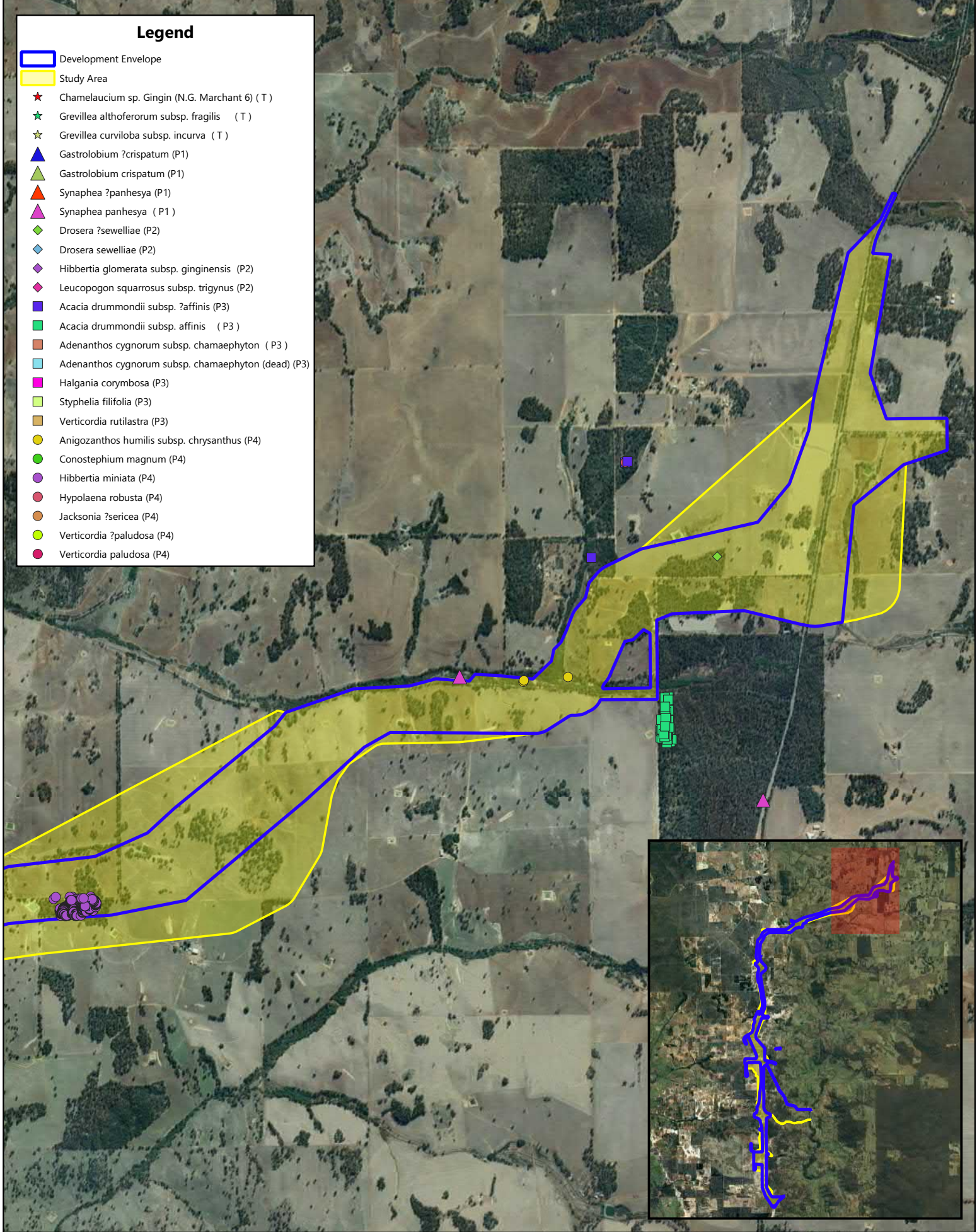


### Legend

- Development Envelope
- Study Area
- ★ Chamelaucium sp. Gingin (N.G. Marchant 6) ( T )
- ★ Grevillea althoferorum subsp. fragilis ( T )
- ☆ Grevillea curviloba subsp. incurva ( T )
- ▲ Gastrolobium ?crispatum (P1)
- ▲ Gastrolobium crispatum (P1)
- ▲ Synaphea ?panhesya ( P1 )
- ▲ Synaphea panhesya ( P1 )
- ◆ Drosera ?sewelliae (P2)
- ◆ Drosera sewelliae (P2)
- ◆ Hibbertia glomerata subsp. ginginensis (P2)
- ◆ Leucopogon squarrosus subsp. trigynus (P2)
- Acacia drummondii subsp. ?affinis (P3)
- Acacia drummondii subsp. affinis ( P3 )
- Adenanthos cygnorum subsp. chamaephyton ( P3 )
- Adenanthos cygnorum subsp. chamaephyton (dead) (P3)
- Halgania corymbosa (P3)
- Stypelia filifolia (P3)
- Verticordia rutilastra (P3)
- Anigozanthos humilis subsp. chrysanthus (P4)
- Conostephium magnum (P4)
- Hibbertia miniata (P4)
- Hypolaena robusta (P4)
- Jacksonia ?sericea (P4)
- Verticordia ?paludosa (P4)
- Verticordia paludosa (P4)



0 5 10 15 20 km

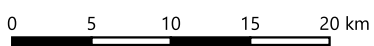
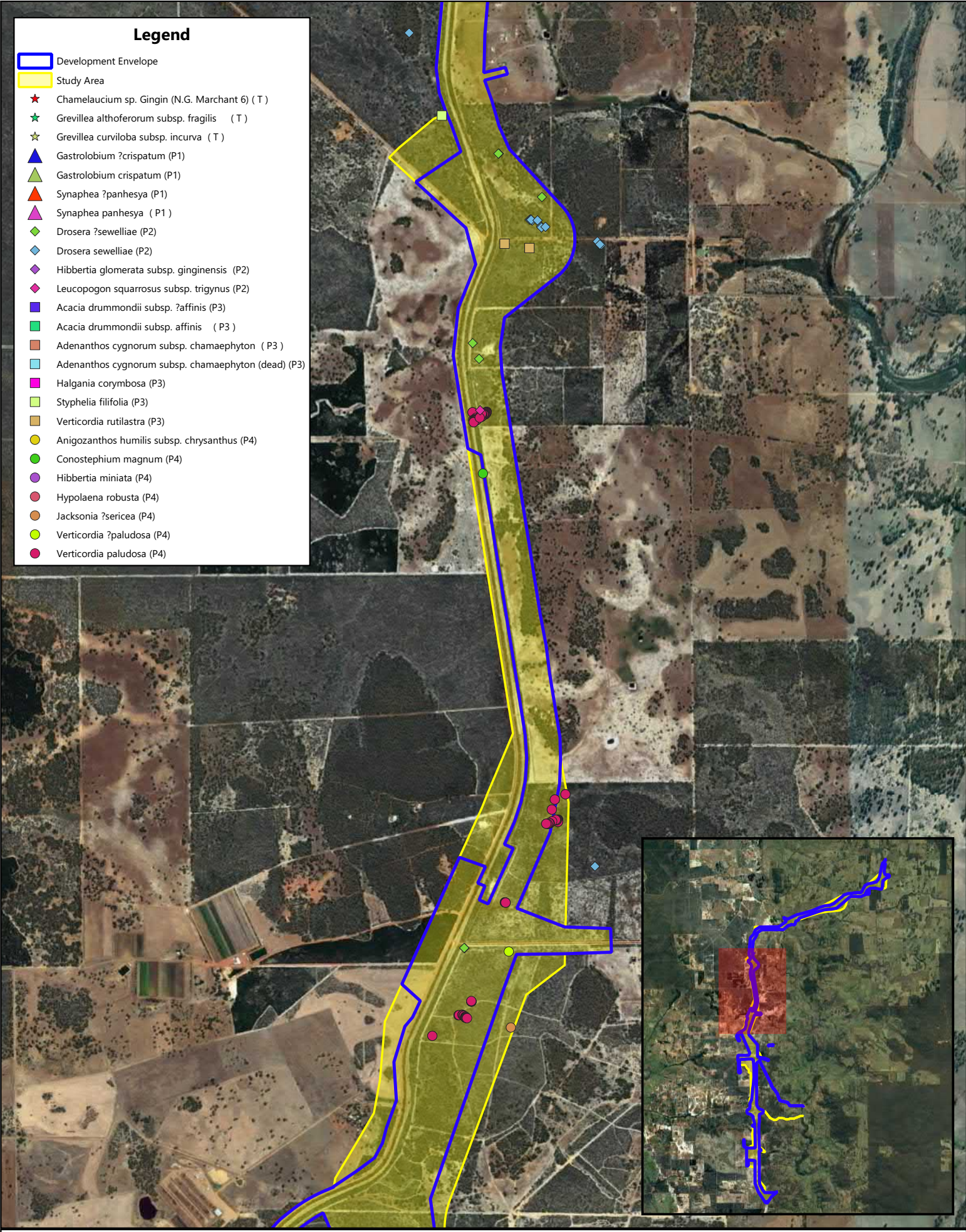
GDA 94 / MGA Zone 50

**Figure 11a - Recorded Locations of Priority Flora within the Study Area**



### Legend

- Development Envelope
- Study Area
- ★ *Chamelaucium* sp. *Gingin* (N.G. Marchant 6) ( T )
- ★ *Grevillea althoferorum* subsp. *fragilis* ( T )
- ☆ *Grevillea curviloba* subsp. *incurva* ( T )
- ▲ *Gastrolobium* ?*crispatum* (P1)
- ▲ *Gastrolobium crispatum* (P1)
- ▲ *Synaphea* ?*panhesya* (P1)
- ▲ *Synaphea panhesya* ( P1 )
- ◆ *Drosera* ?*sewelliae* (P2)
- ◆ *Drosera sewelliae* (P2)
- ◆ *Hibbertia glomerata* subsp. *ginginensis* (P2)
- ◆ *Leucopogon squarrosus* subsp. *trigynus* (P2)
- *Acacia drummondii* subsp. ?*affinis* (P3)
- *Acacia drummondii* subsp. *affinis* ( P3 )
- *Adenanthos cygnorum* subsp. *chamaephyton* ( P3 )
- *Adenanthos cygnorum* subsp. *chamaephyton* (dead) (P3)
- *Halgania corymbosa* (P3)
- *Styphelia filifolia* (P3)
- *Verticordia rutilastra* (P3)
- *Anigozanthos humilis* subsp. *chrysanthus* (P4)
- *Conostephium magnum* (P4)
- *Hibbertia miniata* (P4)
- *Hypolaena robusta* (P4)
- *Jacksonia* ?*sericea* (P4)
- *Verticordia* ?*paludosa* (P4)
- *Verticordia paludosa* (P4)



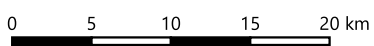
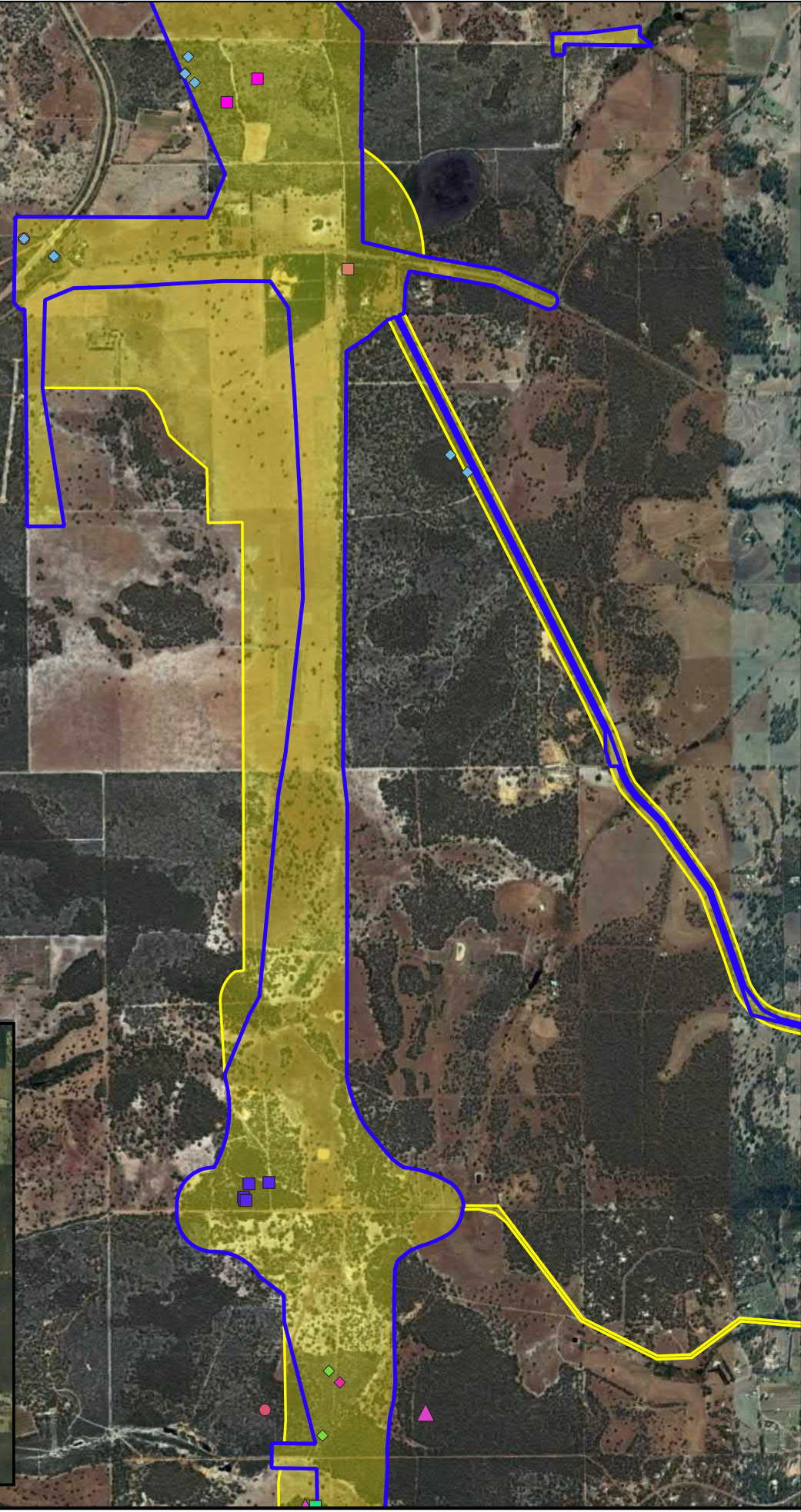
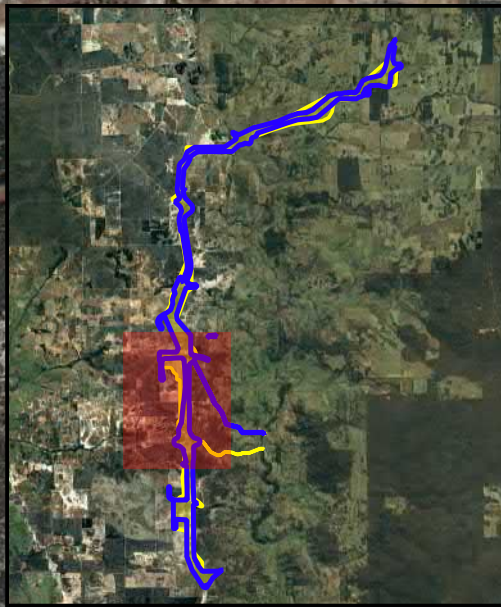
GDA 94 / MGA Zone 50



**Figure 11b - Recorded Locations of Priority Flora within the Study Area**

### Legend

- Development Envelope
- Study Area
- ★ Chamelaucium sp. Gingin (N.G. Marchant 6) ( T )
- ★ Grevillea althoferorum subsp. fragilis ( T )
- ☆ Grevillea curviloba subsp. incurva ( T )
- ▲ Gastrolobium ?crispatum (P1)
- ▲ Gastrolobium crispatum (P1)
- ▲ Synaphea ?panhesya ( P1 )
- ▲ Synaphea panhesya ( P1 )
- ◆ Drosera ?sewelliae (P2)
- ◆ Drosera sewelliae (P2)
- ◆ Hibbertia glomerata subsp. ginginensis (P2)
- ◆ Leucopogon squarrosus subsp. trigynus (P2)
- Acacia drummondii subsp. ?affinis (P3)
- Acacia drummondii subsp. affinis ( P3 )
- Adenanthos cygnorum subsp. chamaephyton ( P3 )
- Adenanthos cygnorum subsp. chamaephyton (dead) (P3)
- Halgania corymbosa (P3)
- Stypelia filifolia (P3)
- Verticordia rutilastra (P3)
- Anigozanthos humilis subsp. chrysanthus (P4)
- Conostephium magnum (P4)
- Hibbertia miniata (P4)
- Hypolaena robusta (P4)
- Jacksonia ?sericea (P4)
- Verticordia ?paludosa (P4)
- Verticordia paludosa (P4)






























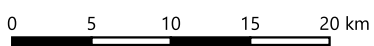
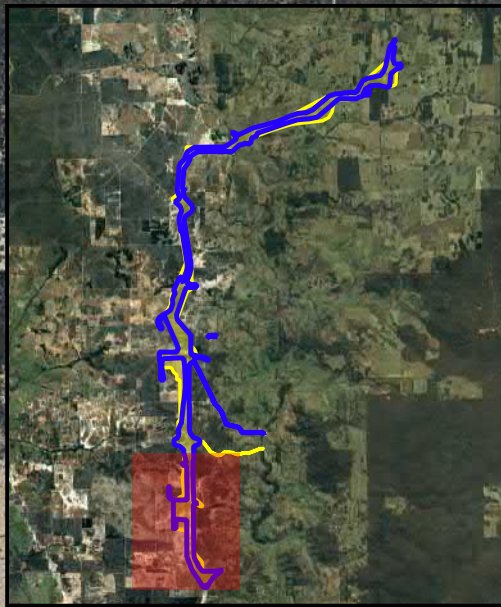
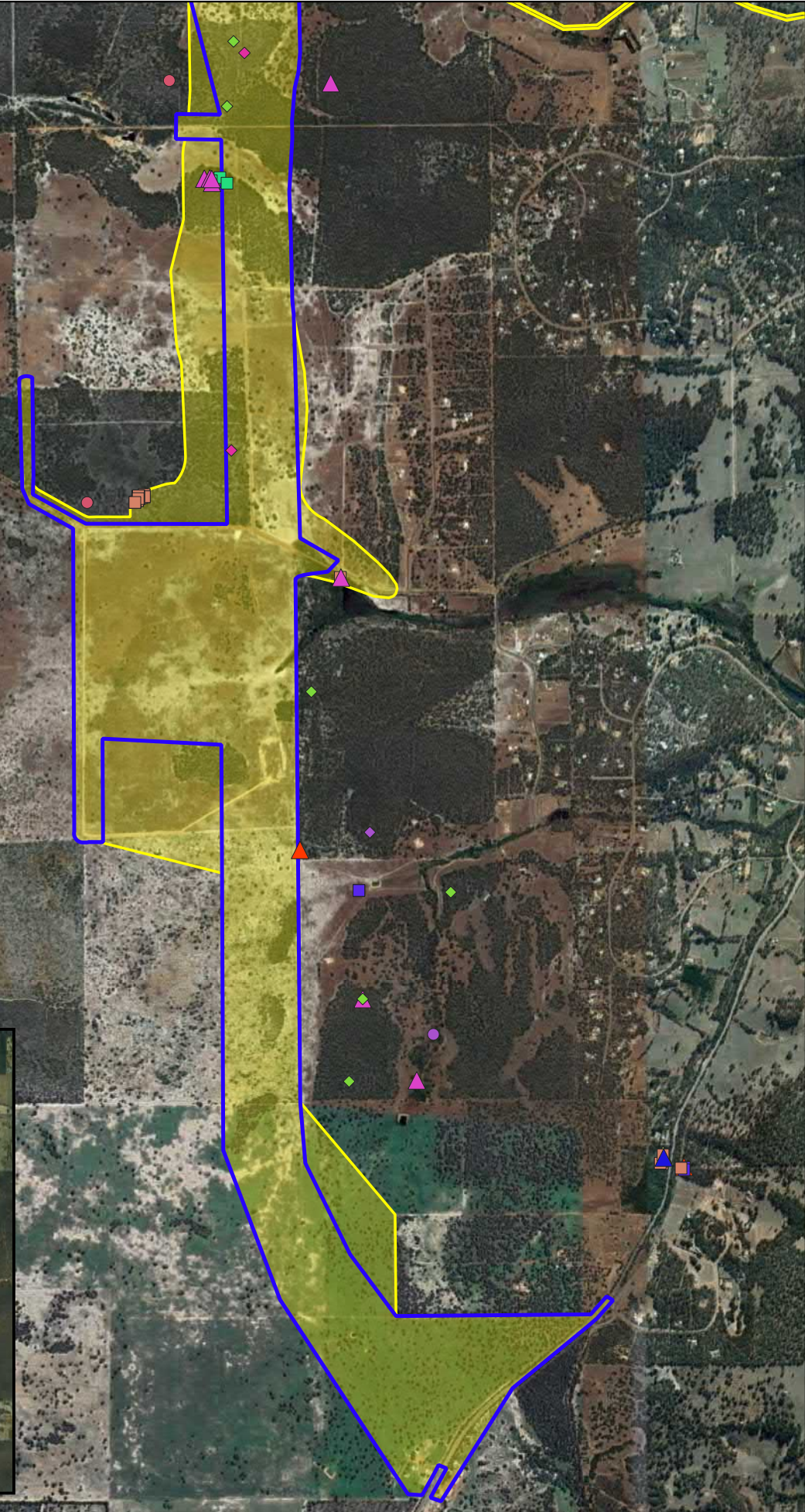
GDA 94 / MGA Zone 50



**Figure 11c - Recorded Locations of Priority Flora within the Study Area**

### Legend

-  Development Envelope
-  Study Area
-  *Chamelaucium* sp. Gingin (N.G. Marchant 6) ( T )
-  *Grevillea althoferorum* subsp. *fragilis* ( T )
-  *Grevillea curviloba* subsp. *incurva* ( T )
-  *Gastrolobium* ?*crispatum* (P1)
-  *Gastrolobium crispatum* (P1)
-  *Synaphea* ?*panhesya* (P1)
-  *Synaphea panhesya* ( P1 )
-  *Drosera* ?*sewelliae* (P2)
-  *Drosera sewelliae* (P2)
-  *Hibbertia glomerata* subsp. *ginginensis* (P2)
-  *Leucopogon squarrosus* subsp. *trigynus* (P2)
-  *Acacia drummondii* subsp. ?*affinis* (P3)
-  *Acacia drummondii* subsp. *affinis* ( P3 )
-  *Adenanthos cygnorum* subsp. *chamaephyton* ( P3 )
-  *Adenanthos cygnorum* subsp. *chamaephyton* (dead) (P3)
-  *Halgania corymbosa* (P3)
-  *Styphelia filifolia* (P3)
-  *Verticordia rutilastra* (P3)
-  *Anigozanthos humilis* subsp. *chrysanthus* (P4)
-  *Conostephium magnum* (P4)
-  *Hibbertia miniata* (P4)
-  *Hypolaena robusta* (P4)
-  *Jacksonia* ?*sericea* (P4)
-  *Verticordia* ?*paludosa* (P4)
-  *Verticordia paludosa* (P4)

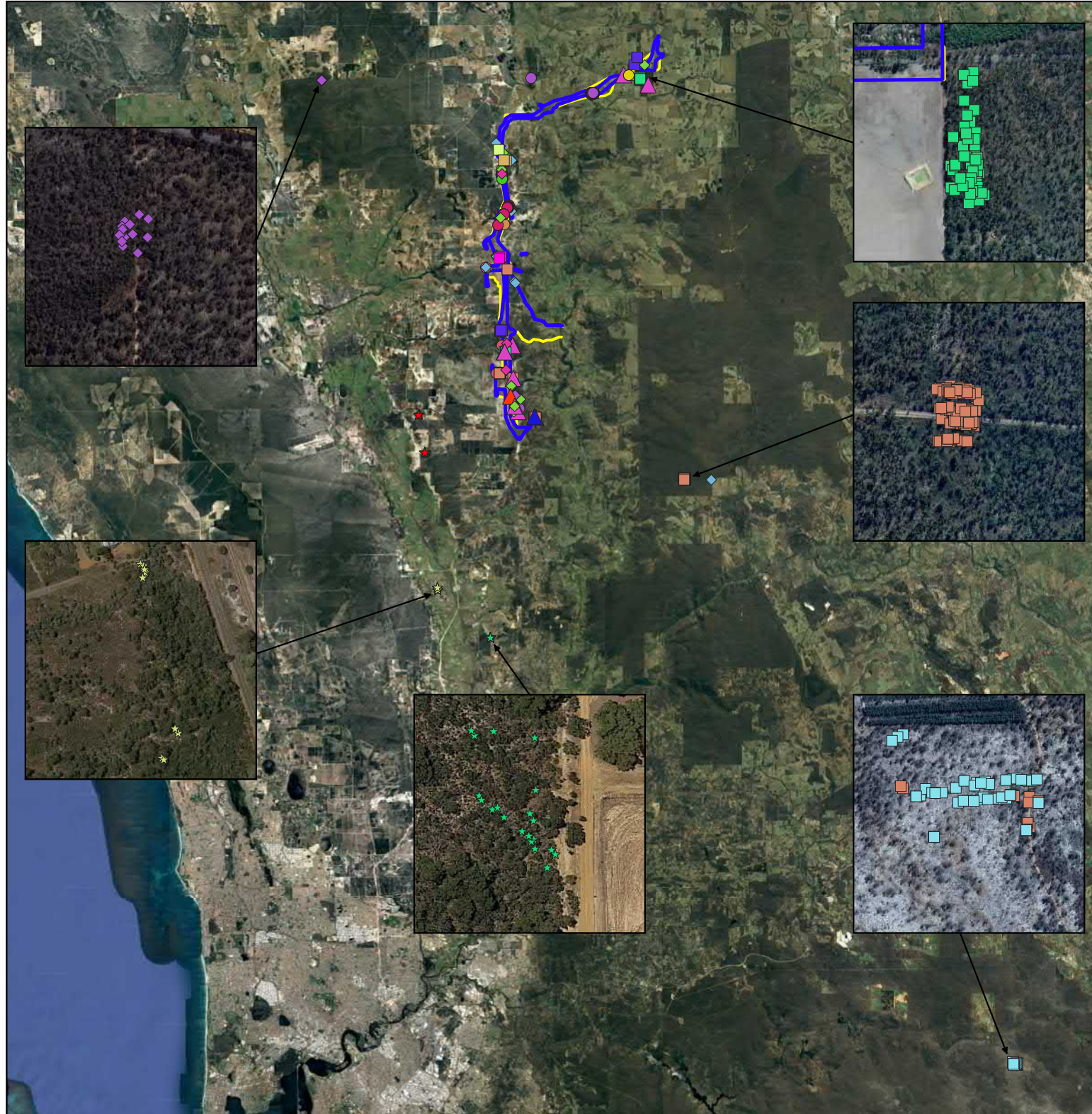


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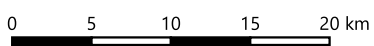


**Figure 11d - Recorded Locations of Priority Flora within the Study Area**





Legend					
	Development Envelope		<i>Drosera ?sewelliae</i> (P2)		<i>Styphelia filifolia</i> (P3)
	Study Area		<i>Drosera sewelliae</i> (P2)		<i>Verticordia rutilastra</i> (P3)
	<i>Chamelaucium</i> sp. Gingin (N.G. Marchant 6) ( T )		<i>Hibbertia glomerata</i> subsp. <i>ginginensis</i> (P2)		<i>Anigozanthos humilis</i> subsp. <i>chrysanthus</i> (P4)
	<i>Grevillea althoferorum</i> subsp. <i>fragilis</i> ( T )		<i>Leucopogon squarrosus</i> subsp. <i>trigynus</i> (P2)		<i>Conostephium magnum</i> (P4)
	<i>Grevillea curviloba</i> subsp. <i>incurva</i> ( T )		<i>Acacia drummondii</i> subsp. <i>?affinis</i> (P3)		<i>Hibbertia miniata</i> (P4)
	<i>Gastrolobium ?crispatum</i> (P1)		<i>Acacia drummondii</i> subsp. <i>affinis</i> ( P3 )		<i>Hypolaena robusta</i> (P4)
	<i>Gastrolobium crispatum</i> (P1)		<i>Adenanthos cygnorum</i> subsp. <i>chamaephyton</i> ( P3 )		<i>Jacksonia ?sericea</i> (P4)
	<i>Synaphea ?panhesya</i> (P1)		<i>Adenanthos cygnorum</i> subsp. <i>chamaephyton</i> (dead) (P3)		<i>Verticordia ?paludosa</i> (P4)
	<i>Synaphea panhesya</i> ( P1 )		<i>Halgania corymbosa</i> (P3)		<i>Verticordia paludosa</i> (P4)



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**Figure 12 - Recorded Locations of Priority Flora in the Region**



### 6.2.3 Vegetation Units

As previously reported (FVC 2018c; FVC 2017), floristic analysis of quadrat data using multivariate cluster analysis of species presence/absence in PATN™, as well as an assessment of site data, was used to identify vegetation units across the study area.

Recorded quadrat data was then used to describe each unit to NVIS Levels III and VI. In a broad sense, the vegetation units comprise Eucalypt woodlands (Jarrah, Marri, Wandoo and Flooded Gum), Banksia Woodlands and Melaleuca woodlands and shrublands (FVC 2018c).

Incorporation of PATN™ analysis results (**Appendix D**), combined with the verifications described above resulted in the 12 vegetation units recorded, described and mapped within the study area, as summarised in **Table 12**. The spatial extent of the various vegetation units is presented in the **Figure 13** series.

**Table 12 - Summary of Recorded Vegetation Units**

Vegetation Unit and Description	Corresponding Shepherd <i>et.al.</i> Code	Equivalent Phoenix Quadrat/s	Representative Quadrats	Inferred FCT Based on Dendrogram [adjusted based on location and species, where applicable]	EPBC TEC	WA TEC PEC~
<b>BaXpAn</b> <b><i>Banksia</i> spp. sparse woodland</b> <i>Banksia attenuata</i> , <i>Banksia menziesii</i> and <i>Eucalyptus todtiana</i> low sparse woodland over <i>Xanthorrhoea preissii</i> mid isolated to sparse shrubs over <i>Bossiaea eriocarpa</i> , <i>Gompholobium tomentosum</i> and <i>Petrophile linearis</i> low isolated shrubs over <i>Alexgeorgea nitens</i> and <i>Lyginia imberbis</i> sparse sedgeland	1027 and/or 949	MNP2013 and/or MNP2002	B06, B06.2	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B10, B10.2	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B11	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B2.17^	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B2.23^	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B2.24^	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B2.25	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B2.28^	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B2.30	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B2.32	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B41^, B41.2^	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B45^, B45.2^	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B49	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B52^	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B53^	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
BW13	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA			

Vegetation Unit and Description	Corresponding Shepherd <i>et.al.</i> Code	Equivalent Phoenix Quadrat/s	Representative Quadrats	Inferred FCT Based on Dendrogram [adjusted based on location and species, where applicable]	EPBC TEC	WA TEC PEC~
<b>BaXpAn (cont.)</b>			BW14	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			BW15	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			BW16	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			BW17	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
<b>BaXpUa</b> <b><i>Banksia attenuata</i> sparse woodland</b> <i>Banksia attenuata</i> low sparse woodland (with occasional <i>Banksia menziesii</i> ) over <i>Xanthorrhoea preissii</i> mid isolated shrubs over <i>Bossiaea eriocarpa</i> , <i>Hibbertia hypericoides</i> and <i>Petrophile linearis</i> low isolated shrubs over <i>Ursinia anthemoides</i> , <i>Conostylis aculeata</i> and <i>Hypochaeris glabra</i> isolated herbs	949	MNP2002	B2.20^	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B2.37	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B2.48	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.49	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B2.50	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B55	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			BW01	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			BW02	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			BW03	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			BW04	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			BWC01	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			C04	Affinity with FCT 21c [Inconclusive – no representative FCT]	NA	NA
			C06	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA



Vegetation Unit and Description	Corresponding Shepherd <i>et.al.</i> Code	Equivalent Phoenix Quadrat/s	Representative Quadrats	Inferred FCT Based on Dendrogram [adjusted based on location and species, where applicable]	EPBC TEC	WA TEC PEC~
<b>BmKgHg</b> <b><i>Kunzea glabrescens</i> shrubland</b> <i>Banksia menziesii</i> low sparse to open woodland over <i>Kunzea glabrescens</i> and <i>Xanthorrhoea preissii</i> mid shrubland over <i>Hypochaeris glabra</i> and <i>Drosera erythrorhiza</i> isolated herbs	Not represented, locally on a regional scale; limited vegetation type	NA	B14	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B37	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B37.2	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B50	Affinity with FCT 21c [Inconclusive – no representative FCT]	NA	NA
<b>EmBsHh</b> <b><i>Eucalyptus marginata</i> and <i>Banksia sessilis</i> sparse woodland</b> <i>Eucalyptus marginata</i> and <i>Corymbia calophylla</i> low sparse woodland over <i>Banksia sessilis</i> and <i>Xanthorrhoea preissii</i> tall to mid sparse shrubland over <i>Hibbertia hypericoides</i> and <i>Bossiaea eriocarpa</i> low isolated to sparse shrubland over <i>Hypochaeris glabra</i> and <i>Ursinia anthemoides</i> isolated herbs	1019	MNP2012	B08	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B09, B09.2	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B12^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B13^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B15R	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B2.13^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.27^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.31	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.33	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.34	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.38^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B28, B28.2	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA

Vegetation Unit and Description	Corresponding Shepherd <i>et.al.</i> Code	Equivalent Phoenix Quadrat/s	Representative Quadrats	Inferred FCT Based on Dendrogram [adjusted based on location and species, where applicable]	EPBC TEC	WA TEC PEC~
<b>EmBsHh (cont.)</b>			B44^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			C03	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			C07^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			C09	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
<b>EmXpAn</b> <b><i>Eucalyptus marginata</i> sparse woodland</b> <i>Eucalyptus marginata</i> (and <i>Banksia attenuata</i> ) low sparse woodland over <i>Xanthorrhoea preissii</i> mid sparse shrubland over <i>Bossiaea eriocarpa</i> <i>Hibbertia hypericoides</i> and <i>Petrophile linearis</i> low isolated to sparse shrubland over <i>Alexgeorgea nitens</i> and <i>Lomandra</i> spp. isolated sedges	1027	MNP2013	B07, B07.2	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B2.15^	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B2.18^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.19	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B2.21^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.22	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.36	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B2.51	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B32, B32.2	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA

Vegetation Unit and Description	Corresponding Shepherd <i>et.al.</i> Code	Equivalent Phoenix Quadrat/s	Representative Quadrats	Inferred FCT Based on Dendrogram [adjusted based on location and species, where applicable]	EPBC TEC	WA TEC PEC~
<b>EmXpHh</b> <b><i>Eucalyptus marginata</i> sparse woodland</b> <i>Eucalyptus marginata</i> and <i>Corymbia calophylla</i> low sparse woodland over <i>Xanthorrhoea preissii</i> mid sparse shrubland over <i>Hibbertia hypericoides</i> , <i>Bossiaea eriocarpa</i> and <i>Banksia dallanneyi</i> low isolated shrubs over <i>Conostylis setosa</i> , <i>Xanthosia</i> sp. and <i>Philothea spicata</i> isolated herbs	1019	MNP2012	B01^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B02^, B02.2^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B04^, B04.2^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.01^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.02^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.03^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.04^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.10^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.12	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
B2.14^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA			
<b>ErXpBm#</b> <b><i>Eucalyptus rudis</i> and <i>Melaleuca preissiana</i> sparse woodland</b> <i>Eucalyptus rudis</i> , <i>Melaleuca preissiana</i> and <i>Corymbia calophylla</i> low sparse woodland over <i>Xanthorrhoea preissii</i> and <i>Jacksonia furcellata</i> mid isolated shrubs over <i>Hypocalymma angustifolium</i> low shrubland over <i>Lepidosperma tenue</i> isolated sedges and <i>Briza</i> spp. sparse grassland	973 or 1009 (1009 is restricted to the Bassendean landform near rivers which does not occur within or near the study area)	Not represented	B05, B05.2	Affinity with FCT 11	NA	NA
			B25	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B26	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B27^, B27.2^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B33	Affinity with FCT 11	NA	NA
			B34	Affinity with FCT 11	NA	NA
			B36	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
B43	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA			

Vegetation Unit and Description	Corresponding Shepherd <i>et.al.</i> Code	Equivalent Phoenix Quadrat/s	Representative Quadrats	Inferred FCT Based on Dendrogram [adjusted based on location and species, where applicable]	EPBC TEC	WA TEC PEC~
<b>ErXpBm# (cont.)</b>			B47	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B48, B48.2	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.16^	Affinity with FCT 11	NA	NA
			B2.26^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.29	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.44^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
<b>EtBeAn</b> <b><i>Eucalyptus todtiana</i> sparse woodland</b> <i>Eucalyptus todtiana</i> , <i>Banksia attenuata</i> and <i>Banksia menziesii</i> low sparse woodland over <i>Bossiaea eriocarpa</i> , <i>Hibbertia hypericoides</i> and <i>Petrophile linearis</i> low isolated shrubs over <i>Alexgeorgea nitens</i> , <i>Lyginia imberbis</i> and <i>Mesomelaena pseudostygia</i> sparse sedgeland	949	MNP2002	B15	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B16R	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B17	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B18, B18.2	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B19, B19.2	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B2.06^	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B2.07^	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B2.35^	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B2.39^	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B2.40^	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B32^, B32.2^	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA

Vegetation Unit and Description	Corresponding Shepherd <i>et.al.</i> Code	Equivalent Phoenix Quadrat/s	Representative Quadrats	Inferred FCT Based on Dendrogram <i>[adjusted based on location and species, where applicable]</i>	EPBC TEC	WA TEC PEC <sup>~</sup>
<b>EtBeAn (cont.)</b>			B51	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B54	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			C01	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			C02	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			C05 <sup>^</sup>	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			C08	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			BW06	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			BW07	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			BW08	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			BW09	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			BW18	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			BWC02	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			BWC03	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			BWC04	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA

Vegetation Unit and Description	Corresponding Shepherd <i>et.al.</i> Code	Equivalent Phoenix Quadrat/s	Representative Quadrats	Inferred FCT Based on Dendrogram [adjusted based on location and species, where applicable]	EPBC TEC	WA TEC PEC~
<b>EtEpAn</b> <b><i>Eucalyptus todtiana</i> sparse woodland</b> <i>Eucalyptus todtiana</i> and <i>Banksia</i> spp. low sparse woodland over <i>Adenanthos cygnorum</i> tall sparse shrubland over <i>Eremaea pauciflora</i> and <i>Stirlingia latifolia</i> mid sparse to isolated shrubland over <i>Bossiaea eriocarpa</i> and <i>Conostephium pendulum</i> low isolated shrubs over <i>Austrostipa hemipogon</i> and <i>Briza maxima</i> grasses and <i>Alexgeorgea nitens</i> sedges	949	MNP2002	B42	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B46, B46.2	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B56	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			BW05	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			BW10	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			BW11	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			BW12	Strong affinity with FCT S09 Some affinity with FCT 23c	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
<b>EwBeNa</b> <b><i>Eucalyptus wandoo</i> and <i>Casuarina obesa</i> sparse woodland</b> <i>Eucalyptus wandoo</i> and <i>Casuarina obesa</i> mid to low sparse woodland over <i>Bossiaea eriocarpa</i> and <i>Gastrolobium calycinum</i> and <i>Hakea lissocarpha</i> low isolated shrubs over <i>Neurachne alopecuroidea</i> and <i>Lepidosperma tenue</i> isolated grasses and sedges	1018	Not represented	B29^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B30^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B31, B31.2	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA

Vegetation Unit and Description	Corresponding Shepherd <i>et.al.</i> Code	Equivalent Phoenix Quadrat/s	Representative Quadrats	Inferred FCT Based on Dendrogram [adjusted based on location and species, where applicable]	EPBC TEC	WA TEC PEC~
<b>EwXpHh</b> <b><i>Eucalyptus wandoo</i> sparse woodland</b> <i>Eucalyptus wandoo</i> mid sparse woodland over <i>Xanthorrhoea preissii</i> mid isolated shrubs over <i>Hibbertia hypericoides</i> , <i>Bossiaea eriocarpa</i> and <i>Banksia dallanneyi</i> low isolated shrubs over <i>Conostylis setosa</i> , <i>Hypochaeris glabra</i> and <i>Drosera</i> spp. isolated herbs	4	MNP2014	B21	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B22, B22.2	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B23, B23.2	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B24	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.05^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.08^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.09	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.11^	Strong affinity with FCT S09 Some affinity with FCT 23c [Inconclusive – no representative FCT]	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B2.12^	Strong affinity with FCT S09 Some affinity with FCT 23c [Inconclusive – no representative FCT]	Banksia Woodland of the Swan Coastal Plain (Endangered)	NA
			B2.41^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.42^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.43^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.45	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
			B2.46^	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA
B2.47	Weak affinity with FCTs 1a, 1b, 3a, 3b, 3c [Inconclusive – no representative FCT]	NA	NA			

Vegetation Unit and Description	Corresponding Shepherd <i>et.al.</i> Code	Equivalent Phoenix Quadrat/s	Representative Quadrats	Inferred FCT Based on Dendrogram [adjusted based on location and species, where applicable]	EPBC TEC	WA TEC PEC~
<b>MvJspLs</b> <b>Melaleuca viminea shrubland</b> <i>Melaleuca viminea</i> tall shrubland over <i>Juncus</i> spp. and <i>Isolepis</i> spp. sparse sedgeland and <i>Cotula coronopifolia</i> , <i>Lotus</i> spp. and <i>Utricularia multifida</i> isolated herbs	37	M1.31	B03^, B03.2^	Very weak affinity with FCTs 11, 13, 14, 15, 16, 17, 18, 19 [Inconclusive – no representative FCT]	NA	NA
			B20^	Very weak affinity with FCTs 11, 13, 14, 15, 16, 17, 18, 19 [Inconclusive – no representative FCT]	NA	NA
			B35^	Very weak affinity with FCTs 11, 13, 14, 15, 16, 17, 18, 19 [Inconclusive – no representative FCT]	NA	NA

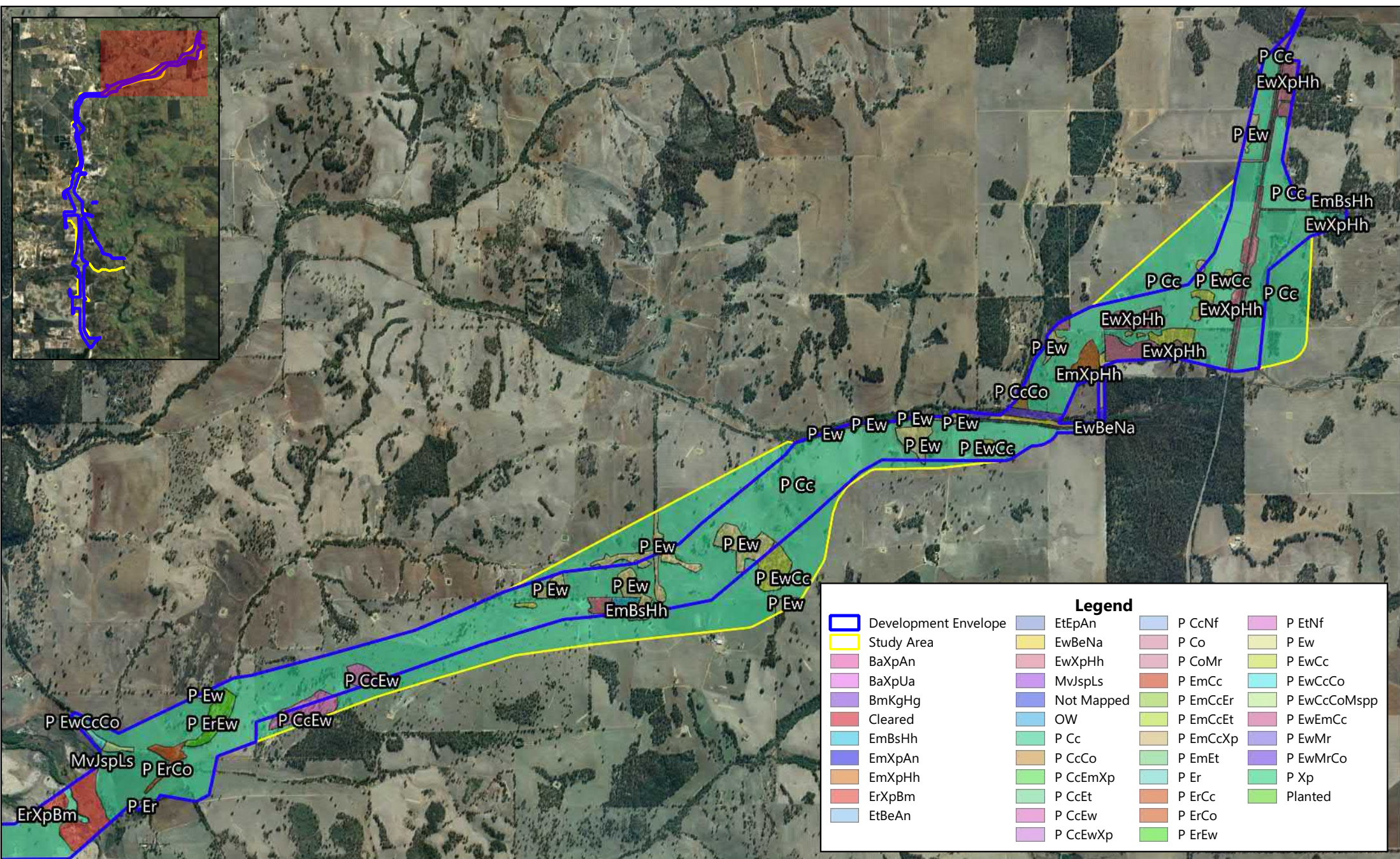
# incorporates vegetation units from FVC (2017) (MpJfLf, ErHaBr, ErXpLt)

originally described from FVC (2017)

^ regional quadrats (outside study area) - not included in Banksia Woodland TEC Characterisation

~ at the time of reporting in May 2019



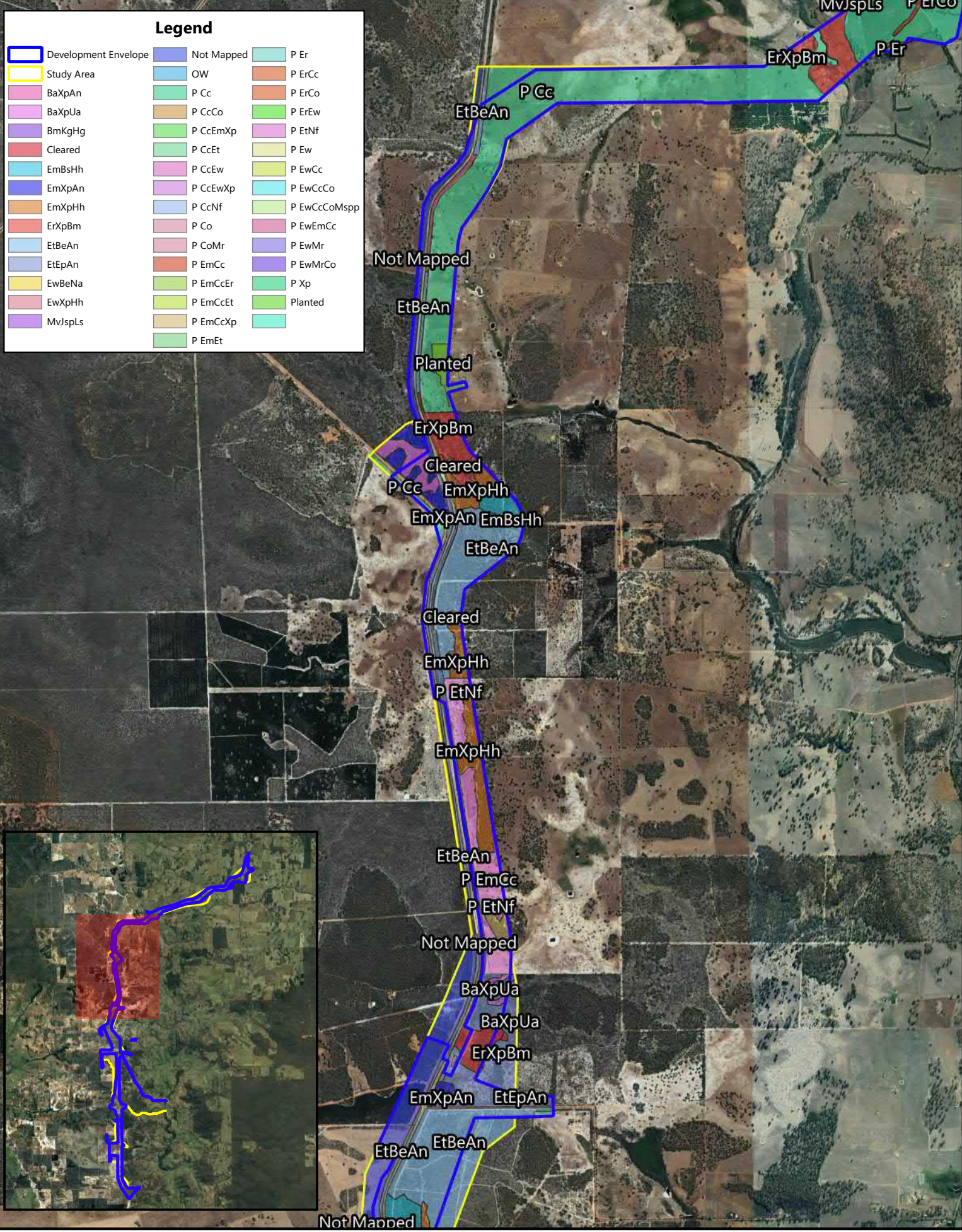


Legend			
	Development Envelope		EtEpAn
	Study Area		EwBeNa
	BaXpAn		EwXpHh
	BaXpUa		MvJspLs
	BmKgHg		Not Mapped
	Cleared		OW
	EmBsHh		P Cc
	EmXpAn		P CcCo
	EmXpHh		P CcEmXp
	ErXpBm		P CcEt
	EtBeAn		P CcEw
			P CcEwXp
			P CcNf
			P Co
			P CoMr
			P EmCc
			P EmCcEr
			P EmCcEt
			P EmCcXp
			P EmEt
			P Er
			P ErCc
			P ErCo
			P ErEw
			P EtNf
			P Ew
			P EwCc
			P EwCcCo
			P EwCcCoMssp
			P EwEmCc
			P EwMr
			P EwMrCo
			P Xp
			Planted

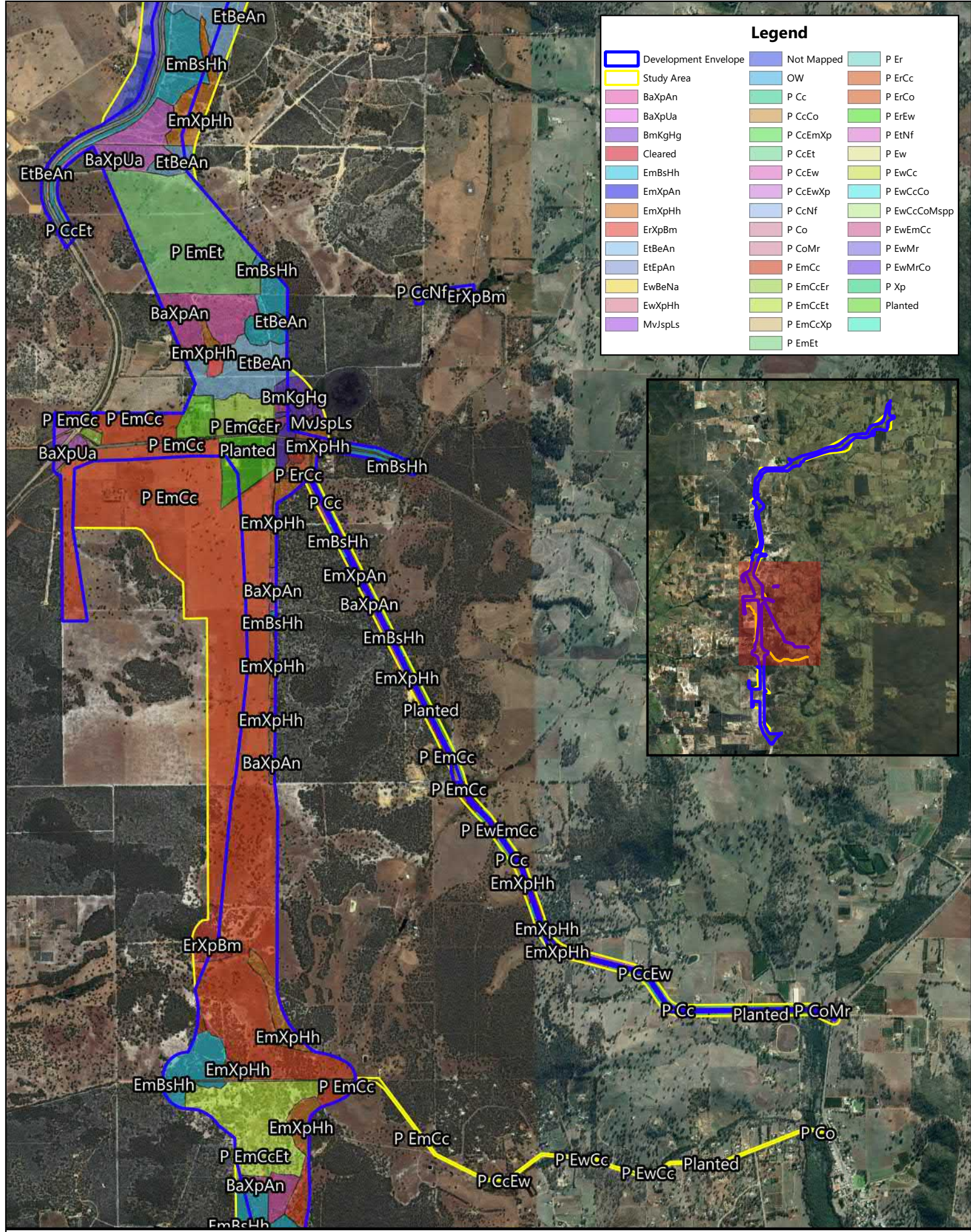
0 0.5 1 1.5 2 km  
 GDA 94 / MGA Zone 50

Figure 13a - Vegetation Units





**Figure 13b -Vegetation Units**

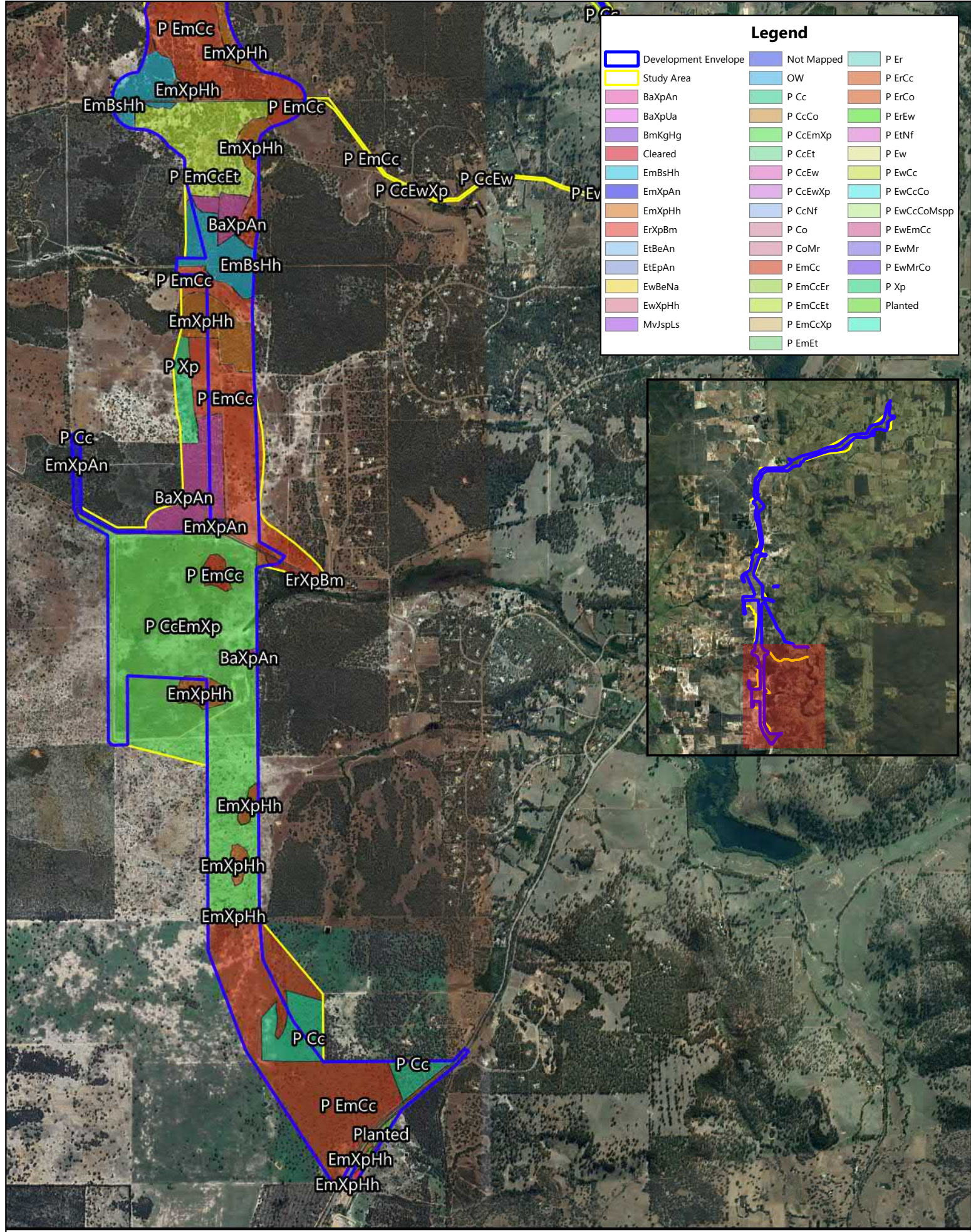


0 5 10 15 20 km

GDA 94 / MGA Zone 50

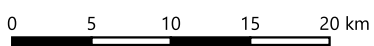
Figure 13c -Vegetation Units





**Legend**

Development Envelope	Not Mapped	P Er
Study Area	OW	P ErCc
BaXpAn	P Cc	P ErCo
BaXpUa	P CcCo	P ErEw
BmKgHg	P CcEmXp	P EtNf
Cleared	P CcEt	P Ew
EmBsHh	P CcEw	P EwCc
EmXpAn	P CcEwXp	P EwCcCo
EmXpHh	P CcNf	P EwCcCoM spp
ErXpBm	P Co	P EwEmCc
EtBeAn	P CoMr	P EwMr
EtEpAn	P EmCc	P EwMrCo
EwBeNa	P EmCcEr	P Xp
EwXpHh	P EmCcEt	Planted
MvJspLs	P EmCcXp	
	P EmEt	



GDA 94 / MGA Zone 50

**Figure 13d -Vegetation Units**



A large proportion of the study area comprises cleared land/pasture, mostly cleared or degraded areas, usually supporting native trees in varying densities. Where native understorey is completely lacking, or almost so, and the ground cover is entirely pasture grasses and/or other weeds, areas have been mapped as 'Pasture' (P) communities. In the vegetation mapping, such areas are designated a 'P' prefix, before abbreviations for the genus and species of the trees present in that area of pasture. For example, an area of pasture or completely degraded understorey with Marri (*Corymbia calophylla*) is coded 'P Cc'. A number of areas were found to support multiple tree species and therefore, the mapping codes indicate this also. The species of trees as present in the pasture communities of the study area are listed in **Table 13**.

**Table 13 - Codes for Pasture Communities Based on Tree Species Present**

Code (Following "P")	Species
Cc	<i>Corymbia calophylla</i>
CcCo	<i>Corymbia calophylla, Casuarina obesa</i>
CcEt	<i>Corymbia calophylla, Eucalyptus todtiana</i>
CcEwXp	<i>Corymbia calophylla, Eucalyptus wandoo, Xanthorrhoea preissii</i>
CcEmXp	<i>Corymbia calophylla, Eucalyptus marginata, Xanthorrhoea preissii</i>
CcEw	<i>Corymbia calophylla, Eucalyptus wandoo</i>
CcNf	<i>Corymbia calophylla, Nuytsia floribunda</i>
Co	<i>Casuarina obesa</i>
CoMr	<i>Casuarina obesa, Melaleuca raphiophylla</i>
EmCc	<i>Eucalyptus marginata, Corymbia calophylla</i>
EmCcEr	<i>Eucalyptus marginata, Corymbia calophylla, Eucalyptus rudis</i>
EmCcEt	<i>Eucalyptus marginata, Corymbia calophylla, Eucalyptus todtiana</i>
EmCcXp	<i>Eucalyptus marginata, Corymbia calophylla, Xanthorrhoea preissii</i>
EmEt	<i>Eucalyptus marginata, Eucalyptus todtiana</i>
Er	<i>Eucalyptus rudis</i>
ErCc	<i>Eucalyptus rudis, Corymbia calophylla</i>
ErCo	<i>Eucalyptus rudis, Casuarina obesa</i>
ErEw	<i>Eucalyptus rudis, Eucalyptus wandoo</i>
EtNf	<i>Eucalyptus todtiana, Nuytsia floribunda</i>
Ew	<i>Eucalyptus wandoo</i>
EwCc	<i>Eucalyptus wandoo, Corymbia calophylla</i>
EwCcCo	<i>Eucalyptus wandoo, Corymbia calophylla, Casuarina obesa</i>
EwCcCoM spp	<i>Eucalyptus wandoo, Corymbia calophylla, Casuarina obesa, Melaleuca spp.</i>
EwEmCc	<i>Eucalyptus wandoo, Eucalyptus marginata, Corymbia calophylla</i>
EwMr	<i>Eucalyptus wandoo, Melaleuca raphiophylla</i>
EwMrCo	<i>Eucalyptus wandoo, Melaleuca raphiophylla, Casuarina obesa</i>
Xp	<i>Xanthorrhoea preissii</i>

The majority of the vegetation units recorded relatively high average species richness values (with at least 20-30 taxa per quadrat). The most floristically diverse vegetation units were found to be BaXpAn (*Banksia* spp. sparse woodland), EwXpHh (*Eucalyptus wandoo* sparse woodland) and EmXpAn (*Eucalyptus marginata* sparse woodland) (FVC 2018c).

The total area occupied by each of the intact vegetation units, the combined degraded 'pasture' communities, planted areas and other areas such as those completely cleared and supporting open water, within each of the survey areas is presented in **Table 14**.

**Table 14 - Vegetation Units Recorded Within the Study Area and their Extents**

Vegetation Unit	Area (ha)	Proportion of Total Study Area* (%)
BaXpAn	93.51	2.71%
BaXpUa	49.10	1.42%
BmKgHg	16.80	0.49%
EmBsHh	128.80	3.73%
EmXpAn	22.78	0.66%
EmXpHh	171.24	4.96%
ErXpBm	62.16	1.80%
EtBeAn	188.61	5.46%
EtEpAn	58.77	1.70%
EwBeNa	4.59	0.13%
EwXpHh	45.34	1.31%
MvJspLs	2.07	0.06%
Cleared	9.08	0.26%
Not Mapped	80.69	2.34%
OW	0.02	0.0005%
Pasture	2,350.87	68.07%
Planted	50.53	1.46%
<b>Total Veg Unit</b>	<b>3,334.97</b>	<b>96.57%</b>

\* Roads not included in area calculation

#### 6.2.4 Vegetation Condition

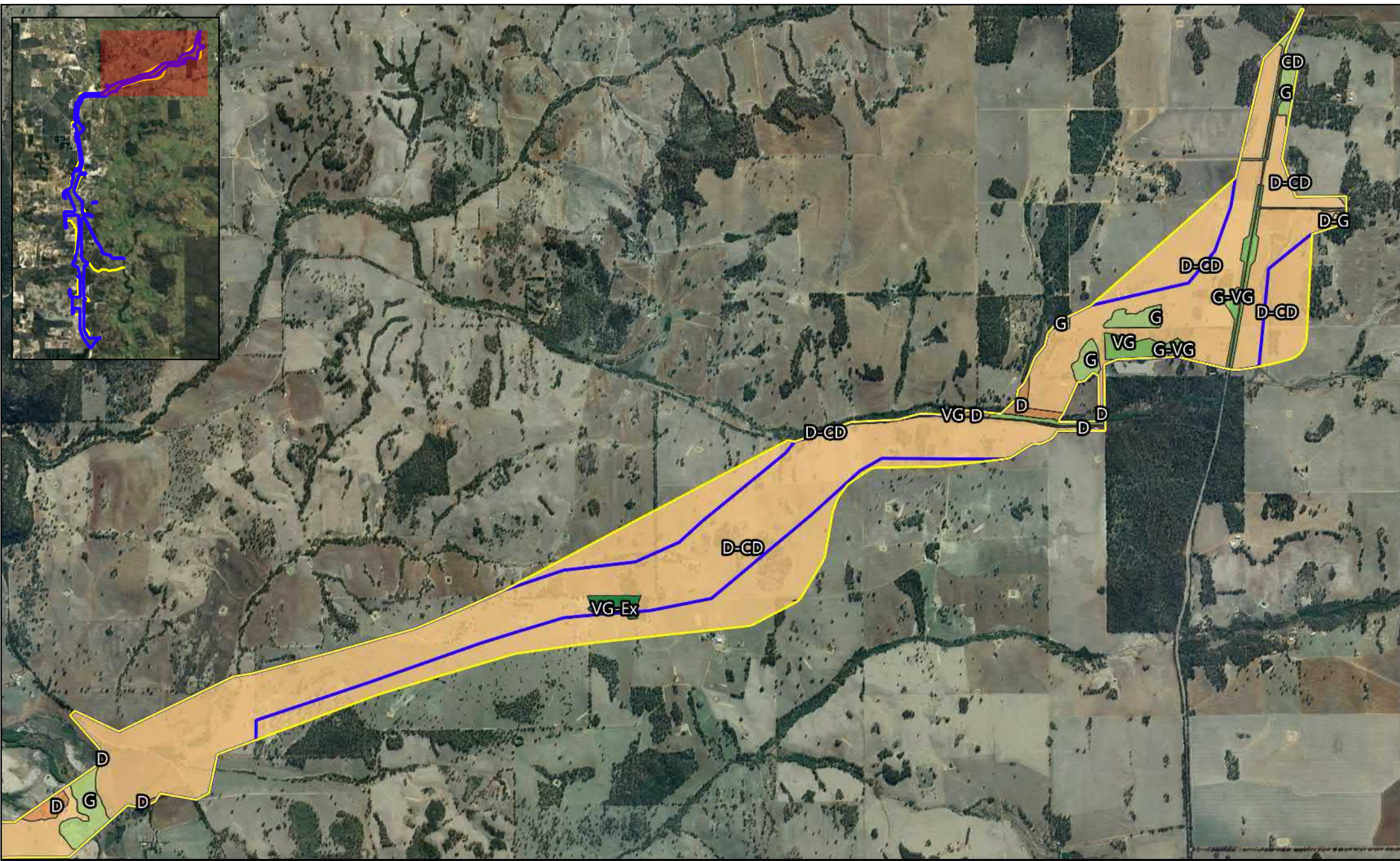
The vegetation of the study area was found to range from 'Completely Degraded' (CD) to 'Excellent' (Ex), with most areas found to be in 'Degraded to Completely Degraded' (D-CD) condition. The spatial extent of the varying vegetation condition across the study area is presented in the **Figure 14** series, and the areas of each condition category are presented in **Table 15**.

**Table 15 - Areas of Varying Vegetation Condition**

Qualitative Vegetation Condition Rating	Area (ha)	Proportion of Total Study Area* (%)
Pristine (P)	0	0
Excellent (Ex)	93.38	2.70%
Very Good to Excellent (VG-Ex)	186.52	5.40%
Very Good (VG)	231.28	6.70%
Good to Very Good (G-VG)	163.68	4.74%
Good (G)	67.81	1.96%
Degraded to Good (D-G)	57.51	1.66%
Degraded (D)	38.68	1.12%
Degraded to Completely Degraded (D-CD)	2,344.69	67.90%
Completely Degraded (CD)	70.72	2.05%
Not Mapped (no access)	80.69	2.34%
<b>Total</b>	<b>2,480.72</b>	<b>97.20%</b>
<b>Total Mapped Areas</b>	<b>3,254.27</b>	

A large proportion of the study area (72.05% of areas mapped) is in 'Degraded to Completely Degraded' condition and is mostly represented by cleared pasture with occasional trees or stands of trees, usually native Eucalypts. The presence and condition of native understorey is a key factor in determining vegetation condition and therefore, most areas of pasture supporting native trees with no understorey, even if tree density is high, are classified as 'Degraded to Completely Degraded'. Such pasture areas dominate the study area and the general landscape of the region.

A total of 742.67 ha (22.82%) of the mapped study area was recorded to be in 'Good' condition or better, with 93.38 ha of this in 'Excellent' condition, but 2,511.60 ha (77.18% of mapped areas) in poorer than 'Good' condition.














0 0.5 1 1.5 2 km

GDA 94 / MGA Zone 50

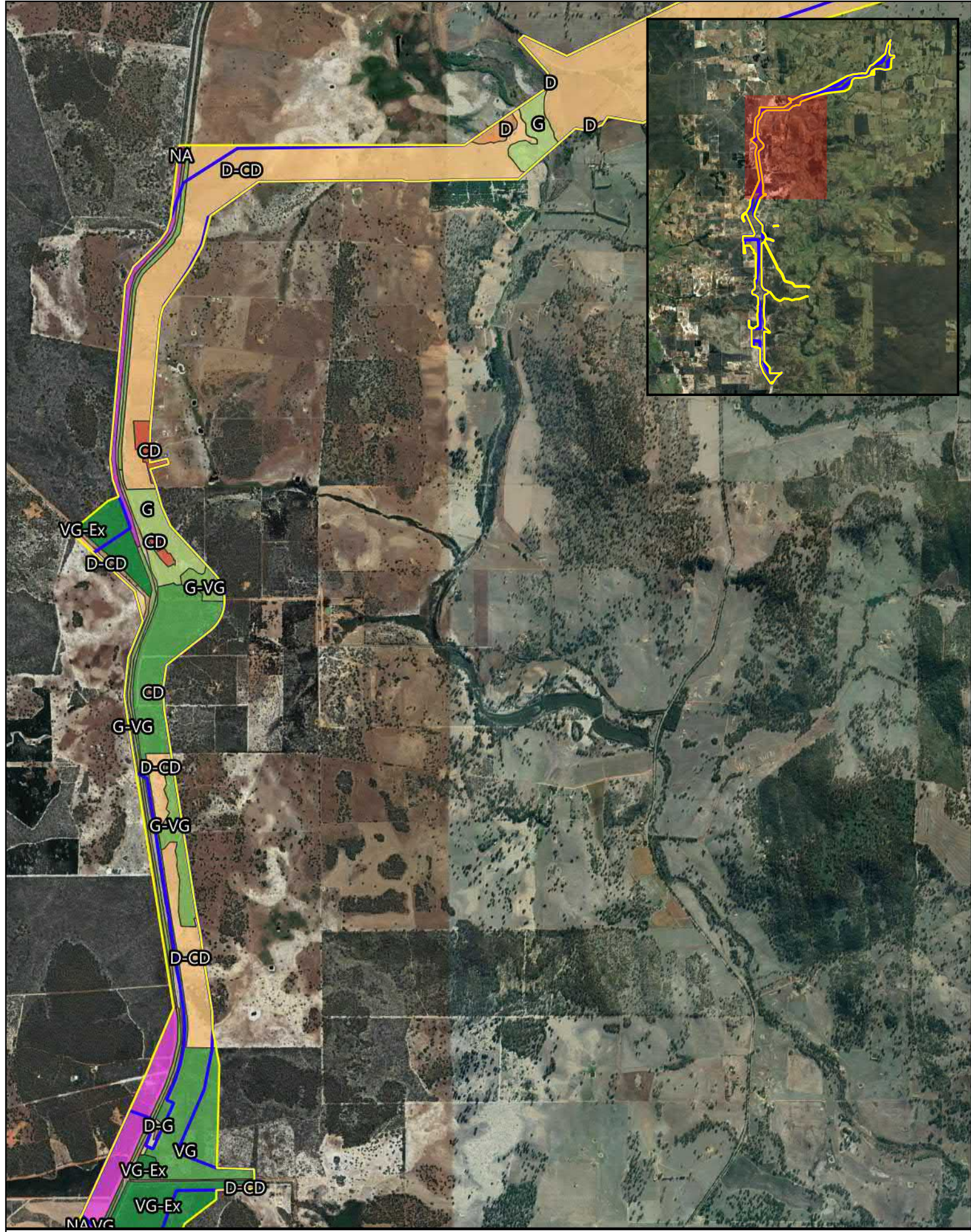
**Figure 14a - Vegetation Condition**



Legend							
	Development Envelope		D		Ex		VG
	Study Area		D-CD		G		VG-Ex
	CD		D-G		G-VG		NA



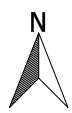




0 5 10 15 20 km

GDA 94 / MGA Zone 50

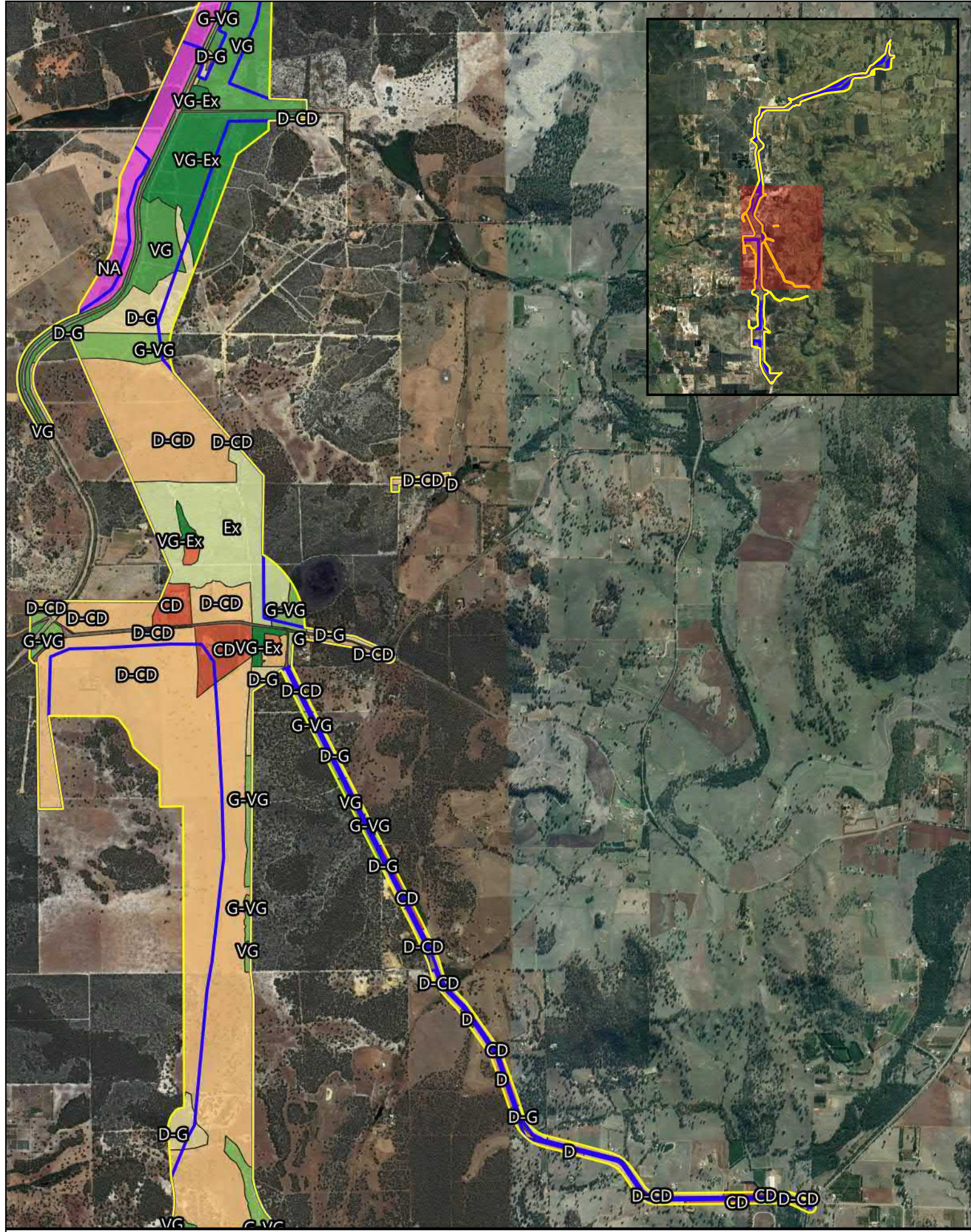
**Figure 14b -Vegetation Condition**



**Legend**

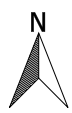
- Development Envelope
- Study Area
- D
- D-CD
- G
- G-VG
- CD
- D-G
- VG
- Ex
- VG-Ex
- NA





0 5 10 15 20 km

GDA 94 / MGA Zone 50

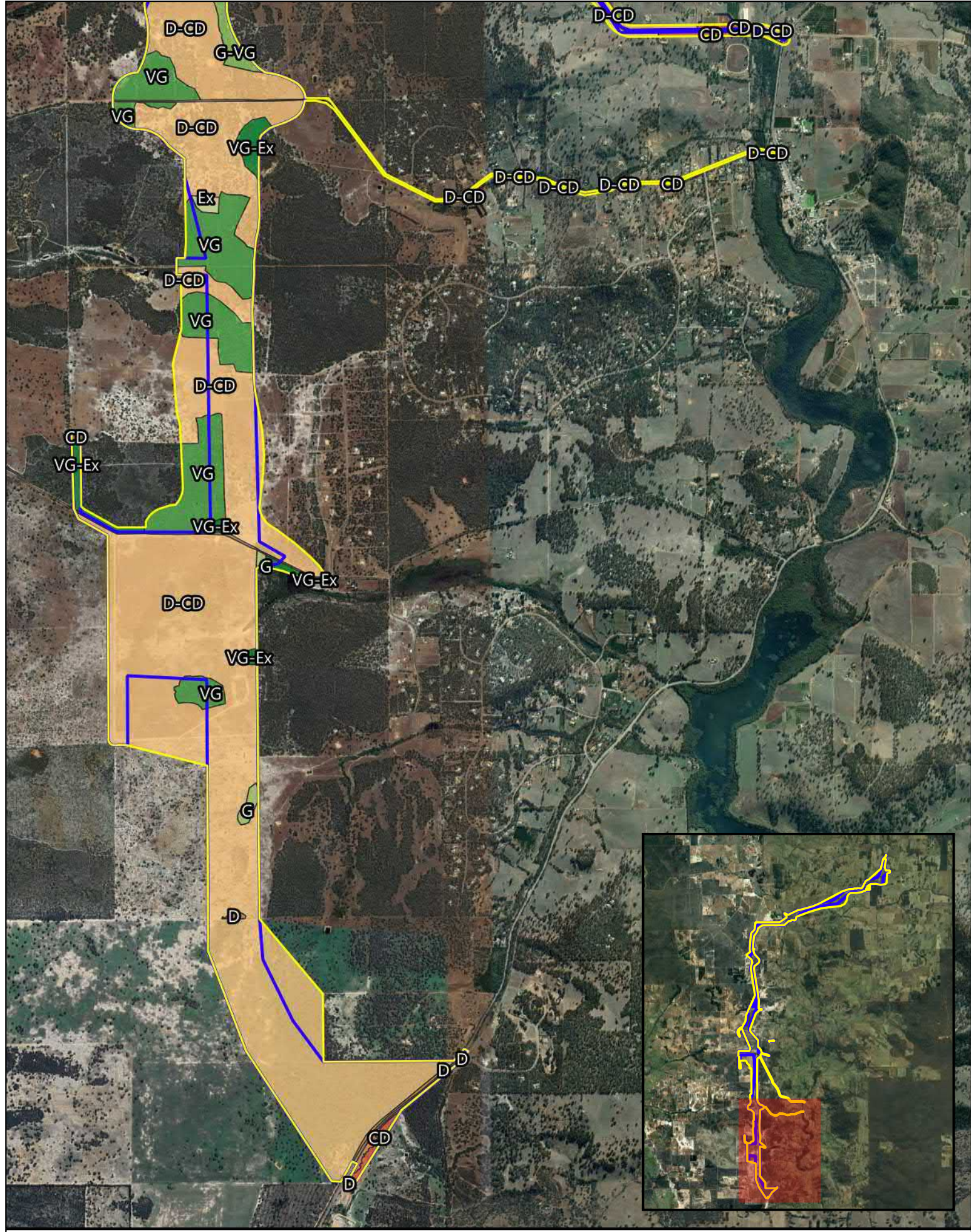


**Legend**

- Development Envelope
- Study Area
- D-CD
- D-G
- CD
- D
- G-VG
- VG
- VG-Ex
- Ex
- G
- NA

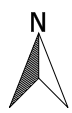
**Figure 14c -Vegetation Condition**





0 5 10 15 20 km

GDA 94 / MGA Zone 50



**Legend**

- |                      |      |       |
|----------------------|------|-------|
| Development Envelope | D-CD | G-VG  |
| Study Area           | D-G  | VG    |
| CD                   | Ex   | VG-Ex |
| D                    | G    | NA    |

**Figure 14d -Vegetation Condition**



## 6.3 BANKSIA WOODLAND ASSESSMENT

### 6.3.1 Banksia Woodland Characterisation

The Conservation Advice (Threatened Species Scientific Committee 2016) states that the Banksia Woodland TEC “typically occurs on well drained, low nutrient soil on sandplain landforms, particularly deep Bassendean and Spearwood sands and occasionally on Quindalup sands”, and that the community “is also common on sandy colluvium and aeolian sands of the Ridge Hill Shelf, Whicher Scarp and Dandaragan Plateau; and may also occur in other limited scenarios”.

All of the sampled quadrats occurring within the study area that were identified through PATN analysis to show affinity with the Banksia woodland TEC (**Table 12, Appendix D**) were further analysed as being representative of the TEC using a checklist developed based on the Conservation Advice (Threatened Species Scientific Committee 2016). The quadrats considered likely to be representative of the Banksia woodland TEC predominantly occur within FVC defined vegetation units, BaXpAn, BaXpUa, EmXpAn, EtBeAn and EtEpAn. The checklist includes the key characteristics of the TEC, including botanical region, soil and landform types and required or typical species for each stratum (**Table 16**). Regional Banksia quadrats occurring outside the study area have not been included in the characterisation.

The combined PATN™ analysis and assessment against the checklist determined that 48 quadrats are representative of the Banksia woodland TEC, with a further seven considered to potentially represent the TEC, based only on PATN™ analysis results (**Appendix D**).

**Table 16 - Key Characteristic Analysis of Recorded Quadrats from within the Study Area for Banksia Woodland TEC Diagnosis**

Key Character (see key)	B06/B06.2	B07/B07.2	B08	B10/B10.2	B11	B15	B15R	B16R	B17	B18/B18.2	B19/B19.2	B2.12	B2.19	B2.22	B2.25	B2.30	B2.32	B2.36	B2.37	B2.48	B2.49	B2.50	B2.51	B32/B32.2	B42	B46/B46.2	B49	B51	B54		
a).	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
b).	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
c).	+	+		+				+		+	+				+	+	+	+		+	+	+	+	+	+	+	+	+	+		
d).		+	+				+					+	+	+						+	+			+			+				
e).	+			+		+		+			+				+	+							+			+	+	+		+	
f).	+	+		+	+	+		+	+	+	+		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
g).	+	+		+	+			+	+	+	+		+	+	+	+	+	+	+	+		+	+	+	+	+	+	+	+	+	
<b>Confirmed/Likely</b>	+	+		+	+	+		+	+	+	+		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Key Character (see key)	B55	B56	C01	C02	C04	C06	C08	BW01	BW02	BW03	BW04	BW05	BW06	BW07	BW08	BW09	BW10	BW11	BW12	BW13	BW14	BW15	BW16	BW17	BW18	BWC01	BWC02	BWC03	BWC04		
a).	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
b).	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
c).	+	+	+	+		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
d).																					+		+	+					+		
e).					+		+		+		+		+	+		+	+	+	+		+		+	+	+	+	+	+	+		
f).	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
g).	+	+	+	+		+	+	+	+	+		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<b>Confirmed/Likely</b>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

NB rescored quadrats have only been characterised once (from the first instance of data)

**KEY**

- a) Swan Coastal Plain or Jarrah Forest location
  - b) Soils and landform either deep Bassendean, Spearwood or occasionally Quindalup sands, sandy colluvium, Aeolian sands of the Ridge Hill Shelf or Whicher Scarp
  - c) Distinctive upper sclerophyllous layer dominated by *Banksia attenuata*, *Banksia menziesii*, *Banksia ilicifolia* or *Banksia prionotes*
  - d) With (although can be without) an emergent tree layer of *Corymbia calophylla*, *Eucalyptus marginata* or *Eucalyptus gomphocephala*
  - e) With (although can be without) other trees including *Eucalyptus tottdiana*, *Nuytsia floribunda*, *Allocasuarina fraseriana*, *Callitris arenaria*, *Callitris pyramidalis* or *Xylomelum occidentale*
  - f) Understorey/mid-ground sclerophyllous shrub layer including mostly Asteraceae, Dilleniaceae, Droseraceae, Ericaceae, Fabaceae, Haemodoraceae, Iridaceae, Myrtaceae, Orchidaceae, Proteaceae, Restionaceae
  - g) Herbaceous ground layer including mostly Apiaceae, Asteraceae, Cyperaceae, Haemodoraceae, Poaceae, Restionaceae, Stylidiaceae
- Confirmed** (based on PATN™ analysis and checklist); **Likely** (based on PATN™ analysis only)

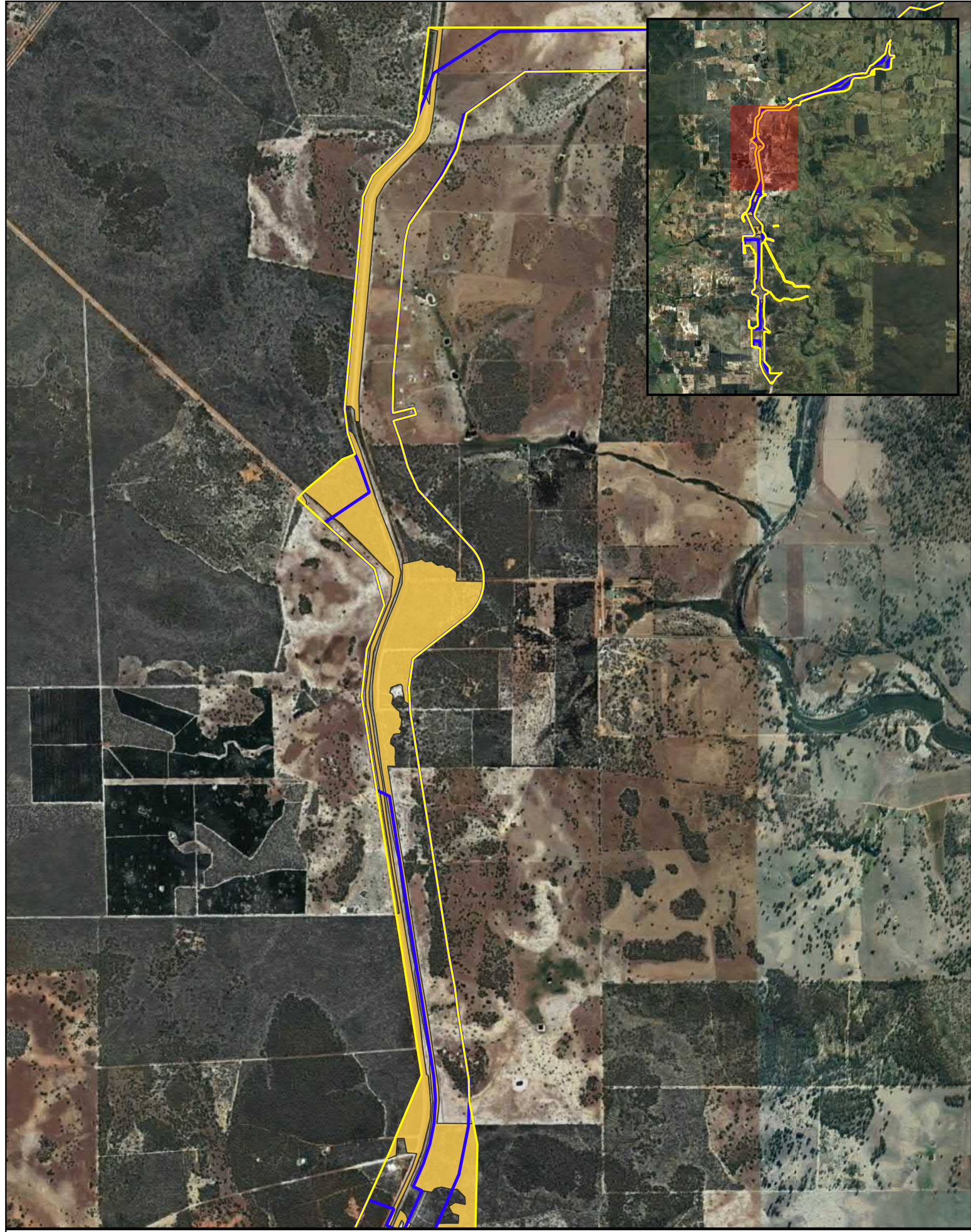
### 6.3.2 Banksia Woodland Mapping

The areas of Banksia woodland across the study area have been mapped based on data from 55 quadrats confirmed to support the Banksia woodland TEC (**Table 16**), with data collected during field assessments conducted between 2016 and 2018. The extent of Banksia woodland across the study area is presented in the **Figure 15** series.

### 6.3.3 Banksia Woodland Patches and Condition Thresholds

Each area of mapped Banksia woodland within the study area has been grouped with other relevant areas of Banksia woodland connected to those areas, to form patches, in accordance with the methodologies and requirements described in the Conservation Advice (Threatened Species Scientific Committee 2016). These methodologies specify that areas of Banksia woodland may be variable in their condition within their patch but that condition thresholds provide guidance as to whether or not a patch as a whole retains sufficient conservation values to be considered a MNES as defined under the EPBC Act. Patches that do not meet the minimum condition thresholds are excluded from full national protection, so that efforts are focused on the most valuable elements of the ecological community (Threatened Species Scientific Committee 2016).

In summary, areas of Banksia woodland that are in 'Degraded' condition are unlikely to be able to be conserved, so are excluded from patches and classification as the TEC altogether. Areas of Banksia woodland in 'Degraded' or worse condition are not considered to be a MNES unless they are connected to or located closely to (separated by less than a 30 m gap, with gaps being cleared areas, infrastructure, areas of another vegetation type, or any other interruption) other areas of applicable Banksia woodland. That is, isolated and degraded areas of Banksia woodland would not be incorporated into nearby patches, and, given the low likelihood of sustainable conservation, would not be focused on for protection. Based on the above logic there are Banksia woodland patches totalling approximately 18,203.55 ha present in the region, that are connected to areas of Banksia woodland classified as the TEC within the study area, as shown in **Figure 16**.






0 0.5 1 1.5 2 km

GDA 94 / MGA Zone 50

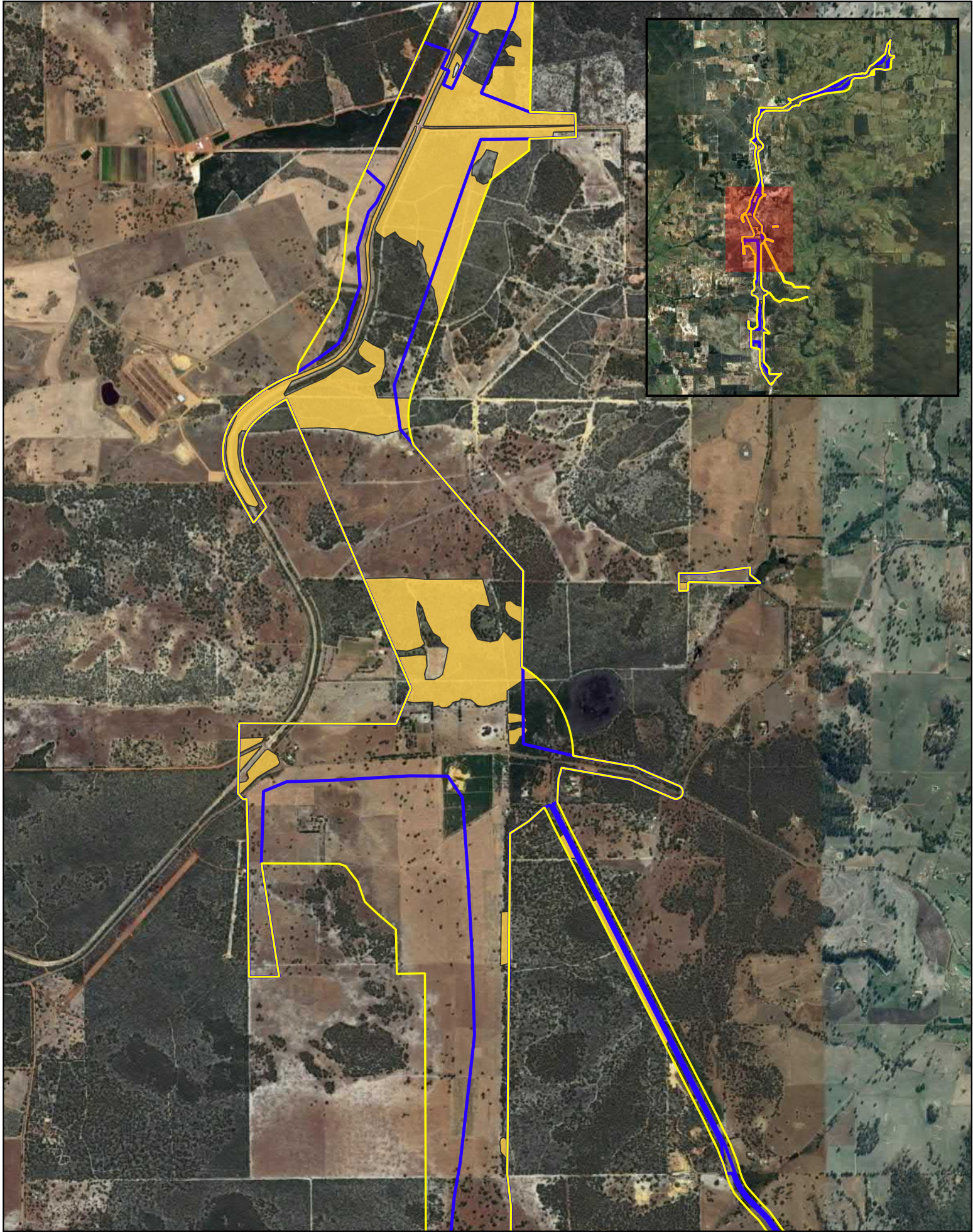


**Legend**

-  Development Envelope
-  Study Area
-  Banksia Woodland Extent



**Figure 15a - Banksia Woodland Extent**






0 0.5 1 1.5 2 km

GDA 94 / MGA Zone 50

**Figure 15b - Banksia  
Woodland Extent**

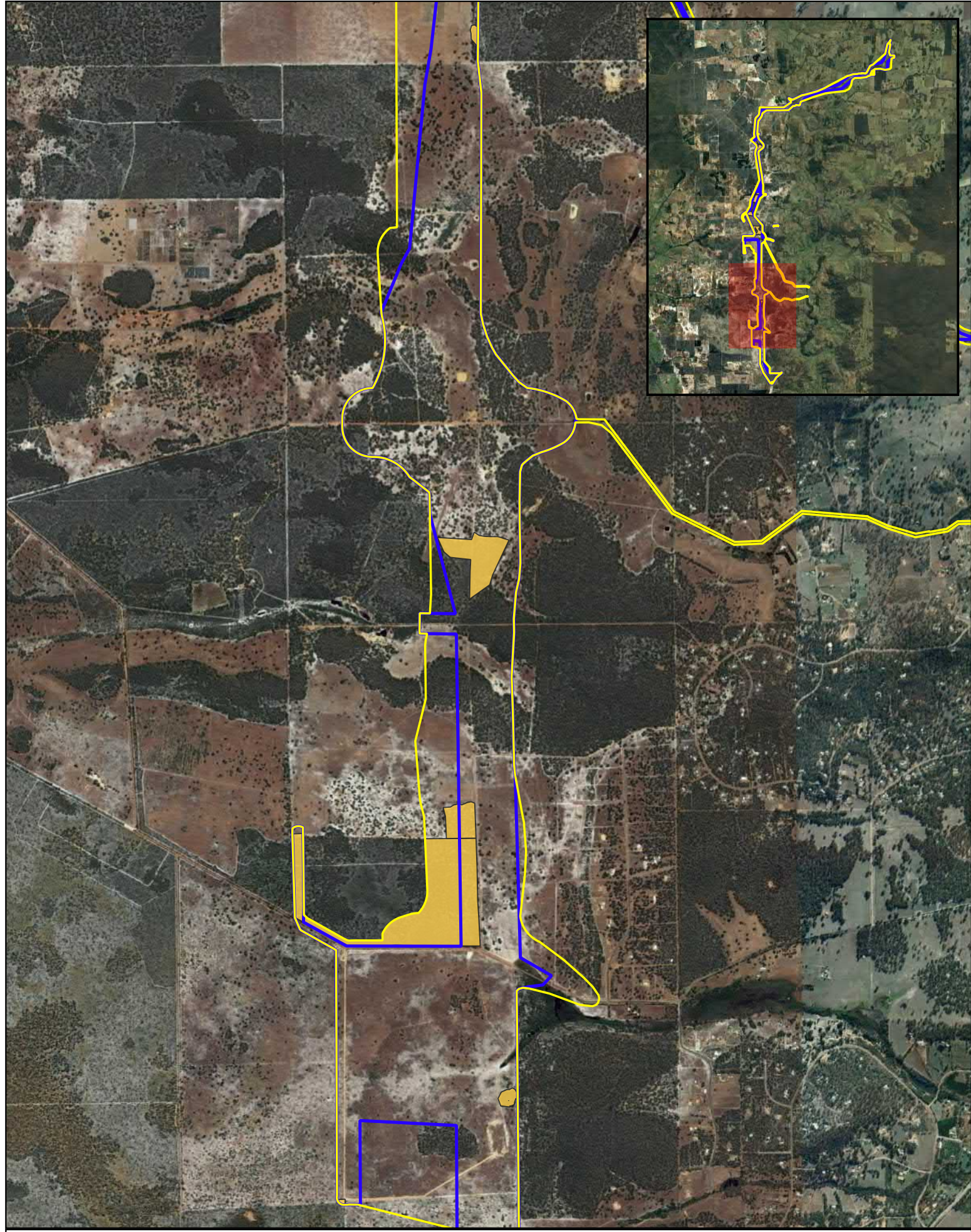


**Legend**

-  Development Envelope
-  Study Area
-  Banksia Woodland Extent



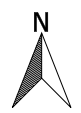




0 0.5 1 1.5 2 km

GDA 94 / MGA Zone 50

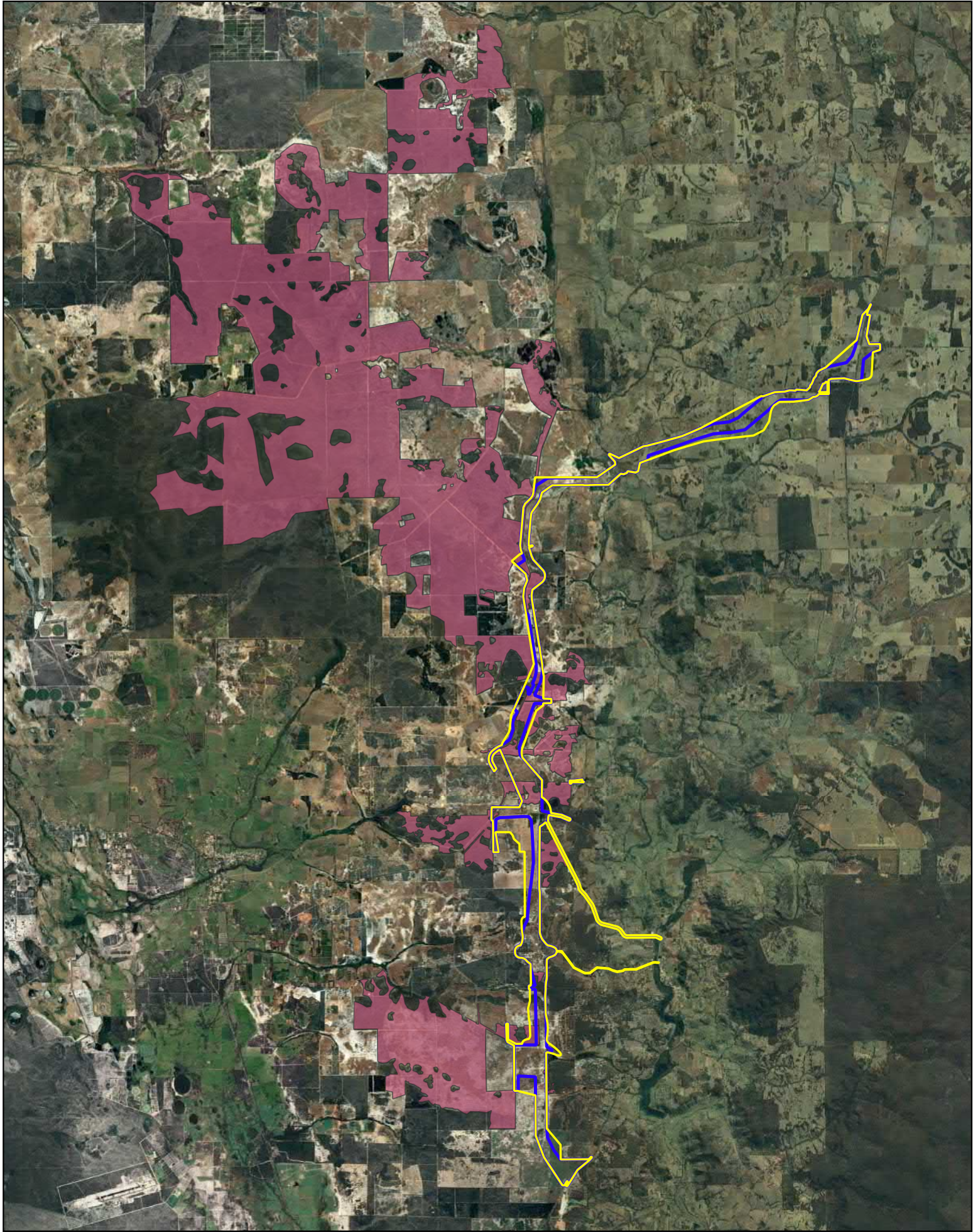
**Figure 15c - Banksia Woodland Extent**



**Legend**

- Development Envelope
- Study Area
- Banksia Woodland Extent








0 2 4 6 8 km

GDA 94 / MGA Zone 50

**Figure 16 - Banksia  
Woodland Patches**



**Legend**

-  Development Envelope
-  Study Area
-  Banksia Woodland Patches



### 6.3.4 Banksia Woodland Buffers

The Conservation Advice (Threatened Species Scientific Committee 2016) incorporates the need for buffers around areas of the TEC, in order to protect the integrity of the significant vegetation from surrounding impacts such as weed invasion. The guideline suggests that suitable buffers are a minimum of 20 m but optimally up to 50 m. A protection buffer of at least 20 m and optimally 50 m would therefore apply around the entire Banksia woodland patch, to reflect the Conservation Advice.

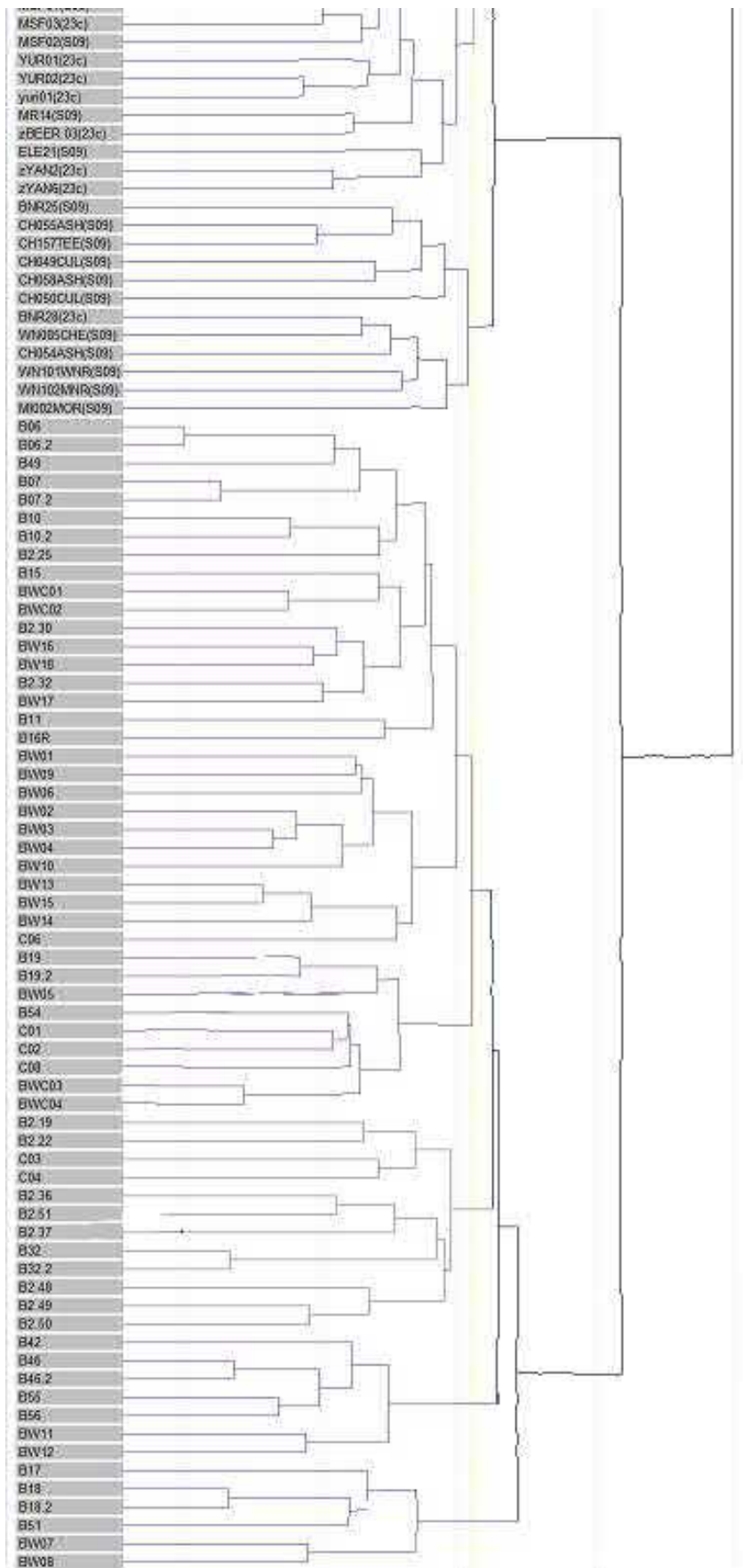
### 6.3.5 Banksia Woodland FCTs

Quadrats recorded from Banksia woodlands were assessed using PATN™, a multivariate cluster analysis of species presence/absence analysis. An excerpt of the resulting dendrogram is presented in **Figure 17**. The full dendrogram is presented in **Appendix E**.

The PATN™ analysis, as presented in **Figure 17**, determined that there is a strong affinity for all recorded quadrats within Banksia woodland with 'FCT SCP09 *Banksia attenuata* woodlands over dense low shrublands', which is representative of the Banksia woodland TEC. Some affinity with FCT 23c 'North-eastern *Banksia attenuata* – *Banksia menziesii* woodlands' is also evident.

Floristic analysis of recorded quadrat data was further carried out against the Gibson *et al.* (1994) and Keighery (2008) datasets using species presence/absence in order to confirm the FCT of the Banksia woodlands surveyed (**Table 17**). The analysis focused on the quadrats from five vegetation units recorded (BaXpAn, BaXpUa, EmXpAn, EtBeAn and EtEpAn) within the study area which are confirmed as characteristic of the Banksia woodland TEC. A summary of the results of this analysis is presented in **Tables 17** and **Table 18**, demonstrating which FCT each of the Banksia woodland study area quadrats and Banksia vegetation units may represent.

The simple presence-absence species analysis suggests that the Banksia woodland vegetation units of the study area are mostly representative of FCT 28 (BaXpAn, BaXpUa, EmXpAn and possibly also EtBeAn) or FCT 23a (EtEpAn and possibly also EtBeAn).



**Figure 17 - Excerpt of the Banksia Woodland Cluster Analysis**

**Table 17 – Number of Species in Common (Presence-Absence Analysis) of Recorded Banksia Woodland Quadrats**

FCT	B06		B06.2		B07		B07.2		B10		B10.2		B11		B15		B16R		B17		B18		B18.2		B19		B19.2		B2.19		B2.22	
	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species
20a	20	57	22	67	22	48	23	49	18	42	25	45	20	51	13	48	24	48	11	38	15	36	21	46	20	42	18	53	21	54	25	52
20b	18	51	19	58	18	39	18	38	18	42	22	40	17	44	12	44	17	34	13	45	18	43	22	48	16	33	16	47	18	46	23	48
20c	17	49	20	61	19	41	17	36	19	44	21	38	17	44	12	44	20	40	12	41	18	43	22	48	19	40	17	50	19	49	24	50
21a	18	51	25	76	26	57	25	53	21	49	27	49	19	49	14	52	21	42	13	45	21	50	23	50	22	46	19	56	25	64	29	60
21b	19	54	23	70	19	41	19	40	19	44	26	47	19	49	10	37	17	34	9	31	15	36	19	41	18	38	15	44	20	51	23	48
21c	21	60	24	73	25	54	26	55	19	44	25	45	19	49	17	63	19	38	12	41	18	43	22	48	20	42	20	59	21	54	24	50
23a	24	69	26	79	25	54	25	53	23	53	31	56	21	54	18	67	25	50	12	41	21	50	25	54	24	50	22	65	22	56	25	52
23b	24	69	25	76	24	52	24	51	23	53	32	58	21	54	17	63	28	56	12	41	19	45	24	52	24	50	21	62	22	56	20	42
22	17	49	18	55	21	46	21	45	14	33	22	40	15	38	11	41	22	44	9	31	13	31	16	35	19	40	18	53	16	41	20	42
24	15	43	17	52	19	41	17	36	12	28	19	35	12	31	15	56	21	42	8	28	13	31	12	26	21	44	17	50	13	33	22	46
25	15	43	16	48	21	46	19	40	13	30	17	31	22	56	10	37	15	30	3	10	13	31	13	28	16	33	11	32	14	36	19	40
28	24	69	26	79	28	61	27	57	24	56	29	53	22	56	18	67	26	52	16	55	24	57	29	63	27	56	23	68	23	59	33	69
23c	22	63	25	76	22	48	23	49	17	40	28	51	22	56	12	44	26	52	12	41	19	45	25	54	24	50	19	56	21	54	23	48
S09	21	60	24	73	21	46	24	51	21	49	27	49	22	56	13	48	27	54	12	41	17	40	24	52	22	46	23	68	21	54	25	52



FCT	B2.25		B2.30		B2.32		B2.36		B2.37		B2.48		B2.49		B2.50		B2.51		B32		B32.2		B42		B46		B46.2		B49		B51	
	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species
20a	18	60	21	60	27	55	11	37	15	36	13	30	27	56	16	35	15	54	18	51	16	62	15	58	13	54	15	58	15	56	19	51
20b	19	63	18	51	28	57	11	37	10	24	18	41	20	42	18	39	11	39	18	51	14	54	13	50	11	46	12	46	15	56	18	49
20c	18	60	19	54	27	55	11	37	15	36	17	39	24	50	18	39	13	46	14	40	14	54	12	46	14	58	15	58	14	52	19	51
21a	21	70	22	63	29	59	14	47	16	38	21	48	26	54	21	46	15	54	19	54	19	73	16	62	13	54	14	54	20	74	17	46
21b	16	53	21	60	22	45	12	40	13	31	13	30	19	40	14	30	10	36	18	51	18	69	13	50	12	50	14	54	17	63	15	41
21c	22	73	21	60	27	55	15	50	14	33	14	32	23	48	17	37	16	57	21	60	20	77	16	62	17	71	19	73	19	70	20	54
23a	21	70	24	69	28	57	14	47	17	40	15	34	22	46	17	37	17	61	19	54	17	65	15	58	17	71	20	77	22	81	22	59
23b	21	70	25	71	29	59	14	47	15	36	10	23	21	44	15	33	15	54	16	46	14	54	13	50	16	67	19	73	21	78	21	57
22	16	53	20	57	22	45	11	37	10	24	13	30	17	35	8	17	14	50	16	46	13	50	12	46	13	54	16	62	16	59	16	43
24	15	50	18	51	20	41	13	43	13	31	17	39	20	42	13	28	12	43	19	54	15	58	12	46	11	46	12	46	14	52	14	38
25	13	43	17	49	18	37	11	37	12	29	14	32	17	35	12	26	12	43	19	54	17	65	9	35	8	33	9	35	12	44	8	22
28	19	63	26	74	33	67	15	50	19	45	26	59	30	63	23	50	16	57	24	69	20	77	17	65	17	71	18	69	20	74	23	62
23c	17	57	25	71	25	51	11	37	18	43	14	32	26	54	17	37	14	50	16	46	14	54	14	54	14	58	15	58	21	78	21	57
S09	16	53	26	74	26	53	12	40	19	45	16	36	28	58	15	33	15	54	16	46	14	54	12	46	16	67	17	65	19	70	23	62

 Highest affinity  
 High affinity

FCT	B54		B55		B56		BW01		BW02		BW03		BW04		BW05		BW06		BW07		BW08		BW09		BW10		BW11		BW12		BW13	
	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species		
20a	21	70	10	59	9	60	14	33	13	36	16	44	14	44	22	63	14	39	14	35	17	40	19	46	12	41	17	47	9	38	21	47
20b	16	53	8	47	8	53	16	37	15	42	18	50	12	38	17	49	14	39	16	40	21	49	20	49	13	45	17	47	9	38	19	42
20c	17	57	11	65	9	60	17	40	13	36	16	44	13	41	19	54	15	42	15	38	19	44	18	44	11	38	15	42	9	38	19	42
21a	22	73	9	53	9	60	21	49	18	50	21	58	17	53	22	63	14	39	15	38	21	49	22	54	13	45	18	50	9	38	22	49
21b	16	53	9	53	7	47	13	30	15	42	17	47	16	50	20	57	11	31	10	25	13	30	17	41	13	45	17	47	9	38	20	44
21c	19	63	13	76	9	60	23	53	19	53	22	61	19	59	23	66	16	44	18	45	20	47	24	59	16	55	18	50	11	46	20	44
23a	23	77	12	71	10	67	22	51	20	56	23	64	19	59	26	74	15	42	18	45	25	58	26	63	17	59	22	61	12	50	23	51
23b	24	80	12	71	9	60	19	44	18	50	20	56	17	53	25	71	15	42	19	48	23	53	24	59	16	55	20	56	12	50	23	51
22	18	60	10	59	7	47	19	44	13	36	15	42	12	38	22	63	12	33	11	28	19	44	18	44	12	41	16	44	7	29	17	38
24	14	47	6	35	8	53	18	42	15	42	16	44	16	50	17	49	13	36	11	28	15	35	18	44	14	48	15	42	8	33	18	40
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23c	21	70	10	59	9	60	20	47	16	44	20	56	16	50	26	74	16	44	16	40	21	49	18	44	15	52	18	50	10	42	21	47
S09	22	73	12	71	8	53	19	44	18	50	20	56	16	50	27	77	18	50	17	43	20	47	18	44	16	55	22	61	13	54	24	53



FCT	BW14		BW15		BW16		BW17		BW18		BWC01		BWC02		BWC03		BWC04		C01		C02		C04		C06		C08	
	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species	No. Common Species	% Common Species
20a	19	36	22	43	25	47	17	33	27	52	19	46	16	50	21	58	23	56	22	61	25	63	16	62	13	37	26	60
20b	20	38	25	49	26	49	15	29	32	62	19	46	17	53	22	61	24	59	22	61	26	65	14	54	15	43	27	63
20c	18	34	18	35	25	47	16	31	27	52	21	51	17	53	20	56	25	61	23	64	23	58	16	62	13	37	17	40
21a	23	43	25	49	29	55	15	29	33	63	21	51	18	56	21	58	25	61	22	61	25	63	18	69	15	43	22	51
21b	21	40	21	41	27	51	13	25	27	52	18	44	15	47	19	53	20	49	22	61	21	53	16	62	12	34	17	40
21c	23	43	22	43	24	45	18	35	24	46	24	59	18	56	21	58	22	54	22	61	22	55	15	58	18	51	19	44
23a	26	49	26	51	29	55	19	37	30	58	23	56	20	63	26	72	27	66	26	72	27	68	15	58	18	51	21	49
23b	27	51	24	47	26	49	18	35	32	62	23	56	19	59	24	67	27	66	27	75	28	70	13	50	17	49	24	56
22	19	36	20	39	23	43	13	25	26	50	14	34	15	47	19	53	21	51	20	56	23	58	8	31	9	26	17	40
24	19	36	20	39	22	42	13	25	21	40	18	44	14	44	18	50	16	39	16	44	17	43	12	46	11	31	14	33
25	16	30	19	37	22	42	10	19	21	40	13	32	9	28	14	39	12	29	16	44	13	33	11	42	10	29	14	33
28	27	51	29	57	30	57	19	37	37	71	25	61	21	66	26	72	29	71	23	64	29	73	18	69	17	49	25	58
23c	20	38	18	35	29	55	17	33	30	58	19	46	18	56	22	61	21	51	26	72	27	68	15	58	17	49	20	47
S09	23	43	22	43	27	51	17	33	26	50	19	46	17	53	25	69	27	66	26	72	31	78	18	69	13	37	24	56





**Table 18 – Inferred FCTs of Recorded Banksia Woodland Quadrats**

Vegetation Unit and Description	Inferred FCT
<p><b><i>BaXpAn</i></b>  <b><i>Banksia</i> spp. sparse woodland</b>  <i>Banksia attenuata</i>, <i>Banksia menziesii</i> and <i>Eucalyptus todtiana</i> low sparse woodland over <i>Xanthorrhoea preissii</i> mid isolated to sparse shrubs over <i>Bossiaea eriocarpa</i>, <i>Gompholobium tomentosum</i> and <i>Petrophile linearis</i> low isolated shrubs over <i>Alexgeorgea nitens</i> and <i>Lyginia imberbis</i> sparse sedgeland</p>	S09/23c/28
<p><b><i>BaXpUa</i></b>  <b><i>Banksia attenuata</i> sparse woodland</b>  <i>Banksia attenuata</i> low sparse woodland (with occasional <i>Banksia menziesii</i>) over <i>Xanthorrhoea preissii</i> mid isolated shrubs over <i>Bossiaea eriocarpa</i>, <i>Hibbertia hypericoides</i> and <i>Petrophile linearis</i> low isolated shrubs over <i>Ursinia anthemoides</i>, <i>Conostylis aculeata</i> and <i>Hypochaeris glabra</i> isolated herbs</p>	S09/23c/28
<p><b><i>EmXpAn</i></b>  <b><i>Eucalyptus marginata</i> sparse woodland</b>  <i>Eucalyptus marginata</i> (and <i>Banksia attenuata</i>) low sparse woodland over <i>Xanthorrhoea preissii</i> mid sparse shrubland over <i>Bossiaea eriocarpa</i> <i>Hibbertia hypericoides</i> and <i>Petrophile linearis</i> low isolated to sparse shrubland over <i>Alexgeorgea nitens</i> and <i>Lomandra</i> spp. isolated sedges</p>	S09/23c/23a/28
<p><b><i>EtBeAn</i></b>  <b><i>Eucalyptus todtiana</i> sparse woodland</b>  <i>Eucalyptus todtiana</i>, <i>Banksia attenuata</i> and <i>Banksia menziesii</i> low sparse woodland over <i>Bossiaea eriocarpa</i>, <i>Hibbertia hypericoides</i> and <i>Petrophile linearis</i> low isolated shrubs over <i>Alexgeorgea nitens</i>, <i>Lyginia imberbis</i> and <i>Mesomelaena pseudostygia</i> sparse sedgeland</p>	S09/23c
<p><b><i>EtEpAn</i></b>  <b><i>Eucalyptus todtiana</i> sparse woodland</b>  <i>Eucalyptus todtiana</i> and <i>Banksia</i> spp. low sparse woodland over <i>Adenanthos cygnorum</i> tall sparse shrubland over <i>Eremaea pauciflora</i> and <i>Stirlingia latifolia</i> mid sparse to isolated shrubland over <i>Bossiaea eriocarpa</i> and <i>Conostephium pendulum</i> low isolated shrubs over <i>Austrostipa hemipogon</i> and <i>Briza maxima</i> grasses and <i>Alexgeorgea nitens</i> sedges</p>	S09/23c/23a

## 7 DISCUSSION

### 7.1 FLORA

A collective total of 572 flora taxa from 218 genera and 63 families have been recorded throughout the study area between spring 2016 and spring 2018, which is considered to be relatively high species diversity. It is reflective of the diversity of landform types, geology/soils and vegetation types across the study area, where two botanical and IBRA regions are traversed and where the scarp and Dandaragan Plateau of the Northern Jarrah Forest transitions to the deep sands of the Swan Coastal Plain. A collective total of 160 study plots/quadrats (including two relevés) have been sampled in the study area since October 2016. During the 2018 field assessments, a total of 22 quadrats were sampled, specifically aimed at characterisation of the Banksia woodland of the study area and to address additional areas encompassed within the revised corridor.

During the 2018 field assessment, a total of 214 taxa from 115 genera and 39 families were recorded from 22 quadrats. This included 199 (93.1%) native and 15 (6.9%) introduced (weed) species. The dominant family species recorded were Fabaceae (20 (9.7%) species), Proteaceae (18 (8.3%) species) and Myrtaceae (25 (11.5%) species).

The desktop review identified the potential for 109 flora species of conservation significance to occur within the study area. Of the 109 species of conservation significance resulting from the desktop assessment, 14 species were recorded to occur within the study area, five were recorded to regionally by FVC, six have been determined to be 'likely' to occur in the study area, with 31 classified as 'may occur' and 53 considered 'unlikely' to occur based on the proximity of previous records.

Thirty-eight species protected under the EPBC Act and listed as Threatened flora under the BC Act, nine Priority 1, 14 Priority 2, 29 Priority 3 and 19 Priority 4 species were determined to potentially occur within the study area, based on the desktop assessment. Of these 38 Commonwealth-listed species, 28 are considered 'unlikely' to occur, eight 'may occur' and two were recorded to occur regionally by FVC. None were recorded, within the study area, nor were any of the Threatened flora species considered 'likely' to occur based on the proximity of previous records, currency of data and whether or not suitable habitat is present in the study area.

The Threatened flora species resulting from the desktop assessment includes Threatened orchid species, *Thelymitra stellata* and *Drakaea elastica*, neither of which were recorded, despite significant search effort being invested in the field program. Although suitable habitat for both species of Threatened orchids exists within the study area, the proximity of one known population of *Thelymitra stellata* is somewhat removed from the study area, with other records much greater distances away. Similarly, an historic population of *Drakaea elastica* within the study area was not able to be located, despite intensive searching in the location which is now found to be significantly degraded. Further surveys would provide greater confidence that this population no longer exists, although it is considered highly unlikely that it would have persisted in the location of the historic record.

A total of 14 Priority flora have been recorded within the study area and surrounds since spring 2016. An additional, three Threatened flora species *Chamelaucium* sp. Gingin (N.G. Marchant 6), *Grevillea curviloba* subsp. *incurva* and *Grevillea althoferorum* subsp. *fragilis*, were recorded during regional surveys outside the study area, conducted during 2018. These Threatened flora species were found to be flowering and easily identifiable. It is considered likely that if these species occurred within the study area, that they would have been detectable. Therefore, given the confirmed existence and flowering of these species in

the surrounding region, but the lack of record of them within the study area, it is considered unlikely that these species occur within the study area.

Six priority species, *Gastrolobium ?crispatum*, *Synaphea ?panhesya*, *Drosera ?sewelliae*, *Acacia drummondii* subsp. *?affinis*, *Jacksonia ?sericea* and *Verticordia ?paludosa* are uncertain in their identification to species level, due to inadequate or sterile material for identification purposes. However, all collections are considered to likely be the queried Priority flora, and four collections identified as *Synaphea panhesya*, *Drosera sewelliae*, *Acacia drummondii* subsp. *affinis* and *Verticordia paludosa* were also made.

The searches for all Threatened and Priority flora conducted during 2018, including for the Threatened orchid species targeted, were carried out via intensive targeted surveys within a series of parallel transects, that systematically searched areas of optimal or potential habitat. The additional targeted surveys conducted during 2018 encompassed an area of more than 565 ha, based on the length of search traverses, to an approximate width of 5 m.

The timing of the most recent targeted *Thelymitra stellata* surveys which were carried out between 6-11 November 2018 was considered suitable for the identification of the species. The timing of the survey was considered optimal as, verification of the flowering status of a known *Thelymitra stellata* surveillance population in Chittering was carried the week prior to targeted surveys where one individual was observed to be in flower.

Two species, *Jacksonia ?sericea* (P4) and *Synaphea ?flabelliformis* were found to be occurring outside their known range based on distributions from the Western Australian Herbarium records (FVC 2018c).

*Jacksonia sericea* is a spreading to prostrate shrub growing in woodland on grey or yellow to brown sand over limestone (Malcom 2012). This species is considered to have a restricted range and has only been previously recorded within woodlands within the Perth Metropolitan area between Wanneroo and Mandurah (Malcolm 2012).

*Synaphea flabelliformis* is not of any conservation significance and is a tufted shrub to 0.4 m high and occurs on sandy clay, white or grey sand over laterite (DBCA 2018a). Its current extent occurs between Beverley and West Arthur, with an isolated occurrence at Ravensthorpe. Significance is not limited to species covered by State and Commonwealth legislation and also includes species of local significance, undescribed species and species showing significant range extensions or at the edge of their known range.

Although extensive targeted surveys were conducted throughout the study area over multiple seasons, it is possible that the distribution and abundance of the Priority flora species recorded within the study area is more widespread and abundant than the assessments would suggest. Since 2016, 14 Priority flora have been recorded within the study area. Five of the Priority flora species, *Leucopogon squarrosus* subsp. *trigynus* (P2), *Halgania corymbosa* (P3), *Styphelia filifolia* (P3), *Verticordia rutilastra* (P3) and *Conostephium magnum* (P4) were recorded within quadrats established in spring 2018.

## 7.2 VEGETATION

### 7.2.1 Floristic Community Types

Data collected from all quadrats were analysed using PATN™ software and multivariate analysis against the Gibson *et al.* (1994) and Keighery (2008) datasets (**Table 12**). The resulting dendrogram is presented in **Appendix D**. Based on the resulting dendrogram, species composition and the typical geographic location of the floristic types (based on distribution of Gibson *et al.* (1994) and Keighery (2008) sites), FCTs have been inferred where possible. Whilst results of the cluster analysis as presented in the dendrogram (**Appendix D**) initially suggest affinity with certain FCTs, further analysis of site-specific species composition, dominant flora and geographical location (in reference to that which is reported in the literature) for some sites has determined that no comparable FCT is defined and mapped and cannot be concluded. The combined results of the FCT analysis of each quadrat, and overall, for each of the vegetation units determined to support the groupings of quadrats concluded the following FCTs supported by the study area (**Table 12**):

- All four of the defined and mapped Banksia woodland vegetation units; BaXpAn, BaXpUa, EtBeAn and EtEpAn were concluded to represent FCT S09 and possibly FCT 23c (indicated by a weaker affinity).
- Vegetation unit EmXpAn was concluded to be represented mostly by FCT S09 and possibly FCT 23c (indicated by a weaker affinity), with some quadrats showing a weak affinity with FCTs 1a, 1b, 3a, 3b and 3c, although these latter quadrats were ultimately inferred to be inconclusive and not able to be assigned a defined FCT.
- Vegetation units EmBsHh and EmXpHh recorded most quadrats with weak affinity with FCTs 1a, 1b, 3a, 3b and 3c, although these were inferred to be inconclusive and not able to be assigned a defined FCT, and some quadrats within these units showed affinity with and were inferred to represent FCT S09 or FCT 23c (indicated by a weaker affinity).
- Vegetation unit EwXpHh recorded most quadrats with weak affinity with FCTs 1a, 1b, 3a, 3b and 3c, and some quadrats showed affinity with FCT S09 or FCT 23c, but all were inferred to be inconclusive and not able to be assigned a defined FCT.
- Vegetation unit ErXpBm recorded some quadrats with weak affinity with FCTs 1a, 1b, 3a, 3b and 3c, although these were inferred to be inconclusive and not able to be assigned a defined FCT, and some quadrats showed affinity with FCT 11, which was concluded to be an accurate representation of the vegetation in the mapped extents.
- Vegetation unit EwBeNa recorded quadrats with weak affinity with FCTs 1a, 1b, 3a, 3b and 3c, although these were all inferred to be inconclusive and none were able to be assigned a defined FCT.
- Vegetation unit BmKgHg recorded quadrats weak affinity with FCTs 1a, 1b, 3a, 3b and 3c, plus one with affinity with FCT 21c, although these were all inferred to be inconclusive and none were able to be assigned a defined FCT.
- Vegetation unit MvJspLc recorded quadrats with weak affinity with a large number of different wetland-associated FCTs, although these were all inferred to be inconclusive and none were able to be assigned a defined FCT.

Where conclusions have been made to infer a different FCT (or no FCT) as opposed to the affinities exhibited in the dendrogram (**Appendix D**), all such conclusions were drawn based on conflicting information relating to species composition (particularly typical and dominant species) and with regards to inappropriate geographical locations and therefore landforms/soil systems, or both. Such conclusions

apply mostly to vegetation units outside the Swan Coastal Plain, since these are not represented in the reference datasets of Gibson *et al.* (1994) and Keighery (2008).

Further analysis of the species composition of the quadrats in comparison to that in the datasets of Gibson *et al.* (1994) and Keighery (2008), via a simple “number of species in common” calculation (**Table 17**) provided further possible inferences regarding FCTs for the vegetation units that support *Banksia* woodland. These results indicate that FCTs 28 and 23a may also be represented within the study area.

### 7.2.2 TECs and PECs

The DBCA database search results revealed the likely presence of the Commonwealth-listed *Banksia* woodland TEC within the study area, with the following State-listed TEC and two PECs as sub-sets of this:

- SCP 20a – *Banksia attenuata* woodlands over species rich dense shrublands’ (EN TEC)
- ‘*Banksia* Woodlands of the Gingin area restricted to soils dominated by yellow to orange sands’ (P2 PEC)
- SCP 23b – Northern Swan Coastal Plain *Banksia attenuata* – *Banksia menziesii* woodlands’ (P3 PEC).

Previous studies conducted during 2016 and 2017 (FVC 2017, 2018c) have confirmed that majority of the *Banksia* woodland within the study area (vegetation units BaXpAn, BaXpUa, EmXpAn, EtBeAn and EtEpAn) is representative of the Commonwealth-listed TEC, with 2018 studies reported herein further confirming this (**Table 16**). The total area of the Commonwealth-listed *Banksia* woodland TEC within the study area is 412 ha (12.1% of the study area), consisting of occurrences of the aforementioned vegetation units.

Based on the results of the FCT analysis:

- vegetation units BaXpAn, BaXpUa, EtBeAn and EtApAn are considered to be representative of the Commonwealth-listed *Banksia* woodland TEC
- some areas of EmBsHh, EmXpAn and EmXpHh may be considered to be representative of the Commonwealth-listed *Banksia* woodland TEC
- vegetation units BmKgHg, MvJspLs, ErXpBm and EwBeNa, are not considered to be representative of any known TEC or PEC.

One of the aims of the targeted *Banksia* woodland assessment of the 2018 study was to further classify areas of *Banksia* woodland into FCTs, which would then enable determination of likely representation of the above State-listed TEC and PECs.

The PATN™ analysis aimed to determine FCTs, which shows strong affinity for all quadrats recorded within *Banksia* woodland with FCT (SCP) 09, and some affinity also with FCT 23c (**Figure 17, Appendix E**). Further analysis in comparison to presence-absence species data of the Gibson *et al.* (1994) and Keighery (2008) datasets suggests that the *Banksia* woodland vegetation units of the study area are mostly representative of FCT 28 or FCT 23a (**Table 17**).

In summary, the largely inconclusive results of the FCT analysis include that the *Banksia* woodland vegetation units could be representative of the following FCTs:

- SCP 09 - *Banksia attenuata* woodlands over dense low shrublands
- SCP 23a - Central *Banksia attenuata* - *Banksia menziesii* woodlands
- SCP 23c - North-eastern *Banksia attenuata* - *Banksia menziesii* woodlands
- SCP 28 - Spearwood *Banksia attenuata* or *Banksia attenuata* – *Eucalyptus* woodlands.

Unfortunately, results of FCT analysis for Swan Coastal Plain sites are rarely conclusive; with several possible FCTs usually matching to each vegetation type or plot. The constraints are due to a number of

factors, including the relatively limited sample size of the reference data. For example, the Gibson *et. al* 1994 study was limited to just 509 plots across the entire southern Swan Coastal Plain, for 30 defined FCTs. Additionally, this dataset is now significantly out-of-date, and with taxonomic revisions, requires constant updating. Furthermore, not all of the reference data incorporates cover or identifies dominant taxa within each type. Whilst “typical” species are listed for each FCT, a lack of dominant flora identified for each prevents the option to apply weightings to these when carrying out comparative analysis. Therefore, simple presence-absence comparisons are often also relied upon (Kellie Bauer-Simpson, pers. comm.).

The important aspect of determination of FCTs for Banksia woodlands is determining whether or not FCTs of State-significance occur, as these types are at greater risk, and are required to be offset ‘like to like’ where unavoidable impacts are proposed by proponents. None of the four FCTs listed above, are concluded as likely to be represented within Banksia woodland areas of the study area are TECs or PECs of State-significance (**Table 8**).

Further consideration of the likely presence of TECs or PECs of State-significance within the study area suggests that SCP 20a and SCP 23b, as returned from the database search results, are not represented.

Database searches also returned results for ‘*Banksia Woodlands of the Gingin area restricted to soils dominated by yellow to orange sands*’ (P2 PEC) or its buffer (DPaW 2016), and this State-listed PEC is known to occur north of Mooliabeenee Road and along Teatree Road. At these locations, the PEC intersects with FVC vegetation units BaXpAn, EmBsHh, EmXpAn, EmXpHh, ErXpBm, EtBeAn and BmKgHg. This PEC is not representative of a FCT of the Swan Coastal Plain, and so analysis against Gibson *et al.* (1994) and Keighery (2008) datasets cannot test for its presence. However, DBCA’s PEC list describes this vegetation types as species-rich Banksia woodlands on deep yellow-red sands that appear restricted to the western Dandaragan Plateau. The vegetation is described as scattered *Eucalyptus todtiana* and *Corymbia calophylla* over *Banksia menziesii* and *Banksia attenuata* low open woodland over *Jacksonia sternbergiana* and *Adenanthos cygnorum* high open shrubland over *Allocasuarina humilis* and *Chamelaucium* sp. Gingin (N.G. Marchant 6) open shrubland over *Eremaea pauciflora* and *Astroloma xerophyllum* low shrubland over *Mesomelaena pseudostygia* open sedgeland (DBCA 2019). Based on characteristic species composition, this PEC is not considered to be represented within the study area, despite DBCA database results (which may be based only on desktop mapping or the application of buffers to confirmed sites) suggesting its occurrence. Further surveys could confirm this, although the absence of the characteristic yellow sands further supports the conclusion that the PEC is unlikely to occur within the study area.

One significant sized area, comprising 89.05 ha (2.60% of study site), occurring west of Cullalla Road and north of the Barn Road intersection, was not accessible for the detailed survey and therefore, vegetation within this area could not be confirmed. It is likely that this area represents Banksia woodland TEC based on the following factors:

- a small pocket at the southern and northern ends of this area contains remnant native vegetation that is likely to represent the Banksia woodland TEC
- confirmed Banksia woodland TEC occurs directly opposite the area on the eastern side of Barn Road
- a very pronounced occurrence of sudden yellow to orange sands is also evident immediately north of Barn Road, where vegetation unit EtBeAn (confirmed Banksia woodland TEC) has been mapped.

It is understood that this area is unlikely to be part of the final infrastructure footprint.

### 7.2.3 Local Representation and Significance

The local significance of the vegetation units was assessed based on:

- presence of Priority Flora
- presence of flora exhibiting range extensions
- unusually high structural and species diversity
- restricted, small or isolated distribution and/or area.

All twelve of the mapped vegetation units recorded Priority flora and are therefore considered to be of local significance, due to this aspect.

One vegetation unit, BmKgHg was observed to be locally restricted to two locations in the study area, associated with a wetland, with the two locations separated by Mooliabeenee Road. This vegetation unit is therefore considered to be locally significant due to limited local representation.

Two of the recorded flora species, *Jacksonia ?sericea* (P4) and *Synaphea ?flabelliformis* were found to be exhibiting range extensions and both occur within vegetation unit EtBeAn which is therefore considered to be locally significant due to this aspect.

None of the recorded vegetation units were found to exhibit unusually high structural diversity, although most of the intact vegetation types of the Swan Coastal Plain are structurally and floristically diverse. Therefore, these vegetation types are considered locally significant due to high species diversity and their relatively high structural diversity is also notable.

Units BmKgHg, EmXpAn, EwBeNa, EwXpHh and MvJspLs were also found to be limited in their local extent and were therefore also considered to be locally significant.

The representation of each of the recorded locally significant vegetation units within the study area is presented in **Table 19**.

**Table 19 - Locally Significant Vegetation Units of the Study Area**

Vegetation Unit	Area (ha)	Proportion of Study Area (%)
BaXpAn - <i>Banksia</i> spp. sparse woodland	93.45	2.7%
BmKgHg – <i>Kunzea glabrescens</i> shrubland	16.79	0.5%
EmXpAn – <i>Eucalyptus marginata</i> woodland	22.76	0.7%
EmXpHh - <i>Eucalyptus marginata</i> sparse woodland	170.95	5.0%
EtBeAn - <i>Eucalyptus todtiana</i> sparse woodland	188.50	5.5%
EwBeNa – <i>Eucalyptus wandoo</i> and <i>Casuarina obesa</i> sparse woodland	4.59	0.1%
EwXpHh - <i>Eucalyptus wandoo</i> sparse woodland	44.77	1.3%
MvJspLs - <i>Melaleuca viminea</i> shrubland	2.07	0.1%

### 7.2.4 Regional Significance

The regional significance of the vegetation units was assessed based on:

- presence of Threatened flora
- extents limited to specific landform types
- regionally uncommon or restricted plant community types.

No Threatened flora species were recorded within the study area, and therefore, none of the vegetation units are considered regionally significant due to this aspect.

The study area supports three broad landforms:

- woodlands and forests on lateritic hills of the Northern Jarrah Forest;
- woodlands and heaths on sands of the Swan Coastal Plain; and
- wetlands and surrounding low-lying/wet vegetation associated with both the Northern Jarrah Forest and Swan Coastal Plain vegetation.

Of the landforms listed above, the wetland landforms and associated vegetation types are relatively less represented in the study area than the other two landforms (woodlands and forests; woodlands and heaths). Additionally, wetland environs tend to support biological values, such as aquatic or wet habitats, that are restricted in areas dominated by woodlands and other upland habitats. As such, the recorded vegetation units associated with these wetland environs, BmKgHg, ErXpBm, EwBeNa and MvJspLs, may be of regional significance.

#### **7.2.4.1 Regional Representation and Extent Remaining**

Native vegetation significance can be determined based on a range of factors such as isolation, the presence of conservation significant flora, fauna or unusual landform types, as discussed above. However, the most important factor in the consideration of community significance is the representation of the vegetation unit in the region. Vegetation units are considered significant if they are poorly represented.

In order to analyse the regional representation and therefore significance of the vegetation units recorded in the study area, comparisons were made between data collected from within the study area and that of regional data available in published work (Shepherd *et al.*, 2002; Heddle *et al.*, 1980).

In order to gain a wider context for assessing the regional representation, and therefore significance, of the vegetation units of the current study, the vegetation units recorded were also aligned with the broad, regional vegetation associations of Shepherd *et al.* (2002) and Heddle *et al.* (1980). Given that data is available pertaining to the representation of the regional vegetation associations within the relevant Local Government (Shire of Chittering and Shire of Gingin), conclusions regarding regional representation, extent remaining and significance were made at the Local Government scale. The results of this analysis are presented in **Table 19**.

The objective of the EPA in relation to flora and vegetation is; *To protect flora and vegetation so that biological diversity and ecological integrity are maintained* (EPA 2016). This objective is documented in the EPA Factor Guideline - Flora and Vegetation (EPA 2016), which has superseded a number of documents including Position Statement No. 2 (EPA 2000). With a lack of quantifiable retention targets outlined in new factor guideline, the 30% threshold/retention target (or 10% in constrained areas) as documented in Position Statement 2 remains a useful guideline for determining whether or not adequate proportions of native vegetation are being conserved. The study area is considered an unconstrained area and as such the minimum retention target of 30% applies.

Within the Shire of Chittering, four of the Shepherd *et al.* (2002) vegetation associations (4, 352, 1017 and 1018) that correspond with vegetation units recorded within the study area, have less than 30% of their pre-European extent remaining (**Table 20**). Vegetation association 1018 is also represented by less than 30% pre-European extent within the Shire of Gingin. Therefore, the recorded vegetation units that align with the Shepherd *et al.* (2002) vegetation associations (EmBsHh, EmXpAn, EmXpHh, EwXpHh and EwBeNa) are considered to be regionally significant.



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One vegetation unit, BmKgHg, which is associated with a wetland, was found to be locally restricted to two locations in the study area, separated only by Mooliabeenee Road. This vegetation unit is also therefore considered to be regionally significant, due to limited local and regional representation, as well as being limited to a specific landform type (wetland).

Four mapped vegetation units, EmBsHh, EmXpHh, EmXpAn and ErXpBm, were found to align with two Shepherd *et al.* (2002) vegetation associations (1009 and 1018), both of which are not regionally mapped as occurring in the immediate vicinity of the study area. As such, these vegetation types are also considered to be of regional significance.

**Table 20 - Regional Extent of Vegetation Associations within the Study Area (FVC 2018c, Government of Western Australia 2013)**

Shire	Shepherd <i>et.al.</i> (2002) Association	Shepherd <i>et.al.</i> Description	Corresponding Heddle <i>et. al.</i> (1980) Complex/es	Corresponding Vegetation Unit/s	Pre-European Extent (ha)	Current Extent (ha)	% Remaining
Chittering	3	Medium forest; jarrah-marri	Mogumber complex – south Cullula complex	EmXpAn, EmXpHh	7,102.74	3,367.17	47.41
	4	Medium woodland; marri & wandoo	Yalanbee complex in low rainfall Coolakin complex in low rainfall Michibin complex	EwXpHh, EwBeNa	54,209.81	15,314.37	28.25
	37	Shrublands; teatree thicket	Nooning complex Wannamal complex Moondah complex	MvJspLs, BmKgHg, ErXpBm	139.52	104.10	74.62
	352	Medium woodland; York gum	Yalanbee complex Bindoon complex	-	4,895.73	825.99	16.87
	949	Low woodland; <i>banksia</i>	Mogumber complex – south Cullula complex Wannamal complex Moondah complex	EtBeAn, EtEpAn, BaXpUa, BaXpAn	13,749.46	12,749.33	92.73
	973	Low forest; paperbark ( <i>Melaleuca raphiophylla</i> )	Nooning complex Wannamal complex	ErXpBm, MvJspLs, BmKgHg	242.04	108.87	44.98
	1017	Medium open woodland; jarrah & marri, with low woodland; banksia	Mogumber complex – south Cullula complex Wannamal complex Moondah complex	EmBsHh, EmXpHh, EmXpAn	1,282.11	241.84	18.86
	1018	Mosaic: Medium forest; jarrah-marri/Low woodland; banksia/Low forest; teatree/Low woodland; <i>Casuarina obesa</i>	Mogumber complex – south Cullula complex Wannamal complex Moondah complex Nooning complex	EmBsHh, EmXpHh, EmXpAn	2,861.34	629.63	22.00
	1019	Medium sparse woodland; jarrah & marri	Mogumber complex – south Cullula complex	EmXpHh, EmBsHh, EmXpAn	511.19	192.11	37.58
	1027	Mosaic: Medium open woodland; jarrah & marri, with low woodland; banksia/Medium sparse woodland; jarrah & marri	Mogumber complex – south Cullula complex Wannamal complex Moondah complex	EmBsHh, EmXpHh, EmXpAn	12,176.15	5,626.35	46.21

Shire	Shepherd <i>et.al.</i> (2002) Association	Shepherd <i>et.al.</i> Description	Corresponding Heddle <i>et. al.</i> (1980) Complex/es	Corresponding Vegetation Unit/s	Pre-European Extent (ha)	Current Extent (ha)	% Remaining
Gingin	37	Shrublands; teatree thicket	Nooning complex Wannamal complex Moondah complex	MvJspLs, BmKgHg, ErXpBm	9,484.90	4,023.96	42.42
	949	Low woodland; <i>banksia</i>	Mogumber complex – south Cullula complex Wannamal complex Moondah complex	EtBeAn, EtEpAn, BaXpUa, BaXpAn	138,102.71	81,727.70	59.18
	1009	Medium woodland; marri & river gum	Nooning complex	ErXpBm	6,839.88	2,169.17	31.71
	1017	Medium open woodland; jarrah & marri, with low woodland; <i>banksia</i>	Mogumber complex – south Cullula complex Wannamal complex Moondah complex	EmBsHh, EmXpHh, EmXpAn	4,528.98	2,283.32	50.42
	1018	Mosaic: Medium forest; jarrah-marri/Low woodland; <i>banksia</i> /Low forest; teatree/Low woodland; <i>Casuarina obesa</i>	Mogumber complex – south Cullula complex Wannamal complex Moondah complex Nooning complex	EmBsHh, EmXpHh, EmXpAn	3,178.56	833.18	26.21
	1019	Medium sparse woodland; jarrah & marri	Mogumber complex – south Cullula complex	EmXpHh, EmBsHh, EmXpAn	293.24	204.05	69.58
	1027	Mosaic: Medium open woodland; jarrah & marri, with low woodland; <i>banksia</i> /Medium sparse woodland; jarrah & marri	Mogumber complex – south Cullula complex Wannamal complex Moondah complex	EmBsHh, EmXpHh, EmXpAn	27,633.06	17,730.69	64.16

## 7.2.5 National Significance

The national significance of the vegetation units was assessed based on:

- presence of EPBC-listed Threatened flora
- presence of EPBC-listed TECs.

No species of EPBC-listed Threatened flora were recorded within the study area, and therefore none of the vegetation types are considered nationally significant due to this aspect.

As discussed in **Section 7.2.1**, five of the recorded vegetation units, BaXpAn, BaXpUa, EmXpAn, EtBeAn and EtEpAn are considered likely to be representative of the Commonwealth-listed TEC, Banksia Woodlands of the Swan Coastal Plain, and therefore, these areas of vegetation are considered to be of national significance.

## 7.2.6 Summary of Vegetation Significance

The significant vegetation units of the study area, along with the factors determining their significance are summarised in **Table 21**.

**Table 21 - Summary of Significant Vegetation Units**

Vegetation Units	Significance
BaXpAn – <i>Banksia</i> sparse woodland	Locally significant (floristically diverse) Locally significant (supports Priority flora) Nationally significant (represents a Commonwealth TEC)
BaXpUa – <i>Banksia attenuata</i> sparse woodland	Locally significant (floristically diverse) Locally significant (supports Priority flora) Nationally significant (represents a Commonwealth TEC)
BmKgHg – <i>Kunzea glabrescens</i> shrubland	Locally significant (supports Priority flora) Locally significant (locally uncommon) Locally significant (limited local extent) Regionally significant (limited to specific landforms) Regionally significant (regionally uncommon)
EmBsHh – <i>Eucalyptus marginata</i> and <i>Banksia sessilis</i> sparse woodland	Locally significant (supports Priority flora) Regionally significant (represented by <30% of pre-European extent)
EmXpAn – <i>Eucalyptus marginata</i> sparse woodland	Locally significant (floristically diverse) Locally significant (supports Priority flora) Locally significant (limited local extent) Regionally significant (represented by <30% of pre-European extent) Nationally significant (represents a Commonwealth TEC)
EmXpHh – <i>Eucalyptus marginata</i> sparse woodland	Locally significant (floristically diverse) Locally significant (supports Priority flora) Regionally significant (represented by <30% of pre-European extent)
ErXpBm – <i>Eucalyptus rudis</i> and <i>Melaleuca preissiana</i> sparse woodland	Locally significant (supports Priority flora) Regionally significant (limited to specific landforms)
EtBeAn – <i>Eucalyptus todtiana</i> sparse woodland	Locally significant (supports Priority flora) Locally significant (supports range extension species) Nationally significant (represents a Commonwealth TEC)
EtEpAn – <i>Eucalyptus todtiana</i> sparse woodland	Locally significant (supports Priority flora) Nationally significant (represents a Commonwealth TEC)

Vegetation Units	Significance
EwBeNa - <i>Eucalyptus wandoo</i> and <i>Casuarina obesa</i> sparse woodland	Locally significant (supports Priority flora) Locally significant (limited local extent) Regionally significant (limited to specific landforms) Regionally significant (represented by <30% of pre-European extent)
EwXpHh - <i>Eucalyptus wandoo</i> sparse woodland	Locally significant (floristically diverse) Locally significant (limited local extent) Locally significant (supports Priority flora) Regionally significant (represented by <30% of pre-European extent)
MvJsplS - <i>Melaleuca viminea</i> shrubland	Locally significant (supports Priority flora) Locally significant (limited local extent) Regionally significant (regionally uncommon) Regionally significant (limited to specific landforms)

## 8 CONCLUSIONS

The key results and conclusions from the detailed flora and vegetation assessment, and targeted Threatened and Priority flora survey are as follows:

- No species of Threatened flora, including *Thelymitra stellata* and *Drakaea elastica* were recorded within the study area, despite intensive and systematic targeted surveys having been carried out, however three Threatened species were recorded outside the study area as part of regional surveys.
- A total of 14 species listed as Priority flora, *Synaphea panhesya* (with *Synaphea ?panhesya*) (P1), *Drosera sewelliae* (with *Drosera ?sewelliae*) (P2), *Leucopogon squarrosus* subsp. *trigynus* (P2), *Acacia drummondii* subsp. *affinis* (with *Acacia drummondii* subsp. *?affinis*) (P3), *Adenanthos cygnorum* subsp. *chamaephyton* (P3), *Halgania corymbosa* (P3), *Styphelia ffilifolia* (P3), *Verticordia rutilastra* (P3), *Anigozanthos humilis* subsp. *chrysanthus* (P4), *Conostephium magnum* (P4), *Hibbertia miniata* (P4), *Hypolaena robusta* (P4), *Jacksonia ?sericea* (P4) and *Verticordia paludosa* (with *Verticordia ?paludosa*) (P4) have been recorded within the study area since 2016.
- A collective total of 4,058 plants representing Threatened or Priority flora have been recorded as part of collective studies within the study area and in the surrounding region. Of these, no Threatened flora have been recorded within the study area, and 2,082 individual Priority flora plants have been recorded within the study area. The remaining 1,976 plants recorded occur outside the study area, in the surrounding region.
- It is considered possible that the distribution and abundance of the Priority flora recorded within the study area and in the surrounding region is greater than the assessment results would suggest, and that additional numbers of Priority flora plants that were not recorded could occur, due to the inherent limitations associated with surveys across vast study areas.
- Two flora species, *Jacksonia ?sericea* (P4) and *Synaphea ?flabelliformis* were found to be occurring outside their known range, based on the distribution of WA Herbarium records.
- One State-listed TEC and two PECs are known to occur within or closely adjacent to the study area, with all three of these community types representative of the Commonwealth-listed Banksia Woodlands of the Swan Coastal Plan TEC.
- The study area has been confirmed to support areas of the of the Commonwealth-listed Banksia woodland TEC, within 412 ha of the TEC mapped, consisting of occurrences of vegetation units BaXpAn, BaXpUa, EmXpAn, EtBeAn and EtEpAn.
- None of the FCTs of the study area vegetation are considered to represent State-listed TECs or PECs, based on a combination of data analysis efforts and based on the conservation status of ecological communities at the time of reporting.
- All of the recorded vegetation units have been determined to be of local, regional or national significance, or a combination of these levels of importance. All are locally significant due to supporting populations of Priority flora and many having a limited local representation. Other factors determining local significance are, being considered floristically diverse or locally uncommon. Vegetation units have been determined to be regionally significant due to being represented by less than 30% of their pre-European extent in the local government area, being limited to specific landform types, or being regionally uncommon. Five vegetation units (BaXpAn, BaXpUa, EmXpAn, EtBeAn and EtEpAn) are of national significance due to representing a TEC of Commonwealth significance.

## 9 LIST OF PARTICIPANTS

**Table 22** summarises the FVC personnel who contributed to the project.

**Table 22 - Project Team**

Name	Qualification	Years of Relevant Experience	Role
Kellie Bauer–Simpson Principal Ecologist/Botanist	BSc. (Biological Science)	20	Project manager, flora, vegetation and targeted flora field assessment, PATN analysis, report technical review
Lisa Chappell Senior Botanist/Environmental Scientist	BEnvSc. (Hons) (Environmental Science)	16	Flora, vegetation and targeted flora field assessment, PATN analysis, report preparation
Catherine Krens Senior Botanist	BSc. (Biological Science)	15	Flora, vegetation and targeted flora field assessment
Shenaye Hummerston Senior Environmental Consultant	BSc. (Biological Science)	10	Flora, vegetation and targeted flora field assessment
Kylie del Fante Senior Botanist	BSc. (Biological Science)	21	Targeted flora field assessment
Michelle Carey Senior Environmental Consultant	BSc. (Hons) PhD (Environmental Science)	15	Data analysis, report preparation
Kristen Bleby Senior Environmental Consultant	BSc. (Hons) PhD (Environmental Science)	8	Report preparation
Sam Hall Graduate Botanist	BSc. (Hons) (Botany)	1	Data entry
Shibi Chandran Taxonomist	BSc. (Zoology)	8	Flora identifications
Udani Sirisena Botanist/Taxonomist	PhD BSc. (Botany and Chemistry)	8	Flora identifications, PATN™ analysis
Will Bauer–Simpson Technician/Advisor	Cert IV (Health and Safety)	7	Field safety and logistics planning, targeted flora field assessment, GIS, mapping and report figures
Nicki Thomson Technician	NA	1	Targeted flora field assessment, logistical support

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## APPENDIX A - THREATENED AND PRIORITY WITH THE POTENTIAL TO OCCUR WITHIN THE STUDY AREA

Species	EPBC Act Cons. Status	WC Act Status	Description	Preferred Habitat	Likelihood of Occurrence	Source
<i>Darwinia foetida</i>	Critically Endangered	Endangered	Erect, or spreading, shrub to 0.7 m high. Green flowers in spring	Grey-white sand on swampy, seasonally wet sites	<b>May</b> occur, recorded by Phoenix (2015)	Phoenix (2015)
<i>Caladenia huegelii</i>	Endangered	Critically Endangered	Tuberous, perennial, herb, 0.25-0.6 m high. Flowers green & cream & red, September to October	Grey or brown sand, clay loam	<b>Unlikely</b> to occur, not previously recorded from within Shire of Chittering	EPBC Phoenix (2015)
<i>Darwinia carnea</i>	Endangered	Critically Endangered	Spreading shrub, 0.2-0.45m high. Flowers green and red, October to December	Lateritic loam & gravel	<b>Unlikely</b> to occur, closest record from the Mogumber area	NatureMap
<i>Drakaea elastica</i>	Endangered	Critically Endangered	Tuberous, perennial, herb, 0.12-0.3 m high. Flowers red & green & yellow, October to November	White or grey sand. Low-lying situations adjoining winter-wet swamps	<b>May</b> occur, previously DBCA record located within Area 2 ('Western A alignment')	DPaW (2016) NatureMap
<i>Eremophila scaberula</i>	Endangered	Critically Endangered	Low compact or sprawling to upright shrub, 0.15-0.7(-1.5) m high. Flowers purple-blue, August to October	Clay, sandy clay or loam. Winter-wet plains, inundated areas	<b>Unlikely</b> to occur, known to occur in Moora district	EPBC
<i>Eucalyptus x balanites</i>	Endangered	Critically Endangered	(Mallee), to 5 m high, bark rough, flaky. Flowers white, October to December or January to February	Sandy soils with lateritic gravel	<b>Unlikely</b> to occur, known records occur a significant distance from the study area	EPBC Phoenix (2015)
<i>Gastrolobium hamulosum</i>	Endangered	Critically Endangered	Low shrub, 0.2-0.45 m high. Flowers yellow and orange and red and purple, August to October	Sandy, often gravelly soils or clay. Flats, slopes, ridges	<b>Unlikely</b> to occur, known to occur in Geraldton Sandplains and Avon Wheatbelt IBRA Regions	EPBC
<i>Grevillea althoferorum</i> subsp. <i>fragilis</i>	Endangered	Critically Endangered	Bluish green, lignotuberous shrub. Flowers yellow with reddish to reddish-brown buds, in spring	Base of the Darling Scarp in greyish-yellow colluvial sand. Banksia woodland	<b>Recorded regionally</b> by FVC, known to occur within the Shire of Chittering	Phoenix (2015)
<i>Grevillea curviloba</i> subsp. <i>curviloba</i>	Endangered	Critically Endangered	Prostrate to erect shrub, 0.1-2.5m high. Flowers white-cream, October	Grey sand, winter wet heath	<b>Unlikely</b> to occur, known population from the Bullbrook area, to the south of the study area	Phoenix (2015), GHD (2011a), GHD (2011b)
<i>Grevillea pythara</i>	Endangered	Critically Endangered	Suckering shrub, 0.06-0.3 m high. Flowers orange and red and blue, May to October	Sand or sandy loam with gravel	<b>Unlikely</b> to occur, known to occur in Geraldton sandplains and Avon Wheatbelt IBRA Regions	EPBC

Species	EPBC Act Cons. Status	WC Act Status	Description	Preferred Habitat	Likelihood of Occurrence	Source
<i>Jacksonia pungens</i>	Endangered	Critically Endangered	Rounded shrub, 0.45-0.8 m high. Flowers orange, November to December	Yellow sand, gravelly lateritic soils. Undulating areas	<b>Unlikely</b> to occur, known to occur in Geraldton sandplains and Avon Wheatbelt IBRA Regions	Phoenix (2015)
<i>Thelymitra dedmaniarum</i>	Endangered	Critically Endangered	Tuberous, perennial, herb, to 0.8 m high. Flowers yellow, November to December or January	Granite	<b>Unlikely</b> to occur, suitable habitat not present within study area	EPBC DPaW (2016) Phoenix (2015)
<i>Conospermum densiflorum</i> subsp. <i>unicephalatum</i>	Endangered	Endangered	Erect, much-branched shrub, 0.3-0.6 m high, inflorescence a spike. Flowers cream/white & blue, September to November	Clay soils. Low-lying areas	<b>Unlikely</b> to occur, no previously known records within the Shire of Chittering	EPBC Phoenix (2015)
<i>Darwinia acerosa</i>	Endangered	Endangered	Prostrate shrub 20 cm high.	Granite rocks and outcrop. Orange - brown gravelly soil. Very Open Woodland	<b>Unlikely</b> occur, closest known record from 1975 occurs 600m of the study area. Historic collection	EPBC DPaW (2016)
<i>Diuris purdiei</i>	Endangered	Endangered	Tuberous, perennial herb, 0.15-0.35m high. Flowers yellow, September to October	Grey-black sand, moist. Winter wet swamps	<b>Unlikely</b> to occur, known from Perth, south to the Whicher Range	Phoenix (2015)
<i>Eucalyptus leprophloia</i>	Endangered	Endangered	(Mallee), 2-5(-8) m high, bark rough loose & flaky to 1 m. Flowers cream-white, August to October	White or grey sand over laterite. Valley slopes	<b>Unlikely</b> to occur, known to occur in Geraldton Sandplains IBRA Region	EPBC Phoenix (2015)
<i>Grevillea curviloba</i> subsp. <i>incurva</i>	Endangered	Endangered	Prostrate to erect shrub, 0.1-2.5 m high. Flowers white-cream, August to September	Sand, sandy loam. Winter-wet heath	<b>Unlikely</b> to occur, study area unlikely to support suitable habitat	EPBC Phoenix (2015)
<i>Melaleuca sciotostyla</i>	Endangered	Endangered	Spreading shrub, 0.6-1.5 m high. Flowers August	Orange clayey sand with lateritic pebbles. Scree slopes	<b>Unlikely</b> to occur, distributed to the east within Avon Wheatbelt region	EPBC
<i>Thelymitra stellata</i>	Endangered	Endangered	Tuberous, perennial, herb, 0.15-0.25 m high. Flowers yellow & brown, October to November	Sand, gravel, lateritic loam. Marri, wandoo open woodland	<b>May</b> occur, suitable habitat is present within study area	EPBC DPaW (2016) Phoenix (2015)
<i>Andersonia gracilis</i>	Endangered	Vulnerable	Slender erect or open straggly shrub, 0.1-0.5(-1) m high. Flowers white-pink-purple, September to November	White/grey sand, sandy clay, gravelly loam. Winter-wet areas, near swamps	<b>Unlikely</b> to occur, no known recorded within close proximity to study area	Phoenix (2015)
<i>Banksia mimica</i>	Endangered	Vulnerable	Prostrate, lignotuberous shrub, 0.15-0.4m high. Flowers yellow-brown, December or January to February	White or grey sand over laterite, sandy loam	<b>Unlikely</b> to occur, known populations occur a significant distance from the study area. Closest known population occurs at Fynes Nature Reserve ~ 25km NW and Boornaring Nature Reserve approximately 15km west of the study area. All other known records occur east of Perth or near Busselton.	DBCA (2018a)

Species	EPBC Act Cons. Status	WC Act Status	Description	Preferred Habitat	Likelihood of Occurrence	Source
<i>Chamelaucium</i> sp. Gingin (N.G. Marchant 6)	Endangered	Vulnerable	Open straggly shrub 1-2 m high, slender, stiff branches with numerous axillary shoots. Flowers pale pinkish-white, buds tinged deeper pink. Flowers September to December.	White/yellow sand supporting open low banksia woodland	<b>Recorded regionally</b> by FVC, known to occur in Bindoon and Chittering area	EPBC FVC
<i>Eucalyptus recta</i>	Endangered	Vulnerable	Tree, to 15 m high, bark smooth	Sandy laterite	<b>Unlikely</b> to occur, known to occur in Avon Wheatbelt IBRA Region	EPBC
<i>Grevillea corrugata</i>	Endangered	Vulnerable	Robust shrub 2-5 m high, white flowers August to September	In gravelly loam <i>Eucalyptus</i> forest. Disturbed road verge	<b>May</b> occur, known to occur approximately 800 m from study area	EPBC DPaW (2016) NatureMap Phoenix (2016)
<i>Spirogardnera rubescens</i>	Endangered	Vulnerable	Spindly leafless shrub, to 1.6 m high. Flowers white, August to December	Wandoo Low Open Woodland. laterite, sand over laterite, loam	<b>May</b> occur, recorded along Hay Flat road within 20 m of survey boundary	EPBC DPaW (2016)
<i>Grevillea thelemanniana</i>	Critically Endangered	Critically Endangered	Spreading, lignotuberous shrub, 0.3-1.5m high. Flowers pink -red, May to November	Sand, sandy clay, winter-wet low-lying flats	<b>Unlikely</b> to occur, restricted to the south-eastern suburbs of Perth, distant from the study area	DBCA (2018a)
<i>Diplolaena andrewsii</i>	Endangered	Endangered	Erect shrub, 0.5-1m high, inner involucre bracts glabrous, leaves broadly cordate. Flowers red, July to October	Loam, clay	<b>Unlikely</b> to occur, known populations are distant to the south-east of the study area within John Forrest National Park and near Walyunga National Park	DBCA (2018a)
<i>Eremophila glabra</i> subsp. <i>chorella</i>	Endangered	Endangered	Prostrate and spreading or sprawling shrub, 0.2-1m high. Flowers green-yellow, July to November	Winter wet depressions	<b>May</b> occur, closest record from Mogumber Nature Reserve, approximately 14km north of the study area	DBCA (2018a)
<i>Acacia anomala</i>	Vulnerable	Vulnerable	Slender, rush-like shrub, 0.2-0.5 m high. Flowers yellow, August to September	Lateritic soils. Slopes	<b>Unlikely</b> to occur, study area is outside range distribution	Phoenix (2015)
<i>Anigozanthos viridis</i> subsp. <i>terraspectans</i>	Vulnerable	Vulnerable	Rhizomatous, perennial, herb, 0.05-0.2 m high. Flowers green/yellow-green, August to September	Grey sand, clay loam. Winter-wet depressions	<b>Unlikely</b> to occur, not previously recorded within Shire of Chittering	Phoenix (2015)
<i>Asterolasia nivea</i>	Vulnerable	Vulnerable	Low open shrub to 0.5 m. Flowers white.	Open Eucalyptus woodland	<b>May</b> occur, closest known record occurs 500 m north of Area 2 within road reserve along GNH	EPBC DPaW (2016) Ecologia (2005)
<i>Banksia serratulooides</i> subsp. <i>serratulooides</i>	Vulnerable	Vulnerable	Low, bushy, lignotuberous shrub, 0.3-1 m high. Fl. yellow, Jul to Sep	Loam or clay loam over laterite, sandy gravel.	<b>Unlikely</b> to occur, not known to occur in Shire of Chittering	KBR (2005)

Species	EPBC Act Cons. Status	WC Act Status	Description	Preferred Habitat	Likelihood of Occurrence	Source
<i>Diuris drummondii</i>	Vulnerable	Vulnerable	Tuberous, perennial, herb, 0.5-1.05m high. Flowers yellow, November to December or January	Low lying depressions, swamps	<b>Unlikely</b> to occur, known populations from the south of Perth	DBCA (2018a)
<i>Diuris micrantha</i>	Vulnerable	Vulnerable	Tuberous, perennial, herb, 0.3-0.6 m high. Fl. yellow & brown, September to October	Brown loamy clay. Winter-wet swamps, in shallow water	<b>Unlikely</b> to occur, known populations occur south of Perth	Phoenix (2015)
<i>Eleocharis keighery</i>	Vulnerable	Vulnerable	Rhizomatous, clumped perennial, grass-like or herb (sedge), to 0.4 m high. Flowers green, August to November	On creekline. In <i>Casuarina</i> woodland swampy area. Clay, sandy loam. Emergent in freshwater: creeks, claypans	<b>Unlikely</b> occur, closest known record occurs 1.5 km from study area. Study area unlikely to support suitable habitat	EPBC DPaW (2016) NatureMap
<i>Ptychosema pusillum</i>	Vulnerable	Vulnerable	Perennial, herb, mostly 0.05-0.1m high. Flowers red and brown and yellow, August to October	Sand rises	<b>Unlikely</b> to occur, known populations northeast of Gingin and in the Moora District	DBCA (2018a)
<i>Stylidium semaphorum</i>	Critically Endangered	Critically Endangered	Erect perennial, herb, 0.15-0.2 m high, Flowers white/pink, September to October	Lateritic gravelly soils. Hill summits. Low Scrub with <i>Banksia sessilis</i>	<b>Unlikely</b> to occur, previously recorded within study area however is an old historic collection from 1966	DPaW (2016)
<i>Goodenia arthrotricha</i>	Endangered	Endangered	Erect perennial, herb, to 0.4 m high. Flowers blue, October to November	Granitic soil. Scattered low forest over mixed scrub.	<b>May</b> occur, closest record occurs 2.5 km east of study area; study area may support suitable habitat	DPaW (2016)
<i>Androcalva fragifolia</i>		Priority 1	Small prostrate shrub with dark green crenate or serrate, stellately hairy leaves. Flowers white, January, February, October, November or December.	Avon Wheatbelt or Jarrah Forest	<b>May</b> occur, closest record is within 300 m of study area	DPaW (2016)
<i>Conostylis caricina</i> subsp. <i>elachys</i>		Priority 1	Rhizomatous, tufted perennial, grass-like or herb, 0.05-0.1 m high. Flowers cream-yellow, July to August	Gravel, clayey loam, sand	<b>May</b> occur, previously recorded from Bindoon area	DPaW (2016)
<i>Daviesia localis</i>		Priority 1	No available information	No available information	<b>May</b> occur, previously recorded from Bindoon area	DPaW (2016)
<i>Gastrolobium crispatum</i>		Priority 1	Tall shrub, to 2.5 m high. Flowers yellow and orange and red, September to October	Yellow or brown sandy loam, red laterite soils. Steep gullies, slopes, ridges, breakaways	<b>Recorded regionally</b> by FVC study, recorded plant identified as possibly this species.	DPaW (2016) FVC
<i>Hibbertia glomerata</i> subsp. <i>ginginensis</i>		Priority 1	Erect shrub, to 0.5 m high. Flowers yellow, July to September	In <i>Eucalyptus-Dryandra-Xanthorrhoea</i> woodland. Sand, brown clay, laterite. Near roadsides	<b>Recorded regionally</b> by FVC	DPaW (2016) NatureMap Phoenix (2015) FVC



Species	EPBC Act Cons. Status	WC Act Status	Description	Preferred Habitat	Likelihood of Occurrence	Source
<i>Lasiopetalum</i> sp. Toodyay (F. Hort 2689)		Priority 1	No available information	No available information	<b>Unlikely</b> to occur, closest record occurs 3 km north of Area 2	DPaW (2016)
<i>Lechenaultia magnifica</i>		Priority 1	Erect perennial, herb or shrub (subshrub), to 0.6 m high	Brown, grey, yellow or white sand, brown sandy loam, laterite. Slopes and flats	<b>Unlikely</b> to occur, closest known occurrence is in Gingin area	DPaW (2016)
<i>Senecio gilbertii</i>		Priority 1	Erect, slender perennial, herb, to 1.5 m high. Flowers yellow, September to November	Peaty sand. Swamps, slopes	<b>Unlikely</b> to occur, one record over 3 km from study area	DPaW (2016)
<i>Synaphea panhesya</i>		Priority 1	Erect shrub, 0.3-0.6 m high. Flowers yellow, August to September	Gravelly loam & sandy gravel	<b>Recorded</b> by FVC within the study area	DPaW (2016) FVC
<i>Acacia browniana</i> var. <i>glaucescens</i>		Priority 2	Multi-stemmed shrub, 0.2-0.5 m high, spreading by subterranean runners. Flowers yellow, August	Lateritic gravelly soils. In Wandoo	<b>Unlikely</b> to occur, closest known record is approximately 2.7 km north of Area 2	DPaW (2016)
<i>Cyanicula ixiooides</i> subsp. <i>candida</i>		Priority 2	Tuberous, perennial, herb, 0.04-0.12 m high. Flowers white, August to October	<i>Eucalyptus wandoo</i> and <i>E. calophylla</i> woodland over formerly mid-dense <i>Hakea</i> . Sand, Laterite	<b>Unlikely</b> to occur, old historic collection	DPaW (2016) NatureMap
<i>Drosera sewelliae</i>		Priority 2	Fibrous-rooted, rosetted perennial, herb, to 0.06 m high, to 0.025 m wide. Flowers orange, October	Laterite & silica sand soils	<b>Recorded</b> by FVC within the study area	DPaW (2016) FVC
<i>Gastrolobium nudum</i>		Priority 2	Spreading, twiggy shrub, to 0.8 m high. Flowers orange and red, February	Red-brown clay, brown loam, gravel, laterite, granite. Flats, slopes, hilltops, ridges, valleys, breakaways	<b>Unlikely</b> to occur, Historic collection from 1956	DPaW (2016) NatureMap
<i>Grevillea</i> sp. Toodyay West (F. Hort et al. 3296)		Priority 2	No available information	No available information	<b>Unlikely</b> to occur, known to occur in Toodyay area	DPaW (2016)
<i>Hibbertia glomerata</i> subsp. <i>ginginensis</i>		Priority 2	Erect shrub to 0.5m high. Flowers yellow, July to September	Sand, brown clay, laterite. Near roadsides	<b>Recorded</b> regionally by FVC within Boonarring Natrue Reserve	Florabase FVC
<i>Leucopogon cymbiformis</i>		Priority 2	Dense, erect or spreading shrub, 0.1-0.6(-0.8) m high. Flowers white, July to November or February to March	White/grey or yellow sand, lateritic gravelly soils. Sandplains, wet flats, foothills	<b>Unlikely</b> to occur, Species is distributed around Albany	Phoenix (2016)
<i>Leucopogon squarrosus</i> subsp. <i>trigynus</i>		Priority 2	Erect shrub to 1.5m. Flowers white	Banksia Woodland. White sand	<b>Recorded</b> by FVC within the study area	FVC

Species	EPBC Act Cons. Status	WC Act Status	Description	Preferred Habitat	Likelihood of Occurrence	Source
<i>Leucopogon</i> sp. Bindoon (F. Hort 2766)		Priority 2	Erect, spreading shrub, to 2 m high	Brown, yellow, white grey sandy clay, brown sandy clay loam, yellow clay, gravel, laterite. Rock outcrops, breakaways, scree slopes drainage lines, gullies	<b>Unlikely</b> to occur, closest known occurrence is in Toodyay area	DPaW (2016)
<i>Millotia tenuifolia</i> var. <i>laevis</i>		Priority 2	Ascending to erect annual, herb, 0.02-0.1 m high. Flowers yellow, September to October	Granite or laterite soils	<b>Unlikely</b> to occur, closest known occurrence is in Toodyay area	Phoenix (2015)
<i>Stylidium glabrifolium</i>		Priority 2	Rosetted perennial, herb, 0.2-0.3 m high, Flowers yellow, October to November	Grey brown clay loam over laterite. Hillslopes or gullies. <i>Eucalyptus wandoo</i> forest	<b>Unlikely</b> to occur, known records 1.5km from study area	DPaW (2016)
<i>Stylidium squamellosum</i>		Priority 2	Caespitose perennial, herb, 0.12-0.35 m high. Inflorescence racemose. Flowers yellow, October to November	Brown to red-brown clay loam. Winter-wet habitats and depressions, open woodland, shrubland	<b>Likely</b> to occur, recorded by Phoenix (2015)	Phoenix (2015)
<i>Tetradlea spartea</i>		Priority 2	No available information	No available information	<b>Unlikely</b> to occur, known populations from Julimar area	DPaW (2016)
<i>Verticordia serrata</i> var. <i>udumung</i> (D. Hunter & B. Yarran 941006)		Priority 2	Shrub	Open jarrah/marri woodland and open shrub understorey	<b>May</b> occur, closest record occurs 700 m from the study area	DPaW (2016)
<i>Acacia anarthros</i>		Priority 3	Erect or prostrate, spinose shrub, 0.1-0.5 m high. Flowers yellow, June to September	Lateritic gravelly soils. Slopes. Marri/Wandoo Woodland	<b>Unlikely</b> to occur, previously recorded within study area however is old historic collection from 1963	DPaW (2016) NatureMap Ecologia (2005)
<i>Acacia cummingiana</i>		Priority 3	Sprawling, straggly, rush-like shrub, 0.3-0.5 m high. Flowers yellow, May to June or August	Grey or yellow sand, lateritic gravel. Sandplains, lateritic breakaways	<b>May</b> occur, suitable habitat may be present in study area	DPaW (2016)
<i>Acacia drummondii</i> subsp. <i>affinis</i>		Priority 3	Erect shrub, 0.3-1 m high. Flowers yellow, July to August	Jarrah woodland. Plateau, laterite. Lateritic gravelly soils	<b>Recorded</b> by FVC within the study area	DPaW (2016) NatureMap Phoenix (2015) GHD (2010) Western Botanical (2006) KBR (2006) Ecologia (2004) FVC

Species	EPBC Act Cons. Status	WC Act Status	Description	Preferred Habitat	Likelihood of Occurrence	Source
<i>Acacia oncinophylla</i> subsp. <i>oncinophylla</i>		Priority 3	Shrub, 0.9-2.5 m high, 'minni-ritchi' bark, phyllodes mostly 8-13 cm long, 1-2 mm wide. Flowers yellow, August to October	Low Forest B over Scrub over Dwarf Scrub D	<b>Unlikely</b> to occur, closest know record occurs 4km north of study area	DPaW (2016)
<i>Acacia pulchella</i> var. <i>reflexa</i> acuminate bracteole variant (R.J. Cumming 882)		Priority 3	Shrub, 0.3-1 m high. Flowers yellow, July to September	Sandy loam or sandy clay over laterite. Woodland. Eucalyptus calophylla-wandoo woodland	<b>May</b> occur, previously recorded within area however old historic collection from 1970	DPaW (2016) NatureMap Phoenix (2015) Western Botanical (2006)
<i>Adenanthos cygnorum</i> subsp. <i>chamaephyton</i>		Priority 3	Prostrate, mat-forming, non-lignotuberous shrub, to 0.3 m high. Flowers white-cream-pink-green/green, July or September to December or January	Low Heath C over Low Heath D; Allocasuarina humilis, Calothamnus sanguineus, Hibbertia hypericoides. Grey sand, lateritic gravel	<b>Recorded</b> by FVC within the study area	DPaW (2016) NatureMap KBR (2006) FVC
<i>Allocasuarina ramosissima</i>		Priority 3	Erect, compact, dwarf shrub. Dioecious, somewhat divaricate shrub, 0.3-1.2 m high	Road verge. Grey-red lateritic soil	<b>May</b> occur, closet record occurs 4km north of area 2 along road reserve on lateritic soil	DPaW (2016)
<i>Asteridea gracilis</i>		Priority 3	Annual, herb, 0.15-0.35 m high. Flowers white-pink, September to December	Sand, clay, gravelly soils	<b>May</b> occur, suitable habitat may be present in study area	DPaW (2016)
<i>Banksia kippistiana</i> var. <i>paenepeccata</i>		Priority 3	Erect, prickly, lignotuberous shrub, 0.3-1.2 m high. Flowers yellow-cream, October to November	Lateritic gravelly soils	<b>May</b> occur, closest known record from Gingin and Wannamal	DPaW (2016)
<i>Banksia pteridifolia</i> subsp. <i>vernalis</i>		Priority 3	Prostrate, lignotuberous shrub, to 0.4 m high. Flowers cream-white/yellow, September to October	White/grey sand over laterite	<b>May</b> occur, suitable habitat may be present in study area	DPaW (2016)
<i>Chamaescilla gibsonii</i>		Priority 3	Clumped tuberous, herb. Flowers blue, September	Clay to sandy clay. Winter-wet flats, shallow water-filled claypans	<b>May</b> occur, suitable habitat may be present in study area	Phoenix (2015)
<i>Cyathochaeta teretifolia</i>		Priority 3	Rhizomatous, clumped, robust perennial, grass-like or herb (sedge), to 2 m high, to 1.0 m wide. Flowers brown	Grey sand, sandy clay. Swamps, creek edges	<b>Unlikely</b> to occur, no suitable habitat	Phoenix (2015)
<i>Daviesia debilior</i> subsp. <i>sinuans</i>		Priority 3	Straggling shrub, to 0.8 m high. Flowers yellow & red/purple, May to July	Gravelly lateritic clay	<b>May</b> occur, previously recorded from Bindoon area	Phoenix (2015) Western Botanical (2006)
<i>Dielsiodoxa leucantha</i> subsp. <i>leucantha</i>		Priority 3	No available information	1.2km north of Area 2	<b>May</b> occur, closest record occurs 1.2km north of study area	DPaW (2016)

Species	EPBC Act Cons. Status	WC Act Status	Description	Preferred Habitat	Likelihood of Occurrence	Source
<i>Grevillea florida</i>		Priority 3	Erect shrub, to 0.9 m high. Flowers cream-yellow, July to September	In open low woodland of <i>Eucalyptus drummondii</i> , and <i>E. calophylla</i> . Sandy clay, gravel, laterite. Sandplain, slopes, road verges	<b>Likely</b> occur; previously recorded within Area 2	DPaW (2016)
<i>Guichenotia tuberculata</i>		Priority 3	Erect, open shrub, (0.25-)0.6-0.9 m high. Flowers purple-pink, August to October	<i>Eucalyptus</i> woodland with <i>Hakea trifurcata</i> , Sand clay over laterite, sand	<b>May</b> occur, occurs 2 km north of study area	DPaW (2016)
<i>Haemodorum loratum</i>		Priority 3	Bulbaceous, perennial, herb, 0.45-1.2(-2) m high. Flowers black/brown-black/green, November	Grey or yellow sand, gravel	<b>Likely</b> to occur, recorded by Phoenix (2015)	Phoenix (2015)
<i>Halgania corymbosa</i>		Priority 3	Erect shrub, 0.35-1 m high. Flowers blue-purple, August to November	Gravelly soils, soils over granite	<b>Recorded</b> by FVC within study area	DPaW (2016) FVC
<i>Johnsonia inconspicua</i>		Priority 3	Rhizomatous, tufted perennial, grass-like or herb, 0.1-0.3 m high, to 0.2 m wide. Flowers green-white/pink, October to November	White-grey or black sand. Low dunes, winter-wet flats	<b>Unlikely</b> to occur, closest known occurrence is in Toodyay area	DPaW (2016)
<i>Lasiopetalum venustum</i>		Priority 3	No available information	No available information	<b>Unlikely</b> to occur, known record from Boonanarring NR	DPaW (2016)
<i>Petrophile plumosa</i>		Priority 3	Erect, compact shrub, 0.3-1.3 m high. Flowers yellow, July to November	Red/brown laterite, loam. Sandplains, hills	<b>May</b> occur, previously recorded from Bindoon area	DPaW (2016)
<i>Platysace ramosissima</i>		Priority 3	Perennial, herb, to 0.3 m high. Flowers white-cream, October to November	Sandy soils	<b>Unlikely</b> to occur, known record from Boonanarring NR	DPaW (2016)
<i>Stylidium cymiferum</i>		Priority 3	Perennial herb. Flowers yellow, laterally paired, throat appendages eight. Juvenile buds pendulous. Flowers October to November	In open Wandoo forest with <i>Stylidium caricifolium</i> . Loam and lateritic soils	<b>Likely</b> to occur, recorded Caligiri-Wongan Hills Road within 25 m of study area boundary	DPaW (2016)
<i>Stylidium sacculatum</i>		Priority 3	Creeping, matted plant with white/pink flowers - laterally paired petals - and red throat markings. Ca 12 cm high	Wandoo open woodland. Jarrah/Marri Woodlands	<b>May</b> occur, known records 1.5 km from study area	DPaW (2016)
<i>Styphelia filifolia</i>		Priority 3	Erect shrub to 0.5m high, Flowers white	Banksia Woodland	<b>Recorded</b> by FVC during 2018 survey within study area	FVC
<i>Tetrateca pilifera</i>		Priority 3	Spreading shrub, 0.1-0.3 m high. Flowers purple, August to October	Gravelly soils. Slope, breakaway. Eucalyptus wandoo fringing shrubland	<b>May</b> occur, previously recorded from Bindoon area	NatureMap

Species	EPBC Act Cons. Status	WC Act Status	Description	Preferred Habitat	Likelihood of Occurrence	Source
<i>Tetradlea similis</i>		Priority 3	Spreading shrub, to 0.3 m high. Flowers pink, August to September	Sandy clay with lateritic	<b>Unlikely</b> to occur, all known populations occur east of study area	DPaW (2016)
<i>Verticordia rutilastra</i>		Priority 3	Shrub to 0.9m high. Flowers yellow, September to November	Sand and lateritic gravel. Hill	<b>Recorded</b> during by FVC during 2018 within study area	FVC DPaW (2016)
<i>Verticordia serrata</i> var. <i>linearis</i>		Priority 3	Shrub, to 1 m high, Flowers September to October	White sand, gravel. Open woodland	<b>Likely</b> to occur, recorded by Phoenix (2015)	Phoenix (2015) Ecologia (2004)
<i>Acacia alata</i> var. <i>platyptera</i>		Priority 4	Dense shrub, 0.5-1 m high. Flowers yellow, June to August	Clay, gravelly sandy clay. Lateritic ridges, clay flats. Marri/Wandoo Woodland	<b>Unlikely</b> to occur, study area unlikely to support suitable habitat	NatureMap
<i>Anigozanthos humilis</i> subsp. <i>chrysanthus</i>		Priority 4	Rhizomatous, perennial, herb, 0.2-0.4 (-0.8) m high. Flowers yellow, July to October	Banksia Woodland. Grey or yellow sand	<b>Recorded</b> by FVC within the study area	DPaW (2016) FVC
<i>Banksia chamaephyton</i>		Priority 4	Low, lignotuberous shrub, to 0.4 m high, up to 2 m wide. Flowers cream & brown, October to December	Grey or white sand over laterite	<b>Unlikely</b> to occur, known from populations north of the study area	DPaW (2016)
<i>Boronia tenuis</i>		Priority 4	Procumbent or erect & slender shrub, 0.1-0.5 m high. Flowers blue/pink-white, August to November	Laterite, stony soils, granite. Pale orange sandy gravelly loam. Dense Heath C over Dwarf Scrub D	<b>Unlikely</b> to occur, closest know record occurs 3km north of study area	DPaW (2016)
<i>Calothamnus pachystachyus</i>		Priority 4	Shrub 1 - 2 ft, stems and young inflorescences grey ribbons. Erect, much-branched, often straggly shrub, (0.3-)0.6-1.7 m high. Flowers red-brown-black, August to October	In red clay loam. Granite. Lateritic soils, often gravelly. Ridges, road verges	<b>Unlikely</b> to occur, old historic collection	DPaW (2016)
<i>Conostephium magnum</i>		Priority 4	Erect, compact, many-stemmed shrub, to 2 m high. Flowers pink-purple, July to September	White-grey sands sometimes associated with laterite gravels. Sand dunes, swampland, disturbed roadside, drainage channels, open woodland.	<b>Recorded</b> by FVC within the study area	FVC
<i>Eucalyptus caesia</i>		Priority 4	(Mallee), 1.8-14 m high, bark 'minni-ritchi'. Flowers pink-red, May to September	Loam. Granite outcrops	<b>Unlikely</b> to occur, Phoenix (2015) recorded one planted specimen all other records occur east of Jarrah Forest IBRA region	Phoenix (2015)
<i>Eucalyptus exilis</i>		Priority 4	(Whipstick mallee), 2-6 m high, bark smooth. Flowers white, August to October	Grey sand, gravelly loam. Lateritic ridges	<b>May</b> occur, previously recorded from Bindoon area	DPaW (2016)

Species	EPBC Act Cons. Status	WC Act Status	Description	Preferred Habitat	Likelihood of Occurrence	Source
<i>Grevillea drummondii</i>		Priority 4	Flowers red, June to December. Compact bushy shrub, 1 - 2 m tall.	Gravelly loam	<b>May</b> occur, previously recorded within road reserve	DPaW (2016) Ecologia (2005)
<i>Hibbertia miniata</i>		Priority 4	Decumbent or erect shrub, 0.1-1 m high. Flowers orange/orange-red, August to November	Open Woodland of <i>Corymbia calophylla</i> . Lateritic gravelly soils	<b>Recorded</b> by FVC within the study area	DPaW (2016) NatureMap Ecologia (2005) FVC
<i>Hypolaena robusta</i>		Priority 4	Dioecious rhizomatous, perennial, herb, ca 0.5 m high. Flowers September to October	White sand. Sandplains	<b>Recorded</b> by FVC within the study area	Phoenix (2015) FVC
<i>Jacksonia sericea</i>		Priority 4	Low spreading shrub, to 0.6 m high. Fl. orange, usually December or January to February	Calcareous and sandy soils	<b>Recorded</b> by FVC within the study area	FVC
<i>Oxymyrrhine coronata</i>		Priority 4	Erect open shrub 40 cm high, flowers pink and white	Lateritic gravel. Marginal Jarrah/Wandoo forest	<b>May</b> , closest record occurs 2 km east of study area	NatureMap
<i>Persoonia sulcata</i>		Priority 4	Much-branched shrub 40 cm tall; fruit green with a few longitudinal brown streaks, white-spotted	In open woodland	<b>May</b> occur, recorded 500 m west of study area	DPaW (2016) NatureMap Phoenix (2015) GHD (2010)
<i>Stylidium longitubum</i>		Priority 4	Erect annual (ephemeral), herb, 0.05-0.12 m high. Flowers pink, October to December	Sandy clay, clay. Seasonal wetlands	<b>Unlikely</b> to occur, little suitable habitat	DPaW (2016)
<i>Stylidium striatum</i>		Priority 4	Rosetted perennial, herb, 0.15-0.55 m high, Inflorescence racemose. Flowers yellow, October to November	Brown clay loam over laterite. Hillslopes. Jarrah/Marri forest, Wandoo woodland	<b>May</b> occur, study area may support suitable habitat	Phoenix (2015)
<i>Synaphea grandis</i>		Priority 4	Tufted shrub, ca 0.3 m high. Flowers Yellow, October to November	Wandoo/Marri Woodland Laterite	<b>May</b> occur, previously recorded within study area from historic record (1949)	DPaW (2016) NatureMap (2016) Phoenix (2015)
<i>Verticordia lindleyi</i> subsp. <i>lindleyi</i>		Priority 4	Erect shrub, 0.2-0.75 m high. Flowers pink, May or November to December or January	Sand, sandy clay. Winter-wet depressions. <i>Banksia</i> and <i>Melaleuca</i> winter wetland	<b>Likely</b> to occur, recorded by Phoenix (2015), study area supports suitable habitat	Phoenix (2015) Western Botanical (2006) KBR (2005) Ecologia (2004)
<i>Verticordia paludosa</i>		Priority 4	Erect shrub, 0.3-0.9 m high. Flowers pink-white, January to May	White/grey sand. Winter-wet flats	<b>Recorded</b> during FVC (2018a) study, one of the recorded plants identified as possibly this species.	DPaW (2016) FVC

## APPENDIX B - FLORA SPECIES RECORDED WITHIN EACH QUADRAT

Family	Species	BW01	BW02	BW03	BW04	BW05	BW06	BW07	BW08	BW09	BW10	BW11	BW12	BW13	BW04	BW15	BW16	Bw17	BW18	BWC01	BWC02	BWC03	BWC04
Apiaceae	<i>Daucus glochidiatus</i>	+	+	+	+		+			+	+			+	+	+							
Apiaceae	<i>Xanthosia atkinsoniana</i>																						+
Apiaceae	<i>Xanthosia huegelii</i>					+			+	+						+			+				
Araliaceae	<i>Trachymene pilbarensis</i>																+						
Araliaceae	<i>Trachymene pilosa</i>																	+	+		+		
Asparagaceae	<i>Chamaescilla corymbosa</i>															+							
Asparagaceae	<i>Laxmannia grandiflora</i> subsp. <i>grandiflora</i>							+	+														
Asparagaceae	<i>Laxmannia squarrosa</i>							+	+											+			+
Asparagaceae	<i>Lomandra hermaphrodita</i>	+		+	+	+			+		+	+		+	+	+	+		+	+	+	+	+
Asparagaceae	<i>Lomandra ?hermaphrodita</i>								+		+					+							
Asparagaceae	<i>Lomandra preissii</i>																+		+				
Asparagaceae	<i>Lomandra</i> sp.		+											+	+								
Asparagaceae	<i>Lomandra spartea</i>	+	+									+				+							
Asparagaceae	<i>Sowerbaea laxiflora</i>	+		+			+		+							+	+						
Asparagaceae	<i>Thysanotus dichotomus</i>																	+					
Asparagaceae	<i>Thysanotus manglesianus</i>	+					+								+		+						
Asteraceae	* <i>Arctotheca calendula</i>									+													
Asteraceae	Asteraceae sp.														+								
Asteraceae	* <i>Hypochaeris glabra</i>	+	+	+			+	+		+	+		+	+	+	+	+	+		+	+		
Asteraceae	<i>Lagenifera huegelii</i>	+		+	+											+							
Asteraceae	<i>Podotheca gnaphalioides</i>		+	+	+		+	+		+			+	+	+			+	+	+	+		
Asteraceae	* <i>Ursinia anthemoides</i>	+	+	+	+		+			+	+		+	+	+	+	+	+	+	+	+		
Asteraceae	<i>Waitzia suaveolens</i> var. <i>suaveolens</i>	+	+							+	+			+		+	+	+					
Boraginaceae	<i>Halgania corymbosa</i> (P3)																+	+					
Boryaceae	<i>Borya sphaerocephala</i>																	+					
Campanulaceae	* <i>Wahlenbergia capensis</i>																				+		
Casuarinaceae	<i>Allocasuarina humilis</i>			+	+		+	+	+	+							+			+	+		+
Celastraceae	<i>Stackhousia monogyna</i>																		+				
Centrolepidaceae	<i>Centrolepis mutica</i>																+	+					
Colchicaceae	<i>Burchardia congesta</i>																	+	+		+		
Crassulaceae	<i>Crassula colorata</i>	+															+	+					
Crassulaceae	<i>Crassula decumbens</i>												+										

Family	Species	BW01	BW02	BW03	BW04	BW05	BW06	BW07	BW08	BW09	BW10	BW11	BW12	BW13	BW04	BW15	BW16	BW17	BW18	BWC01	BWC02	BWC03	BWC04
Cyperaceae	<i>Caustis dioica</i>						+	+	+								+	+	+				
Cyperaceae	* <i>Cyperus tenellus</i>																	+					
Cyperaceae	* <i>Isolepis marginata</i>															+							
Cyperaceae	<i>Lepidosperma squamatum</i>					+														+			
Cyperaceae	<i>Lepidosperma tenue</i>					+					+	+			+					+		+	+
Cyperaceae	<i>Mesomelaena pseudostygia</i>	+	+			+	+	+	+	+						+	+		+	+	+	+	+
Cyperaceae	<i>Schoenus armeria</i>							+	+	+													
Cyperaceae	<i>Schoenus clandestinus</i>	+							+	+					+	+							
Cyperaceae	<i>Schoenus curvifolius</i>					+				+		+		+									
Cyperaceae	<i>Tetraria octandra</i>	+	+		+													+		+			
Dasyopogonaceae	<i>Calectasia cyanea</i>																			+			
Dilleniaceae	<i>Hibbertia ?spicata</i> subsp. <i>spicata</i>	+																		+			
Dilleniaceae	<i>Hibbertia acerosa</i>		+	+	+	+			+	+		+		+		+	+		+			+	+
Dilleniaceae	<i>Hibbertia huegelii</i>																	+				+	+
Dilleniaceae	<i>Hibbertia hypericoides</i>		+	+	+		+	+	+			+		+	+	+	+	+	+	+	+		
Dilleniaceae	<i>Hibbertia</i> sp.										+												
Dilleniaceae	<i>Hibbertia subvaginata</i>	+				+				+					+	+							
Droseraceae	<i>Drosera erythroyne</i>			+	+			+	+														
Droseraceae	<i>Drosera erythrorhiza</i>		+			+	+	+	+	+	+			+	+	+	+		+				
Droseraceae	<i>Drosera macrantha</i>	+	+					+	+	+								+	+	+		+	+
Droseraceae	<i>Drosera micrantha</i>			+			+							+		+	+						
Droseraceae	<i>Drosera spilos</i>	+					+	+		+		+	+			+							
Ericaceae	<i>Astroloma glaucescens</i>																					+	+
Ericaceae	<i>Astroloma macrocalyx</i>							+															
Ericaceae	<i>Astroloma</i> sp.					+																	
Ericaceae	<i>Conostephium ?magnum</i> (P4)														+								
Ericaceae	<i>Conostephium magnum</i> (P4)					+																	
Ericaceae	<i>Conostephium minus</i>																			+		+	
Ericaceae	<i>Conostephium pendulum</i>			+		+					+	+	+	+	+		+		+				
Ericaceae	<i>Leucopogon conostephioides</i>					+				+													
Ericaceae	<i>Leucopogon propinquus</i>						+																
Ericaceae	<i>Leucopogon squarrosus</i> subsp. <i>squarrosus</i>														+	+	+		+			+	+
Ericaceae	<i>Leucopogon squarrosus</i> subsp. <i>trigynus</i> (P2)							+	+	+				+	+								
Ericaceae	<i>Lysinema ciliatum</i>					+			+													+	+



Family	Species	BW01	BW02	BW03	BW04	BW05	BW06	BW07	BW08	BW09	BW10	BW11	BW12	BW13	BW04	BW15	BW16	Bw17	BW18	BWC01	BWC02	BWC03	BWC04
Ericaceae	<i>Styphelia filifolia</i> (P3)	+																					
Fabaceae	<i>Acacia applanata</i>											+											
Fabaceae	<i>Acacia huegelii</i>				+																		
Fabaceae	<i>Acacia pulchella</i>													+	+						+		
Fabaceae	<i>Acacia stenoptera</i>			+				+	+			+					+		+			+	+
Fabaceae	<i>Bossiaea eriocarpa</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+		+	+	+	+		+	+
Fabaceae	<i>Bossiaea ornata</i>																			+			
Fabaceae	<i>Cristonia biloba</i>																			+			+
Fabaceae	<i>Daviesia decurrens</i>																			+			
Fabaceae	<i>Daviesia divaricata</i> subsp. <i>divaricata</i>																						+
Fabaceae	<i>Daviesia triflora</i>											+		+		+						+	+
Fabaceae	<i>Gastrolobium calycinum</i>													+									
Fabaceae	<i>Gastrolobium capitatum</i>																						+
Fabaceae	<i>Gastrolobium oxylobioides</i>					+			+			+											
Fabaceae	<i>Gompholobium knightianum</i>																+						
Fabaceae	<i>Gompholobium tomentosum</i>				+					+	+				+		+	+		+		+	
Fabaceae	<i>Hovea trisperma</i>														+		+		+				
Fabaceae	<i>Isotropis cuneifolia</i> subsp. <i>cuneifolia</i> .				+			+				+											
Fabaceae	<i>Jacksonia floribunda</i>					+	+					+	+	+		+		+		+		+	
Fabaceae	<i>Jacksonia sternbergiana</i>	+		+														+					
Fabaceae	<i>Nemcia capitata</i>																			+			
Gentianaceae	Gentianaceae sp.		+	+			+																
Goodeniaceae	<i>Dampiera lindleyi</i>																		+				
Goodeniaceae	<i>Dampiera linearis</i>		+			+						+		+		+							
Goodeniaceae	<i>Lechenaultia biloba</i>												+										
Goodeniaceae	<i>Scaevola repens</i> de Vries																	+					
Goodeniaceae	<i>Scaevola spinescens</i>																				+	+	
Haemodoraceae	<i>Anigozanthos humilis</i>		+	+			+	+	+	+				+	+	+		+	+				
Haemodoraceae	<i>Anigozanthos manglesii</i>																+			+			
Haemodoraceae	<i>Conostylis aculeata</i>				+												+	+		+		+	+
Haemodoraceae	<i>Conostylis aculeata</i> subsp. <i>aculeata</i>	+	+				+																
Haemodoraceae	<i>Conostylis aurea</i>													+									
Haemodoraceae	<i>Conostylis setigera</i>								+	+		+			+	+	+		+			+	+
Haemodoraceae	<i>Conostylis teretifolia</i> subsp. <i>planescens</i>	+																					

Family	Species	BW01	BW02	BW03	BW04	BW05	BW06	BW07	BW08	BW09	BW10	BW11	BW12	BW13	BW04	BW15	BW16	Bw17	BW18	BWC01	BWC02	BWC03	BWC04
Haemodoraceae	<i>Conostylis teretifolia</i> subsp. <i>teretifolia</i>						+	+			+												
Haemodoraceae	Haemodoraceae sp.								+			+									+		
Haemodoraceae	<i>Haemodorum laxum</i>																	+					
Haemodoraceae	<i>Haemodorum simulans</i>					+																	
Haemodoraceae	<i>Haemodorum</i> sp.									+						+					+		
Hemerocallidaceae	<i>Caesia micrantha</i>								+					+	+	+				+			
Hemerocallidaceae	<i>Corynotheca micrantha</i>	+	+	+	+			+													+		
Hemerocallidaceae	<i>Johnsonia pubescens</i>																	+					
Hemerocallidaceae	<i>Johnsonia pubescens</i> subsp. <i>pubescens</i>										+			+	+								
Hemerocallidaceae	<i>Stypandra ?glauca</i>						+																
Hemerocallidaceae	<i>Tricoryne elatior</i>					+								+								+	
Iridaceae	* <i>Gladiolus cardinalis</i>								+														
Iridaceae	* <i>Gladiolus caryophyllaceus</i>		+		+	+	+	+	+		+	+	+	+	+	+		+		+			+
Iridaceae	* <i>Gladiolus</i> sp.																				+		
Iridaceae	<i>Patersonia occidentalis</i>	+				+																	
Iridaceae	* <i>Romulea rosea</i>	+																					
Lamiaceae	<i>Physopsis spicata</i>																			+			
Lauraceae	<i>Cassytha racemosa</i>													+	+	+							
Loranthaceae	<i>Nuytsia floribunda</i>						+	+		+										+	+		
Molluginaceae	<i>Macarthuria australis</i>																	+					
Montiaceae	Montiaceae sp.	+	+							+			+										
Myrtaceae	<i>Beaufortia elegans</i>						+		+		+												
Myrtaceae	<i>Calothamnus sanguineus</i>					+																	
Myrtaceae	<i>Calytrix angulata</i>		+	+				+		+					+		+						
Myrtaceae	<i>Calytrix flavescens</i>					+									+	+		+	+		+	+	
Myrtaceae	<i>Calytrix fraseri</i>	+	+	+	+	+				+	+						+						
Myrtaceae	<i>Calytrix leschenaultii</i>																				+		
Myrtaceae	<i>Calytrix</i> sp.													+									
Myrtaceae	<i>Calytrix variabilis</i>													+	+	+						+	+
Myrtaceae	<i>Corymbia calophylla</i>																+						
Myrtaceae	<i>Eremaea pauciflora</i>											+	+		+				+	+	+	+	+
Myrtaceae	<i>Eremaea purpurea</i>	+																					
Myrtaceae	<i>Eucalyptus marginata</i>													+		+						+	
Myrtaceae	<i>Eucalyptus todtiana</i>		+		+						+	+	+		+		+	+	+	+	+	+	+

Family	Species	BW01	BW02	BW03	BW04	BW05	BW06	BW07	BW08	BW09	BW10	BW11	BW12	BW13	BW04	BW15	BW16	BW17	BW18	BWC01	BWC02	BWC03	BWC04
Myrtaceae	<i>Hypocalymma angustifolium</i>		+																				
Myrtaceae	<i>Hypocalymma xanthopetalum</i>														+								
Myrtaceae	<i>Kunzea ericifolia</i>	+																					
Myrtaceae	<i>Kunzea micrantha</i>											+	+		+								
Myrtaceae	<i>Kunzea recurva</i>		+																				
Myrtaceae	<i>Leptospermum erubescens</i>	+																					
Myrtaceae	<i>Melaleuca lateritia</i>											+											
Myrtaceae	<i>Melaleuca trichophylla</i>					+								+			+		+	+		+	+
Myrtaceae	<i>Regelia ciliata</i>									+													
Myrtaceae	<i>Scholtzia involucreta</i>					+		+							+		+				+		+
Myrtaceae	<i>Verticordia nitens</i>																					+	+
Myrtaceae	<i>Verticordia rutilastra</i> (P3)							+	+														
Orchidaceae	<i>Caladenia flava</i>	+	+	+	+					+	+	+	+		+	+							
Orchidaceae	<i>Caladenia</i> sp.						+																
Orchidaceae	Orchidaceae sp.						+	+			+			+	+	+							
Orchidaceae	<i>Pterostylis recurva</i>	+			+	+			+		+												
Orchidaceae	<i>Pterostylis</i> sp.																	+					
Orchidaceae	<i>Pterostylis vittata</i>										+												
Orchidaceae	<i>Pyrorchis nigricans</i>																+		+				
Orchidaceae	<i>Pyrorchis</i> sp.					+																	
Phyllanthaceae	<i>Poranthera ericoides</i>									+													
Poaceae	<i>Amphipogon turbinatus</i>								+											+	+		+
Poaceae	<i>Austrostipa elegantissima</i>																			+			
Poaceae	<i>Austrostipa nitida</i>																	+					
Poaceae	* <i>Briza maxima</i>				+						+		+	+	+	+	+	+		+	+		
Poaceae	<i>Bromus arenarius</i>																			+	+		
Poaceae	* <i>Ehrharta longiflora</i>														+								
Poaceae	* <i>Ehrharta</i> sp.		+		+																		
Poaceae	* <i>Lagurus ovatus</i>																+						
Poaceae	<i>Neurachne alopecuroidea</i>	+	+	+	+		+	+	+		+	+	+					+	+	+			
Poaceae	<i>Pennisetum americanum</i>																+						
Poaceae	* <i>Pentameris airoides</i>																+						
Poaceae	Poaceae sp.												+			+							
Poaceae	<i>Tetrarrhena laevis</i>															+							

Family	Species	BW01	BW02	BW03	BW04	BW05	BW06	BW07	BW08	BW09	BW10	BW11	BW12	BW13	BW04	BW15	BW16	Bw17	BW18	BWC01	BWC02	BWC03	BWC04
Proteaceae	<i>Adenanthos cygnorum</i>	+	+	+		+		+	+														
Proteaceae	<i>Adenanthos</i> sp.				+																		
Proteaceae	<i>Banksia attenuata</i>	+	+	+	+	+		+		+	+	+	+	+	+	+	+	+	+	+	+	+	+
Proteaceae	<i>Banksia dallanneyi</i>																+						
Proteaceae	<i>Banksia ilicifolia</i>											+	+										
Proteaceae	<i>Banksia menziesii</i>	+		+		+	+	+	+	+					+				+	+	+	+	+
Proteaceae	<i>Banksia sessilis</i>						+	+															
Proteaceae	<i>Banksia sphaerocarpa</i> var. <i>sphaerocarpa</i>													+									
Proteaceae	<i>Conospermum crassinervium</i>														+								
Proteaceae	<i>Conospermum ephedroides</i>											+											
Proteaceae	<i>Conospermum</i> sp.														+								
Proteaceae	<i>Conospermum stoechadis</i>	+						+	+	+						+							
Proteaceae	<i>Conospermum stoechadis</i> subsp. <i>sclerophyllum</i>																	+				+	+
Proteaceae	<i>Hakea costata</i>		+					+															
Proteaceae	<i>Petrophile linearis</i>	+	+	+	+	+	+			+	+	+		+	+	+	+	+	+	+	+	+	+
Proteaceae	<i>Stirlingia latifolia</i>		+	+		+	+		+	+		+	+	+		+	+	+	+	+	+	+	+
Proteaceae	<i>Synaphea spinulosa</i>								+			+	+	+		+	+		+				+
Proteaceae	<i>Synaphea spinulosa</i> subsp. <i>spinulosa</i>							+															
Restionaceae	<i>Alexgeorgea nitens</i>	+		+	+	+	+	+	+	+	+	+	+	+	+			+	+	+	+	+	+
Restionaceae	<i>Chordifex sinuosus</i>													+									
Restionaceae	<i>Desmocladus fasciculatus</i>						+																+
Restionaceae	<i>Dielsia stenostachya</i>								+						+								
Restionaceae	<i>Hypolaena exsulca</i>													+	+	+	+	+	+				
Restionaceae	<i>Lepidobolus preissianus</i>																			+	+	+	+
Restionaceae	<i>Loxocarya cinerea</i>																+	+	+	+			+
Restionaceae	<i>Lyginia barbata</i>										+	+											
Restionaceae	<i>Lyginia imberbis</i>	+					+	+						+	+	+	+	+	+			+	+
Rhamnaceae	<i>Cryptandra arbutiflora</i>		+	+				+	+														
Rubiaceae	<i>Opercularia vaginata</i>	+							+												+		
Rutaceae	<i>Boronia ramosa</i>			+	+				+														
Rutaceae	<i>Philotheca spicata</i>													+	+	+						+	+
Santalaceae	<i>Leptomeria empetriflora</i>																		+				
Stylidiaceae	<i>Stylidium albolilacinum</i>							+															
Stylidiaceae	<i>Stylidium amoenum</i>	+	+	+	+									+	+	+	+			+		+	

Family	Species	BW01	BW02	BW03	BW04	BW05	BW06	BW07	BW08	BW09	BW10	BW11	BW12	BW13	BW04	BW15	BW16	BW17	BW18	BWC01	BWC02	BWC03	BWC04
Stylidiaceae	<i>Stylidium brunonianum</i>																				+		
Stylidiaceae	<i>Stylidium ciliatum</i>			+						+		+			+	+							
Stylidiaceae	<i>Stylidium diuroides</i> subsp. <i>diuroides</i>									+							+		+				
Stylidiaceae	<i>Stylidium hispidum</i>														+								
Stylidiaceae	<i>Stylidium leptophyllum</i>																		+				
Stylidiaceae	<i>Stylidium piliferum</i>																+		+	+			+
Stylidiaceae	<i>Stylidium repens</i>																		+				+
Stylidiaceae	<i>Stylidium sacculatum</i>			+	+		+	+	+		+	+			+	+							
Stylidiaceae	<i>Stylidium</i> sp.	+								+													
Thymelaeaceae	<i>Pimelea angustifolia</i>																			+	+		
Thymelaeaceae	<i>Pimelea</i> sp.								+														
Thymelaeaceae	<i>Pimelea suaveolens</i> subsp. <i>suaveolens</i>								+														
Xanthorrhoeaceae	<i>Xanthorrhoea gracilis</i>													+									
Xanthorrhoeaceae	<i>Xanthorrhoea preissii</i>	+		+			+			+	+	+	+	+		+	+		+	+	+	+	
Zamiaceae	<i>Macrozamia riedlei</i>		+	+	+																		

## APPENDIX C - QUADRAT DATA

### Site BW01

<b>Date</b>	03/09/2018
<b>Botanist</b>	Kellie Bauer-Simpson and Lisa Chappell
<b>Quadrat Size</b>	10 x 10 m
<b>NW Corner Coordinates</b>	408297mE 6544318mN
<b>Vegetation Unit</b>	BaXpUa - <i>Banksia attenuata</i> low sparse woodland (with occasional <i>Banksia menziesii</i> ) over <i>Xanthorrhoea preissii</i> mid isolated shrubs over <i>Bossiaea eriocarpa</i> , <i>Hibbertia hypericoides</i> and <i>Petrophile linearis</i> low isolated shrubs over * <i>Ursinia anthemoides</i> , <i>Conostylis aculeata</i> and <i>Hypochaeris glabra</i> isolated herbs
<b>Slope</b>	flat
<b>Landform</b>	flat
<b>Soil Colour</b>	white
<b>Soil Type</b>	sand
<b>Litter</b>	6%
<b>Bare Ground</b>	11%
<b>Fire Age</b>	> 10years
<b>Vegetation Condition</b>	Good
<b>Disturbances/Impacts</b>	possible dieback



Name	Height (m)	Cover (%)
<i>Banksia menziesii</i>	7	10
<i>Banksia attenuata</i>	6	15
<i>Adenanthos cygnorum</i>	3	15
<i>Xanthorrhoea preissii</i>	2	5
<i>Calytrix fraseri</i>	1	3
<i>Eremaea purpurea</i>	0.8	2
<i>Conostylis teretifolia</i> subsp. <i>planescens</i>	0.5	2
<i>Tetraria octandra</i>	0.2	6
<i>Conostylis aculeata</i> subsp. <i>aculeata</i>	0.12	4
<i>Alexgeorgea nitens</i>	+	
<i>Bossiaea eriocarpa</i>	+	
<i>Caladenia flava</i>	+	
<i>Conospermum stoechadis</i>	+	
<i>Corynotheca micrantha</i>	+	
<i>Crassula colorata</i>	+	
<i>Daucus glochidiatus</i>	+	
<i>Drosera macrantha</i>	+	
<i>Drosera spilos</i>	+	
<i>Hibbertia?</i> <i>spicata</i> subsp. <i>spicata</i>	+	
<i>Hibbertia subvaginata</i>	+	
<i>Hypochaeris glabra</i>	+	
<i>Jacksonia sternbergiana</i>	+	
<i>Lagenifera huegelii</i>	+	
<i>Leptospermum erubescens</i>	+	
<i>Lomandra hermaphrodita</i>	+	
<i>Lomandra spartea</i>	+	
<i>Mesomelaena pseudostygia</i>	+	
Montiaceae sp.	+	
<i>Neurachne alopecuroidea</i>	+	
<i>Opercularia vaginata</i>	+	
<i>Patersonia occidentalis</i>	+	
<i>Petrophile linearis</i>	+	
<i>Romulea rosea</i>	+	
<i>Schoenus clandestinus</i>	+	
<i>Sowerbaea laxiflora</i>	+	
<i>Stylidium amoenum</i>	+	
<i>Stylidium</i> sp.	+	
<i>Styphelia filifolia</i> (P3)	+	
<i>Thysanotus manglesianus</i>	+	
* <i>Ursinia anthemoides</i>	+	
<i>Waitzia suaveolens</i> var. <i>suaveolens</i>	+	

Name	Height (m)	Cover (%)
<i>Kunzea ericifolia</i>	ASS	
<i>Lyginia imberbis</i>	ASS	
<i>Pterostylis recurva</i>	ASS	



## Site BW02

<b>Date</b>	03/09/2018
<b>Botanist</b>	Kellie Bauer-Simpson and Lisa Chappell
<b>Quadrat Size</b>	10 x 10 m
<b>NW Corner Coordinates</b>	408355mE 6544002mN
<b>Vegetation Unit</b>	BaXpUa <i>Banksia attenuata</i> low sparse woodland (with occasional <i>Banksia menziesii</i> ) over <i>Xanthorrhoea preissii</i> mid isolated shrubs over <i>Bossiaea eriocarpa</i> , <i>Hibbertia hypericoides</i> and <i>Petrophile linearis</i> low isolated shrubs over * <i>Ursinia anthemoides</i> , <i>Conostylis aculeata</i> and <i>Hypochaeris glabra</i> isolated herbs
<b>Slope</b>	gentle
<b>Landform</b>	mid slope
<b>Soil Colour</b>	white
<b>Soil Type</b>	sand
<b>Litter</b>	3%
<b>Bare Ground</b>	8%
<b>Fire Age</b>	>10years
<b>Vegetation Condition</b>	Very Good
<b>Disturbances/Impacts</b>	na



Name	Height (m)	Cover (%)
<i>Eucalyptus todtiana</i>	7	6
<i>Banksia attenuata</i>	5	7
<i>Adenanthos cygnorum</i>	4	20
<i>Macrozamia riedlei</i>	2.5	15
<i>Kunzea recurva</i>	2.5	8
<i>Calytrix fraseri</i>	1.5	6
<i>Hibbertia hypericoides</i>	0.5	15
<i>Corynotheca micrantha</i>	0.3	12
<i>Conostylis aculeata</i> subsp. <i>aculeata</i>	0.15	2
<i>Anigozanthos humilis</i>	+	
<i>Bossiaea eriocarpa</i>	+	
<i>Caladenia flava</i>	+	
<i>Calytrix angulata</i>	+	
<i>Dampiera linearis</i>	+	
<i>Daucus glochidiatus</i>	+	
<i>Drosera erythrorhiza</i>	+	
<i>Drosera macrantha</i>	+	
* <i>Ehrharta</i> sp.	+	
Gentianaceae sp.	+	
<i>Gladiolus caryophyllaceus</i>	+	
<i>Hypocalymma angustifolium</i>	+	
* <i>Hypochaeris glabra</i>	+	
<i>Lomandra</i> sp.	+	
<i>Lomandra spartea</i>	+	
<i>Mesomelaena pseudostygia</i>	+	
Montiaceae sp.	+	
<i>Neurachne alopecuroidea</i>	+	
<i>Petrophile linearis</i>	+	
<i>Podotheca gnaphalioides</i>	+	
<i>Tetralix octandra</i>	+	
* <i>Ursinia anthemoides</i>	+	
<i>Waitzia suaveolens</i> var. <i>suaveolens</i>	+	
<i>Cryptandra arbutiflora</i>	ASS	
<i>Hakea costata</i>	ASS	
<i>Hibbertia acerosa</i>	ASS	
<i>Stirlingia latifolia</i>	ASS	
<i>Stylidium amoenum</i>	ASS	

## Site BW03

<b>Date</b>	03/09/2018
<b>Botanist</b>	Kellie Bauer-Simpson and Lisa Chappell
<b>Quadrat Size</b>	10 x 10 m
<b>NW Corner Coordinates</b>	408407mE 6543840mN
<b>Vegetation Unit</b>	BaXpUa - <i>Banksia attenuata</i> low sparse woodland (with occasional <i>Banksia menziesii</i> ) over <i>Xanthorrhoea preissii</i> mid isolated shrubs over <i>Bossiaea eriocarpa</i> , <i>Hibbertia hypericoides</i> and <i>Petrophile linearis</i> low isolated shrubs over * <i>Ursinia anthemoides</i> , <i>Conostylis aculeata</i> and <i>Hypochaeris glabra</i> isolated herbs
<b>Slope</b>	moderate
<b>Landform</b>	upper slope
<b>Soil Colour</b>	white
<b>Soil Type</b>	sand
<b>Litter</b>	5%
<b>Bare Ground</b>	15%
<b>Fire Age</b>	>10years
<b>Vegetation Condition</b>	Very Good
<b>Disturbances/Impacts</b>	na



Name	Height (m)	Cover (%)
<i>Jacksonia sternbergiana</i>	6.5	4
<i>Banksia menziesii</i>	5.5	14
<i>Adenanthos cygnorum</i>	2.5	6
<i>Allocasuarina humilis</i>	2	12
<i>Xanthorrhoea preissii</i>	2	6
<i>Macrozamia riedlei</i>	2	3
<i>Stirlingia latifolia</i>	1.5	4
<i>Hibbertia hypericoides</i>	0.7	15
<i>Acacia stenoptera</i>	+	
<i>Alexgeorgea nitens</i>	+	
<i>Anigozanthos humilis</i>	+	
<i>Banksia attenuata</i>	+	
<i>Boronia ramosa</i>	+	
<i>Bossiaea eriocarpa</i>	+	
<i>Caladenia flava</i>	+	
<i>Calytrix angulata</i>	+	
<i>Calytrix fraseri</i>	+	
<i>Conostephium pendulum</i>	+	
<i>Corynotheca micrantha</i>	+	
<i>Cryptandra arbutiflora</i>	+	
<i>Daucus glochidiatus</i>	+	
<i>Drosera erythrogynae</i>	+	
<i>Drosera micrantha</i>	+	
Gentianaceae sp.	+	
<i>Hibbertia acerosa</i>	+	
* <i>Hypochaeris glabra</i>	+	
<i>Lagenifera huegelii</i>	+	
<i>Lomandra hermaphrodita</i>	+	
<i>Neurachne alopecuroidea</i>	+	
<i>Petrophile linearis</i>	+	
<i>Podotheca gnaphalioides</i>	+	
<i>Sowerbaea laxiflora</i>	+	
<i>Stylidium amoenum</i>	+	
<i>Stylidium ciliatum</i>	+	
<i>Stylidium sacculatum</i>	+	
* <i>Ursinia anthemoides</i>	+	

## Site BW04

<b>Date</b>	03/09/2018
<b>Botanist</b>	Kellie Bauer-Simpson and Lisa Chappell
<b>Quadrat Size</b>	10 x 10 m
<b>NW Corner Coordinates</b>	408355mE 6543788mN
<b>Vegetation Unit</b>	BaXpUa - <i>Banksia attenuata</i> low sparse woodland (with occasional <i>Banksia menziesii</i> ) over <i>Xanthorrhoea preissii</i> mid isolated shrubs over <i>Bossiaea eriocarpa</i> , <i>Hibbertia hypericoides</i> and <i>Petrophile linearis</i> low isolated shrubs over * <i>Ursinia anthemoides</i> , <i>Conostylis aculeata</i> and <i>Hypochaeris glabra</i> isolated herbs
<b>Slope</b>	gentle
<b>Landform</b>	upper slope
<b>Soil Colour</b>	white
<b>Soil Type</b>	sand
<b>Litter</b>	0%
<b>Bare Ground</b>	60%
<b>Fire Age</b>	>10years
<b>Vegetation Condition</b>	Very Good-Excellent
<b>Disturbances/Impacts</b>	na



Name	Height (m)	Cover (%)
<i>Eucalyptus todtiana</i>	9	40
<i>Banksia attenuata</i>	5.5	7
<i>Adenanthos</i> sp.	3.5	6
<i>Allocasuarina humilis</i>	2.5	3
<i>Hibbertia hypericoides</i>	0.5	8
<i>Bossiaea eriocarpa</i>	0.4	14
<i>Corynotheca micrantha</i>	0.3	10
<i>Acacia huegelii</i>	+	
<i>Alexgeorgea nitens</i>	+	
<i>Boronia ramosa</i>	+	
* <i>Briza maxima</i>	+	
<i>Caladenia flava</i>	+	
<i>Calytrix fraseri</i>	+	
<i>Conostylis aculeata</i>	+	
<i>Daucus glochidiatus</i>	+	
<i>Drosera erythrogyne</i>	+	
* <i>Ehrharta</i> sp.	+	
* <i>Gladiolus caryophyllaceus</i>	+	
<i>Gompholobium tomentosum</i>	+	
<i>Hibbertia acerosa</i>	+	
<i>Isotropis cuneifolia</i> subsp. <i>cuneifolia</i>	+	
<i>Lagenifera huegelii</i>	+	
<i>Lomandra hermaphrodita</i>	+	
<i>Macrozamia riedlei</i>	+	
<i>Neurachne alopecuroidea</i>	+	
<i>Petrophile linearis</i>	+	
<i>Podotheca gnaphalioides</i>	+	
<i>Pterostylis recurva</i>	+	
<i>Stylidium amoenum</i>	+	
<i>Stylidium sacculatum</i>	+	
<i>Tetralix octandra</i>	+	
* <i>Ursinia anthemoides</i>	+	

## Site BW05

<b>Date</b>	03/09/2018
<b>Botanist</b>	Kellie Bauer-Simpson and Lisa Chappell
<b>Quadrat Size</b>	10 x 10 m
<b>NW Corner Coordinates</b>	408596mE 6541715mN
<b>Vegetation Unit</b>	EtEpAn - <i>Eucalyptus todtiana</i> and <i>Banksia</i> spp. low sparse woodland over <i>Adenanthos cygnorum</i> tall sparse shrubland over <i>Eremaea pauciflora</i> and <i>Stirlingia latifolia</i> mid sparse to isolated shrubland over <i>Bossiaea eriocarpa</i> and <i>Conostephium pendulum</i> low isolated shrubs over <i>Austrostipa hemipogon</i> and * <i>Briza maxima</i> grasses and <i>Alexgeorgea nitens</i> sedges
<b>Slope</b>	flat
<b>Landform</b>	flat
<b>Soil Colour</b>	white
<b>Soil Type</b>	sand
<b>Litter</b>	0%
<b>Bare Ground</b>	90%
<b>Fire Age</b>	>10years
<b>Vegetation Condition</b>	Very Good - Excellent
<b>Disturbances/Impacts</b>	na



Name	Height (m)	Cover (%)
<i>Banksia attenuata</i>	8	30
<i>Banksia menziesii</i>	8	8
<i>Adenanthos cygnorum</i>	5.5	15
<i>Jacksonia floribunda</i>	3.5	5
<i>Calytrix fraseri</i>	1.8	3
<i>Conostephium magnum</i> (P4)	1	16
<i>Alexgeorgea nitens</i>	+	
<i>Astroloma</i> sp.	+	
<i>Bossiaea eriocarpa</i>	+	
<i>Calothamnus sanguineus</i>	+	
<i>Calytrix flavescens</i>	+	
<i>Dampiera linearis</i>	+	
<i>Drosera erythrorhiza</i>	+	
<i>Gastrolobium oxylobioides</i>	+	
* <i>Gladiolus caryophyllaceus</i>	+	
<i>Haemodorum simulans</i>	+	
<i>Hibbertia acerosa</i>	+	
<i>Hibbertia subvaginata</i>	+	
<i>Lepidosperma squamatum</i>	+	
<i>Lepidosperma tenue</i>	+	
<i>Leucopogon conostephioides</i>	+	
<i>Lomandra hermaphrodita</i>	+	
<i>Lysinema ciliatum</i>	+	
<i>Melaleuca trichophylla</i>	+	
<i>Mesomelaena pseudostygia</i>	+	
<i>Patersonia occidentalis</i>	+	
<i>Petrophile linearis</i>	+	
<i>Pterostylis recurva</i>	+	
<i>Pyrorchis</i> sp.	+	
<i>Schoenus curvifolius</i>	+	
<i>Scholtzia involucrata</i>	+	
<i>Stirlingia latifolia</i>	+	
<i>Tricoryne elatior</i>	+	
<i>Xanthosia huegelii</i>	+	
<i>Conostephium pendulum</i>	ASS	



## Site BW06

<b>Date</b>	04/09/2018
<b>Botanist</b>	Kellie Bauer-Simpson and Lisa Chappell
<b>Quadrat Size</b>	10 x 10 m
<b>NW Corner Coordinates</b>	408918mE 6543512mN
<b>Vegetation Unit</b>	EtBeAn - <i>Eucalyptus todtiana</i> , <i>Banksia attenuata</i> and <i>Banksia menziesii</i> low sparse woodland over <i>Bossiaea eriocarpa</i> , <i>Hibbertia hypericoides</i> and <i>Petrophile linearis</i> low isolated shrubs over <i>Alexgeorgea nitens</i> , <i>Lyginia imberbis</i> and <i>Mesomelaena pseudostygia</i> sparse sedgeland
<b>Slope</b>	gentle
<b>Landform</b>	upper slope
<b>Soil Colour</b>	white
<b>Soil Type</b>	sand
<b>Litter</b>	5%
<b>Bare Ground</b>	7%
<b>Fire Age</b>	>10years
<b>Vegetation Condition</b>	Very Good-Excellent
<b>Disturbances/Impacts</b>	possible dieback



Name	Height (m)	Cover (m)
<i>Banksia menziesii</i>	5.5	8
<i>Banksia sessilis</i>	OH	1
<i>Xanthorrhoea preissii</i>	2	3
<i>Allocasuarina humilis</i>	1.5	25
<i>Mesomelaena pseudostygia</i>	0.8	20
<i>Alexeorgea nitens</i>	+	
<i>Anigozanthos humilis</i>	+	
<i>Beaufortia elegans</i>	+	
<i>Bossiaea eriocarpa</i>	+	
<i>Caladenia</i> sp.	+	
<i>Caustis dioica</i>	+	
<i>Conostylis aculeata</i> subsp. <i>aculeata</i> .	+	
<i>Conostylis teretifolia</i> subsp. <i>teretifolia</i>	+	
<i>Daucus glochidiatus</i>	+	
<i>Desmocladus fasciculatus</i>	+	
<i>Drosera erythrorhiza</i>	+	
<i>Drosera micrantha</i>	+	
<i>Drosera spilos</i>	+	
Gentianaceae sp.	+	
* <i>Gladiolus caryophyllaceus</i>	+	
<i>Hibbertia hypericoides</i>	+	
* <i>Hypochaeris glabra</i>	+	
<i>Leucopogon propinquus</i>	+	
<i>Lyginia imberbis</i>	+	
<i>Neurachne alopecuroidea</i>	+	
<i>Nuytsia floribunda</i>	+	
Orchidaceae sp.	+	
<i>Petrophile linearis</i>	+	
<i>Podotheca gnaphalioides</i>	+	
<i>Sowerbaea laxiflora</i>	+	
<i>Stirlingia latifolia</i>	+	
<i>Stylidium sacculatum</i>	+	
<i>Stypandra ?glauca</i>	+	
<i>Thysanotus manglesianus</i>	+	
* <i>Ursinia anthemoides</i>	+	
<i>Jacksonia floribunda</i>	ASS	

## Site BW07

<b>Date</b>	04/09/2018
<b>Botanist</b>	Kellie Bauer-Simpson and Lisa Chappell
<b>Quadrat Size</b>	10 x 10 m
<b>NW Corner Coordinates</b>	408934mE 6543355mN
<b>Vegetation Unit</b>	EtBeAn - <i>Eucalyptus todtiana</i> , <i>Banksia attenuata</i> and <i>Banksia menziesii</i> low sparse woodland over <i>Bossiaea eriocarpa</i> , <i>Hibbertia hypericoides</i> and <i>Petrophile linearis</i> low isolated shrubs over <i>Alexgeorgea nitens</i> , <i>Lyginia imberbis</i> and <i>Mesomelaena pseudostygia</i> sparse sedgeland
<b>Slope</b>	flat
<b>Landform</b>	upper slope
<b>Soil Colour</b>	white
<b>Soil Type</b>	sand
<b>Litter</b>	5%
<b>Bare Ground</b>	10%
<b>Fire Age</b>	>10years
<b>Vegetation Condition</b>	Very Good-Excellent
<b>Disturbances/Impacts</b>	na



Name	Height (m)	Cover (%)
<i>Banksia menziesii</i>	5.5	40
<i>Banksia attenuata</i>	5.5	8
<i>Banksia sessilis</i>	4	3
<i>Allocasuarina humilis</i>	2	30
<i>Hibbertia hypericoides</i>	0.8	50
<i>Mesomelaena pseudostygia</i>	0.5	15
<i>Acacia stenoptera</i>	+	
<i>Alexgeorgea nitens</i>	+	
<i>Anigozanthos humilis</i>	+	
<i>Astroloma macrocalyx</i>	+	
<i>Bossiaea eriocarpa</i>	+	
<i>Calytrix angulata</i>	+	
<i>Caustis dioica</i>	+	
<i>Conostylis teretifolia</i> subsp. <i>teretifolia</i>	+	
<i>Corynotheca micrantha</i>	+	
<i>Cryptandra arbutiflora</i>	+	
<i>Drosera erythrogyne</i>	+	
<i>Drosera erythrorhiza</i>	+	
<i>Drosera macrantha</i>	+	
<i>Drosera spilos</i>	+	
* <i>Gladiolus caryophyllaceus</i>	+	
* <i>Hypochaeris glabra</i>	+	
<i>Isotropis cuneifolia</i> subsp. <i>cuneifolia</i> .	+	
<i>Laxmannia grandiflora</i> subsp. <i>grandiflora</i>	+	
<i>Laxmannia squarrosa</i>	+	
<i>Leucopogon squarrosus</i> subsp. <i>Trigynus</i> (P2)	+	
<i>Lyginia imberbis</i>	+	
<i>Neurachne alopecuroidea</i>	+	
Orchidaceae sp.	+	
<i>Podotheca gnaphalioides</i>	+	
<i>Schoenus armeria</i>	+	
<i>Scholtzia involucrata</i>	+	
<i>Stylidium albolilacinum</i>	+	
<i>Stylidium sacculatum</i>	+	
<i>Synaphea spinulosa</i> subsp. <i>spinulosa</i>	+	
<i>Verticordia rutilastra</i> (P3)	+	
<i>Adenanthos cygnorum</i>	ASS	
<i>Conospermum stoechadis</i>	ASS	
<i>Hakea costata</i>	ASS	
<i>Nuytsia floribunda</i>	ASS	

## Site BW08

<b>Date</b>	04/09/2018
<b>Botanist</b>	Kellie Bauer-Simpson and Lisa Chappell
<b>Quadrat Size</b>	10 x 10 m
<b>NW Corner Coordinates</b>	408753mE 6543386mN
<b>Vegetation Unit</b>	EtBeAn - <i>Eucalyptus todtiana</i> , <i>Banksia attenuata</i> and <i>Banksia menziesii</i> low sparse woodland over <i>Bossiaea eriocarpa</i> , <i>Hibbertia hypericoides</i> and <i>Petrophile linearis</i> low isolated shrubs over <i>Alexgeorgea nitens</i> , <i>Lyginia imberbis</i> and <i>Mesomelaena pseudostygia</i> sparse sedgeland
<b>Slope</b>	gentle
<b>Landform</b>	upper slope
<b>Soil Colour</b>	white
<b>Soil Type</b>	sand
<b>Litter</b>	4%
<b>Bare Ground</b>	20%
<b>Fire Age</b>	>10years
<b>Vegetation Condition</b>	Very Good
<b>Disturbances/Impacts</b>	possible dieback



Name	Height (m)	Cover (%)
<i>Banksia menziesii</i>	5.5	20
<i>Adenanthos cygnorum</i>	3.5	25
<i>Allocasuarina humilis</i>	2	8
<i>Hibbertia hypericoides</i>	0.8	20
<i>Stirlingia latifolia</i>	0.8	3
<i>Mesomelaena pseudostygia</i>	0.4	15
<i>Acacia stenoptera</i>	+	
<i>Alexgeorgea nitens</i>	+	
<i>Amphipogon turbinatus</i>	+	
<i>Anigozanthos humilis</i>	+	
<i>Beaufortia elegans</i>	+	
<i>Boronia ramosa</i>	+	
<i>Bossiaea eriocarpa</i>	+	
<i>Caesia micrantha</i>	+	
<i>Caustis dioica</i>	+	
<i>Conospermum stoechadis</i>	+	
<i>Conostylis setigera</i>	+	
<i>Cryptandra arbutiflora</i>	+	
<i>Dielsia stenostachya</i>	+	
<i>Drosera erythrogyne</i>	+	
<i>Drosera macrantha</i>	+	
<i>Gastrolobium oxylabioides</i>	+	
* <i>Gladiolus cardinalis</i>	+	
Haemodoraceae sp.	+	
<i>Hibbertia acerosa</i>	+	
<i>Laxmannia grandiflora</i> subsp. <i>grandiflora</i>	+	
<i>Laxmannia squarrosa</i>	+	
<i>Leucopogon squarrosus</i> subsp. <i>trigynus</i> (P2)	+	
<i>Lomandra ?hermaphrodita</i>	+	
<i>Lomandra hermaphrodita</i>	+	
<i>Lysinema ciliatum</i>	+	
<i>Neurachne alopecuroidea</i>	+	
<i>Opercularia vaginata</i>	+	
<i>Pimelea</i> sp.	+	
<i>Pimelea suaveolens</i> subsp. <i>suaveolens</i>	+	
<i>Pterostylis recurva</i>	+	
<i>Schoenus clandestinus</i>	+	
<i>Sowerbaea laxiflora</i>	+	
<i>Stylidium sacculatum</i>	+	
<i>Schoenus armeria</i>	ASS	
<i>Synaphea spinulosa</i>	ASS	

Name	Height (m)	Cover (%)
<i>Verticordia rutilastra</i> (P3)	ASS	
<i>Xanthosia huegelii</i>	ASS	

## Site BW09

<b>Date</b>	04/09/2018
<b>Botanist</b>	Kellie Bauer-Simpson and Lisa Chappell
<b>Quadrat Size</b>	10 x 10 m
<b>NW Corner Coordinates</b>	408575mE 6542174mN
<b>Vegetation Unit</b>	EtBeAn - <i>Eucalyptus todtiana</i> , <i>Banksia attenuata</i> and <i>Banksia menziesii</i> low sparse woodland over <i>Bossiaea eriocarpa</i> , <i>Hibbertia hypericoides</i> and <i>Petrophile linearis</i> low isolated shrubs over <i>Alexgeorgea nitens</i> , <i>Lyginia imberbis</i> and <i>Mesomelaena pseudostygia</i> sparse sedgeland
<b>Slope</b>	flat
<b>Landform</b>	mid slope
<b>Soil Colour</b>	white
<b>Soil Type</b>	sand
<b>Litter</b>	20%
<b>Bare Ground</b>	40%
<b>Fire Age</b>	>10years
<b>Vegetation Condition</b>	Very Good
<b>Disturbances/Impacts</b>	adjacent to track





Name	Height (m)	Cover (%)
<i>Banksia menziesii</i>	4	14
<i>Banksia attenuata</i>	3.5	8
<i>Calytrix fraseri</i>	2	15
<i>Allocasuarina humilis</i>	1.8	20
<i>Alexgeorgea nitens</i>	0.1	2
<i>Anigozanthos humilis</i>	+	
<i>Bossiaea eriocarpa</i>	+	
<i>Caladenia flava</i>	+	
<i>Calytrix angulata</i>	+	
<i>Conospermum stoechadis</i>	+	
<i>Conostylis setigera</i>	+	
<i>Daucus glochidiatus</i>	+	
<i>Drosera erythrorhiza</i>	+	
<i>Drosera macrantha</i>	+	
<i>Drosera spilos</i>	+	
<i>Gompholobium tomentosum</i>	+	
<i>Haemodorum</i> sp.	+	
<i>Hibbertia acerosa</i>	+	
<i>Hibbertia subvaginata</i>	+	
* <i>Hypochaeris glabra</i>	+	
<i>Johnsonia pubescens</i> subsp. <i>pubescens</i>	+	
<i>Leucopogon conostephioides</i>	+	
<i>Leucopogon squarrosus</i> subsp. <i>trigynus</i> (P2)	+	
<i>Mesomelaena pseudostygia</i>	+	
Montiaceae sp.	+	
<i>Nuytsia floribunda</i>	+	
<i>Petrophile linearis</i>	+	
<i>Podotrochea gnaphalioides</i>	+	
<i>Poranthera ericoides</i>	+	
<i>Regelia ciliata</i>	+	
<i>Schoenus armeria</i>	+	
<i>Schoenus clandestinus</i>	+	
<i>Schoenus curvifolius</i>	+	
<i>Stirlingia latifolia</i>	+	
<i>Stylidium ciliatum</i>	+	
<i>Stylidium diuroides</i> subsp. <i>diuroides</i>	+	
<i>Stylidium</i> sp.	+	
* <i>Ursinia anthemoides</i>	+	
<i>Waitzia suaveolens</i> var. <i>suaveolens</i>	+	
<i>Xanthorrhoea preissii</i>	+	
<i>Xanthosia huegelii</i>	+	

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Name	Height (m)	Cover (%)
<i>Arctotheca calendula</i>	ASS	

## Site BW10

<b>Date</b>	04/09/2018
<b>Botanist</b>	Kellie Bauer-Simpson and Lisa Chappell
<b>Quadrat Size</b>	10 x 10 m
<b>NW Corner Coordinates</b>	408856mE 6539127mN
<b>Vegetation Unit</b>	EtEpAn - <i>Eucalyptus todtiana</i> and <i>Banksia</i> spp. low sparse woodland over <i>Adenanthos cygnorum</i> tall sparse shrubland over <i>Eremaea pauciflora</i> and <i>Stirlingia latifolia</i> mid sparse to isolated shrubland over <i>Bossiaea eriocarpa</i> and <i>Conostephium pendulum</i> low isolated shrubs over <i>Austrostipa hemipogon</i> and * <i>Briza maxima</i> grasses and <i>Alexgeorgea nitens</i> sedges
<b>Slope</b>	flat
<b>Landform</b>	flat
<b>Soil Colour</b>	white
<b>Soil Type</b>	sand
<b>Litter</b>	2%
<b>Bare Ground</b>	90%
<b>Fire Age</b>	>10years
<b>Vegetation Condition</b>	Very Good - Excellent
<b>Disturbances/Impacts</b>	possible dieback



Name	Height (m)	Cover (%)
<i>Banksia attenuata</i>	5	35
<i>Eucalyptus todtiana</i>	5	8
<i>Xanthorrhoea preissii</i>	1.5	20
<i>Alexgeorgea nitens</i>	0.1	80
<i>Beaufortia elegans</i>	+	
<i>Bossiaea eriocarpa</i>	+	
* <i>Briza maxima</i>	+	
<i>Caladenia flava</i>	+	
<i>Calytrix fraseri</i>	+	
<i>Conostephium pendulum</i>	+	
<i>Conostylis teretifolia</i> subsp. <i>teretifolia</i>	+	
<i>Daucus glochidiatus</i>	+	
<i>Drosera erythrorhiza</i>	+	
* <i>Gladiolus caryophyllaceus</i>	+	
<i>Gompholobium tomentosum</i>	+	
<i>Hibbertia</i> sp.	+	
* <i>Hypochoeris glabra</i>	+	
<i>Lepidosperma tenue</i>	+	
<i>Lomandra ?hermaphrodita</i>	+	
<i>Lomandra hermaphrodita</i>	+	
<i>Lyginia barbata</i>	+	
Monocot sp.	+	
<i>Neurachne alopecuroidea</i>	+	
Orchidaceae sp.	+	
<i>Petrophile linearis</i>	+	
<i>Pterostylis recurva</i>	+	
<i>Pterostylis vittata</i>	+	
<i>Stylidium sacculatum</i>	+	
* <i>Ursinia anthemoides</i>	+	
<i>Waitzia suaveolens</i> var. <i>suaveolens</i>	+	

## Site BW11

<b>Date</b>	04/09/2018
<b>Botanist</b>	Kellie Bauer-Simpson and Lisa Chappell
<b>Quadrat Size</b>	10 x 10 m
<b>NW Corner Coordinates</b>	409040mE 6538392mN
<b>Vegetation Unit</b>	EtEpAn - <i>Eucalyptus todtiana</i> and <i>Banksia</i> spp. low sparse woodland over <i>Adenanthos cygnorum</i> tall sparse shrubland over <i>Eremaea pauciflora</i> and <i>Stirlingia latifolia</i> mid sparse to isolated shrubland over <i>Bossiaea eriocarpa</i> and <i>Conostephium pendulum</i> low isolated shrubs over <i>Austrostipa hemipogon</i> and * <i>Briza maxima</i> grasses and <i>Alexgeorgea nitens</i> sedges
<b>Slope</b>	flat
<b>Landform</b>	flat
<b>Soil Colour</b>	white
<b>Soil Type</b>	sand
<b>Litter</b>	7%
<b>Bare Ground</b>	40%
<b>Fire Age</b>	>10years
<b>Vegetation Condition</b>	Very Good - Excellent
<b>Disturbances/Impacts</b>	na



Name	Height (m)	Cover (%)
<i>Banksia attenuata</i>	10	40
<i>Xanthorrhoea preissii</i>	1.4	3
<i>Alexgeorgea nitens</i>	0.8	60
<i>Acacia applanata</i>	+	
<i>Acacia stenoptera</i>	+	
<i>Bossiaea eriocarpa</i>	+	
<i>Caladenia flava</i>	+	
<i>Conospermum ephedroides</i>	+	
<i>Conostephium pendulum</i>	+	
<i>Conostylis setigera</i>	+	
<i>Dampiera linearis</i>	+	
<i>Daviesia triflora</i>	+	
<i>Drosera spilos</i>	+	
<i>Eremaea pauciflora</i>	+	
<i>Gastrolobium oxylobioides</i>	+	
* <i>Gladiolus caryophyllaceus</i>	+	
Haemodoraceae sp.	+	
<i>Hibbertia acerosa</i>	+	
<i>Hibbertia hypericoides</i>	+	
<i>Jacksonia floribunda</i>	+	
<i>Kunzea micrantha</i>	+	
<i>Lepidosperma tenue</i>	+	
<i>Lomandra hermaphrodita</i>	+	
<i>Lomandra spartea</i>	+	
<i>Lyginia barbata</i>	+	
<i>Melaleuca lateritia</i>	+	
<i>Neurachne alopecuroidea</i>	+	
<i>Petrophile linearis</i>	+	
<i>Schoenus curvifolius</i>	+	
<i>Stirlingia latifolia</i>	+	
<i>Stylidium ciliatum</i>	+	
<i>Stylidium sacculatum</i>	+	
<i>Synaphea spinulosa</i>	+	
<i>Banksia ilicifolia</i>	ASS	
<i>Eucalyptus todtiana</i>	ASS	
<i>Isotropis cuneifolia</i> subsp. <i>cuneifolia</i>	ASS	
<i>Stylidium sacculatum</i>	ASS	

## Site BW12

<b>Date</b>	04/09/2018
<b>Botanist</b>	Kellie Bauer-Simpson and Lisa Chappell
<b>Quadrat Size</b>	10 x 10 m
<b>NW Corner Coordinates</b>	409344mE 6538385mN
<b>Vegetation Unit</b>	EtEpAn - <i>Eucalyptus todtiana</i> and <i>Banksia</i> spp. low sparse woodland over <i>Adenanthos cygnorum</i> tall sparse shrubland over <i>Eremaea pauciflora</i> and <i>Stirlingia latifolia</i> mid sparse to isolated shrubland over <i>Bossiaea eriocarpa</i> and <i>Conostephium pendulum</i> low isolated shrubs over <i>Austrostipa hemipogon</i> and * <i>Briza maxima</i> grasses and <i>Alexgeorgea nitens</i> sedges
<b>Slope</b>	flat
<b>Landform</b>	flat
<b>Soil Colour</b>	white
<b>Soil Type</b>	sand
<b>Litter</b>	3%
<b>Bare Ground</b>	2%
<b>Fire Age</b>	>10years
<b>Vegetation Condition</b>	Very Good - Excellent
<b>Disturbances/Impacts</b>	na



Name	Height (m)	Cover (%)
<i>Banksia attenuata</i>	6	20
<i>Eremaea pauciflora</i>	1.2	20
<i>Alexgeorgea nitens</i>	0.1	80
* <i>Ursinia anthemoides</i>	0.06	20
<i>Bossiaea eriocarpa</i>	+	
* <i>Briza maxima</i>	+	
<i>Caladenia flava</i>	+	
<i>Conostephium pendulum</i>	+	
<i>Crassula decumbens</i>	+	
<i>Drosera spilos</i>	+	
* <i>Gladiolus caryophyllaceus</i>	+	
* <i>Hypochaeris glabra</i>	+	
<i>Jacksonia floribunda</i>	+	
<i>Kunzea micrantha</i>	+	
<i>Lechenaultia biloba</i>	+	
Montiaceae sp.	+	
<i>Neurachne alopecuroidea</i>	+	
Poaceae sp.	+	
<i>Podotheca gnaphalioides</i>	+	
<i>Synaphea spinulosa</i>	+	
<i>Banksia ilicifolia</i>	ASS	
<i>Eucalyptus todtiana</i>	ASS	
<i>Stirlingia latifolia</i>	ASS	
<i>Xanthorrhoea preissii</i>	ASS	



## Site BW13

<b>Date</b>	04/09/2018
<b>Botanist</b>	Kellie Bauer-Simpson and Lisa Chappell
<b>Quadrat Size</b>	10 x 10 m
<b>NW Corner Coordinates</b>	408936mE 6524741mN
<b>Vegetation Unit</b>	BaXpAn - <i>Banksia attenuata</i> , <i>Banksia menziesii</i> and <i>Eucalyptus todtiana</i> Low sparse woodland over <i>Xanthorrhoea preissii</i> mid isolated to sparse shrubs over <i>Bossiaea eriocarpa</i> , <i>Gompholobium tomentosum</i> and <i>Petrophile linearis</i> low isolated shrubs over <i>Alexgeorgea nitens</i> and <i>Lyginia imberbis</i> sparse sedgeland
<b>Slope</b>	moderate
<b>Landform</b>	mid slope
<b>Soil Colour</b>	white
<b>Soil Type</b>	sand
<b>Litter</b>	15%
<b>Bare Ground</b>	10%
<b>Fire Age</b>	5--10 years
<b>Vegetation Condition</b>	Very Good - Excellent
<b>Disturbances/Impacts</b>	na



Name	Height (m)	Cover (%)
<i>Banksia attenuata</i>	6.5	20
<i>Xanthorrhoea preissii</i>	1.5	15
<i>Hibbertia hypericoides</i>	0.8	30
<i>Lyginia imberbis</i>	0.15	20
<i>Acacia pulchella</i>	+	
<i>Alexeorgea nitens</i>	+	
<i>Anigozanthos humilis</i>	+	
<i>Banksia sphaerocarpa</i> var. <i>sphaerocarpa</i>	+	
<i>Bossiaea eriocarpa</i>	+	
* <i>Briza maxima</i>	+	
<i>Caesia micrantha</i>	+	
<i>Calytrix</i> sp.	+	
<i>Calytrix variabilis</i>	+	
<i>Cassytha racemosa</i>	+	
<i>Chordifex sinuosus</i>	+	
<i>Conostephium pendulum</i>	+	
<i>Conostylis aurea</i>	+	
<i>Dampiera linearis</i>	+	
<i>Daucus glochidiatus</i>	+	
<i>Daviesia triflora</i>	+	
<i>Drosera erythrorhiza</i>	+	
<i>Drosera micrantha</i>	+	
<i>Gastrolobium calycinum</i>	+	
* <i>Gladiolus caryophyllaceus</i>	+	
<i>Hibbertia acerosa</i>	+	
* <i>Hypochaeris glabra</i>	+	
<i>Hypolaena exsulca</i>	+	
<i>Jacksonia floribunda</i>	+	
<i>Johnsonia pubescens</i> subsp. <i>pubescens</i>	+	
<i>Leucopogon squarrosus</i> subsp. <i>trigynus</i> (P2)	+	
<i>Lomandra hermaphrodita</i>	+	
<i>Lomandra</i> sp.	+	
<i>Melaleuca trichophylla</i>	+	
Orchidaceae sp.	+	
<i>Petrophile linearis</i>	+	
<i>Philothea spicata</i>	+	
<i>Podotheca gnaphalioides</i>	+	
<i>Schoenus curvifolius</i>	+	
<i>Stirlingia latifolia</i>	+	
<i>Stylidium amoenum</i>	+	
<i>Synaphea spinulosa</i>	+	

Name	Height (m)	Cover (%)
<i>Tricoryne elatior</i>	+	
<i>*Ursinia anthemoides</i>	+	
<i>Waitzia suaveolens var. suaveolens</i>	+	
<i>Xanthorrhoea gracilis</i>	+	
<i>Eucalyptus marginata</i>	ASS	

## Site BW14

<b>Date</b>	05/09/2018
<b>Botanist</b>	Kellie Bauer-Simpson and Lisa Chappell
<b>Quadrat Size</b>	10 x 10 m
<b>NW Corner Coordinates</b>	409013mE 6527083mN
<b>Vegetation Unit</b>	BaXpAn - <i>Banksia attenuata</i> , <i>Banksia menziesii</i> and <i>Eucalyptus todtiana</i> low sparse woodland over <i>Xanthorrhoea preissii</i> mid isolated to sparse shrubs over <i>Bossiaea eriocarpa</i> , <i>Gompholobium tomentosum</i> and <i>Petrophile linearis</i> low isolated shrubs over <i>Alexgeorgea nitens</i> and <i>Lyginia imberbis</i> sparse sedgeland
<b>Slope</b>	moderate
<b>Landform</b>	mid slope
<b>Soil Colour</b>	white
<b>Soil Type</b>	sand
<b>Litter</b>	8%
<b>Bare Ground</b>	40%
<b>Fire Age</b>	5--10 years
<b>Vegetation Condition</b>	Very Good
<b>Disturbances/Impacts</b>	possible dieback



Name	Height (m)	Cover (%)
<i>Banksia attenuata</i>	5	20
<i>Eucalyptus todtiana</i>	OH	5
<i>Eremaea pauciflora</i>	0.7	30
<i>Hibbertia hypericoides</i>	0.4	1
<i>Acacia pulchella</i>	+	
<i>Alexgeorgea nitens</i>	+	
<i>Anigozanthos humilis</i>	+	
Asteraceae sp.	+	
<i>Bossiaea eriocarpa</i>	+	
* <i>Briza maxima</i>	+	
<i>Caesia micrantha</i>	+	
<i>Caladenia flava</i>	+	
<i>Calytrix angulata</i>	+	
<i>Calytrix flavescens</i>	+	
<i>Calytrix variabilis</i>	+	
<i>Cassytha racemosa</i>	+	
<i>Conospermum crassinervium</i>	+	
<i>Conospermum</i> sp.	+	
<i>Conostephium ?magnum</i> (P4)	+	
<i>Conostephium pendulum</i>	+	
<i>Conostylis setigera</i>	+	
<i>Daucus glochidiatus</i>	+	
<i>Dielsia stenostachya</i>	+	
<i>Drosera erythrorhiza</i>	+	
* <i>Ehrharta longiflora</i>	+	
<i>Eremaea pauciflora</i>	+	
* <i>Gladiolus caryophyllaceus</i>	+	
<i>Gompholobium tomentosum</i>	+	
<i>Hibbertia hypericoides</i>	+	
<i>Hibbertia subvaginata</i>	+	
<i>Hovea trisperma</i>	+	
<i>Hypocalymma xanthopetalum</i>	+	
* <i>Hypochoeris glabra</i>	+	
<i>Hypolaena exsulca</i>	+	
<i>Johnsonia pubescens</i> subsp. <i>pubescens</i>	+	
<i>Kunzea micrantha</i>	+	
<i>Lepidosperma tenue</i>	+	
<i>Leucopogon squarrosus</i> subsp. <i>squarrosus</i>	+	
<i>Leucopogon squarrosus</i> subsp. <i>trigynus</i> (P2)	+	
<i>Lomandra hermaphrodita</i>	+	
<i>Lomandra</i> sp.	+	

Name	Height (m)	Cover (%)
<i>Lyginia imberbis</i>	+	
Orchidaceae sp.	+	
<i>Petrophile linearis</i>	+	
<i>Philothea spicata</i>	+	
<i>Podotheca gnaphalioides</i>	+	
<i>Schoenus clandestinus</i>	+	
<i>Scholtzia involucrata</i>	+	
<i>Stylidium amoenum</i>	+	
<i>Stylidium ciliatum</i>	+	
<i>Stylidium hispidum</i>	+	
<i>Stylidium sacculatum</i>	+	
<i>Thysanotus manglesianus</i>	+	
* <i>Ursinia anthemoides</i>	+	
<i>Banksia menziesii</i>	ASS	

## Site BW15

<b>Date</b>	05/09/2018
<b>Botanist</b>	Kellie Bauer-Simpson and Lisa Chappell
<b>Quadrat Size</b>	10 x 10 m
<b>NW Corner Coordinates</b>	408998mE 6526935mN
<b>Vegetation Unit</b>	BaXpAn - <i>Banksia attenuata</i> , <i>Banksia menziesii</i> and <i>Eucalyptus tottiana</i> low sparse woodland over <i>Xanthorrhoea preissii</i> mid isolated to sparse shrubs over <i>Bossiaea eriocarpa</i> , <i>Gompholobium tomentosum</i> and <i>Petrophile linearis</i> low isolated shrubs over <i>Alexgeorgea nitens</i> and <i>Lyginia imberbis</i> sparse sedgeland
<b>Slope</b>	flat
<b>Landform</b>	lower slope
<b>Soil Colour</b>	white
<b>Soil Type</b>	sand
<b>Litter</b>	8%
<b>Bare Ground</b>	20%
<b>Fire Age</b>	5--10 years
<b>Vegetation Condition</b>	Very Good - Excellent
<b>Disturbances/Impacts</b>	possible dieback



Name	Height (m)	Cover (%)
<i>Banksia attenuata</i>	5.5	25
<i>Xanthorrhoea preissii</i>	1.5	25
<i>Hibbertia hypericoides</i>	0.7	4
<i>Leucopogon squarrosus</i> subsp. <i>squarrosus</i>	0.7	1
<i>Anigozanthos humilis</i>	+	
* <i>Briza maxima</i>	+	
<i>Caesia micrantha</i>	+	
<i>Caladenia flava</i>	+	
<i>Calytrix flavescens</i>	+	
<i>Calytrix variabilis</i>	+	
<i>Cassytha racemosa</i>	+	
<i>Chamaescilla corymbosa</i>	+	
<i>Conospermum stoechadis</i>	+	
<i>Conostylis setigera</i>	+	
<i>Dampiera linearis</i>	+	
<i>Daucus glochidiatus</i>	+	
<i>Daviesia triflora</i>	+	
<i>Drosera erythrorhiza</i>	+	
<i>Drosera micrantha</i>	+	
<i>Drosera spilos</i>	+	
* <i>Gladiolus caryophyllaceus</i>	+	
<i>Gompholobium knightianum</i>	+	
<i>Haemodorum</i> sp.	+	
<i>Hibbertia acerosa</i>	+	
<i>Hibbertia subvaginata</i>	+	
* <i>Hypochaeris glabra</i>	+	
<i>Hypolaena exsulca</i>	+	
* <i>Isolepis marginata</i>	+	
<i>Jacksonia floribunda</i>	+	
<i>Lagenifera huegelii</i>	+	
<i>Lomandra ?hermaphrodita</i>	+	
<i>Lomandra hermaphrodita</i>	+	
<i>Lomandra spartea</i>	+	
<i>Lyginia imberbis</i>	+	
<i>Mesomelaena pseudostygia</i>	+	
Orchidaceae sp.	+	
<i>Petrophile linearis</i>	+	
<i>Philothea spicata</i>	+	
Poaceae sp.	+	
<i>Schoenus clandestinus</i>	+	
<i>Sowerbaea laxiflora</i>	+	



Name	Height (m)	Cover (%)
<i>Stirlingia latifolia</i>	+	
<i>Stylidium amoenum</i>	+	
<i>Stylidium ciliatum</i>	+	
<i>Stylidium sacculatum</i>	+	
<i>Tetrarrhena laevis</i>	+	
* <i>Ursinia anthemoides</i>	+	
<i>Waitzia suaveolens</i> var. <i>suaveolens</i>	+	
<i>Xanthosia huegelii</i>	+	
<i>Eucalyptus marginata</i>	ASS	
<i>Synaphea spinulosa</i>	ASS	

## Site BW16

<b>Date</b>	24/09/2018
<b>Botanist</b>	Kellie Bauer-Simpson and Lisa Chappell
<b>Quadrat Size</b>	10 x 10 m
<b>NW Corner Coordinates</b>	408344mE 6534670mN
<b>Vegetation Unit</b>	BaXpAn - <i>Banksia attenuata</i> , <i>Banksia menziesii</i> and <i>Eucalyptus todtiana</i> low sparse woodland over <i>Xanthorrhoea preissii</i> mid isolated to sparse shrubs over <i>Bossiaea eriocarpa</i> , <i>Gompholobium tomentosum</i> and <i>Petrophile linearis</i> low isolated shrubs over <i>Alexgeorgea nitens</i> and <i>Lyginia imberbis</i> sparse sedgeland
<b>Slope</b>	moderate
<b>Landform</b>	mid slope
<b>Soil Colour</b>	pale grey
<b>Soil Type</b>	sand
<b>Litter</b>	5%
<b>Bare Ground</b>	40%
<b>Fire Age</b>	5--10 years
<b>Vegetation Condition</b>	Very Good
<b>Disturbances/Impacts</b>	possible dieback



Name	Height (m)	Cover (%)
<i>Corymbia calophylla</i>	7	8
<i>Eucalyptus todtiana</i>	5	6
<i>Banksia attenuata</i>	5	4
<i>Calytrix fraseri</i>	2	20
<i>Xanthorrhoea preissii</i>	1.5	5
<i>Mesomelaena pseudostygia</i>	1	2
<i>Hibbertia hypericoides</i>	0.5	3
<i>Acacia stenoptera</i>	+	
<i>Allocasuarina humilis</i>	+	
<i>Anigozanthos manglesii</i>	+	
<i>Banksia dallanneyi</i>	+	
<i>Bossiaea eriocarpa</i>	+	
* <i>Briza maxima</i>	+	
<i>Calytrix angulata</i>	+	
<i>Caustis dioica</i>	+	
<i>Centrolepis mutica</i>	+	
<i>Conostephium pendulum</i>	+	
<i>Conostylis aculeata</i>	+	
<i>Conostylis setigera</i>	+	
<i>Crassula colorata</i>	+	
<i>Drosera erythrorhiza</i>	+	
<i>Drosera micrantha</i>	+	
<i>Gompholobium tomentosum</i>	+	
<i>Halgania corymbosa</i> (P3)	+	
<i>Hibbertia acerosa</i>	+	
<i>Hibbertia huegelii</i>	+	
<i>Hovea trisperma</i>	+	
* <i>Hypochaeris glabra</i>	+	
<i>Hypolaena exsulca</i>	+	
* <i>Lagurus ovatus</i>	+	
<i>Leucopogon squarrosus</i> subsp. <i>squarrosus</i>	+	
<i>Lomandra hermaphrodita</i>	+	
<i>Lomandra preissii</i>	+	
<i>Loxocarya cinerea</i>	+	
<i>Lyginia imberbis</i>	+	
<i>Melaleuca trichophylla</i>	+	
* <i>Pentameris airoides</i>	+	
<i>Petrophile linearis</i>	+	
<i>Pterostylis</i> sp.	+	
<i>Pyrorchis nigricans</i>	+	
<i>Scholtzia involucrata</i>	+	

Name	Height (m)	Cover (%)
<i>Sowerbaea laxiflora</i>	+	
<i>Stirlingia latifolia</i>	+	
<i>Stylidium amoenum</i>	+	
<i>Stylidium diuroides</i> subsp. <i>diuroides</i>	+	
<i>Stylidium piliferum</i>	+	
<i>Synaphea spinulosa</i>	+	
<i>Tetraria octandra</i>	+	
<i>Thysanotus manglesianus</i>	+	
<i>Trachymene pilbarensis</i>	+	
* <i>Ursinia anthemoides</i>	+	
<i>Waitzia suaveolens</i> var. <i>suaveolens</i>	+	

## Site BW17

<b>Date</b>	24/09/2018
<b>Botanist</b>	Kellie Bauer-Simpson and Lisa Chappell
<b>Quadrat Size</b>	10 x 10 m
<b>NW Corner Coordinates</b>	408526mE 6534809mN
<b>Vegetation Unit</b>	BaXpAn - <i>Banksia attenuata</i> , <i>Banksia menziesii</i> and <i>Eucalyptus todtiana</i> low sparse woodland over <i>Xanthorrhoea preissii</i> mid isolated to sparse shrubs over <i>Bossiaea eriocarpa</i> , <i>Gompholobium tomentosum</i> and <i>Petrophile linearis</i> low isolated shrubs over <i>Alexgeorgea nitens</i> and <i>Lyginia imberbis</i> sparse sedgeland
<b>Slope</b>	moderate
<b>Landform</b>	upper slope
<b>Soil Colour</b>	pale grey
<b>Soil Type</b>	sand
<b>Litter</b>	5%
<b>Bare Ground</b>	15%
<b>Fire Age</b>	3-5 years
<b>Vegetation Condition</b>	Very Good-Excellent
<b>Disturbances/Impacts</b>	some weeds



Name	Height (m)	Cover (%)
<i>Eucalyptus todtiana</i>	7	15
<i>Banksia attenuata</i>	3	10
<i>Conospermum stoechadis</i> subsp. <i>sclerophyllum</i>	1.5	8
<i>Stirlingia latifolia</i>	1	2
<i>Macarthuria australis</i>	0.8	5
<i>Bossiaea eriocarpa</i>	0.5	3
<i>Caustis dioica</i>	0.3	2
<i>Alexgeorgea nitens</i>	+	
<i>Anigozanthos humilis</i>	+	
<i>Austrostipa nitida</i>	+	
<i>Borya sphaerocephala</i>	+	
* <i>Briza maxima</i>	+	
<i>Burchardia congesta</i>	+	
<i>Calytrix flavescens</i>	+	
<i>Centrolepis mutica</i>	+	
<i>Conostylis aculeata</i>	+	
<i>Crassula colorata</i>	+	
* <i>Cyperus tenellus</i>	+	
<i>Dampiera lindleyi</i>	+	
<i>Drosera macrantha</i>	+	
* <i>Gladiolus caryophyllaceus</i>	+	
<i>Gompholobium tomentosum</i>	+	
<i>Haemodorum laxum</i>	+	
<i>Halgania corymbosa</i> (P3)	+	
<i>Hibbertia hypericoides</i>	+	
* <i>Hypochaeris glabra</i>	+	
<i>Hypolaena exsulca</i>	+	
<i>Jacksonia floribunda</i>	+	
<i>Jacksonia sternbergiana</i>	+	
<i>Johnsonia pubescens</i>	+	
<i>Loxocarya cinerea</i>	+	
<i>Lyginia imberbis</i>	+	
<i>Neurachne alopecuroidea</i>	+	
<i>Petrophile linearis</i>	+	
<i>Podotheca gnaphalioides</i>	+	
<i>Scaevola repens</i> de Vriese	+	
<i>Thysanotus dichotomus</i>	+	
<i>Trachymene pilosa</i>	+	
* <i>Ursinia anthemoides</i>	+	
<i>Waitzia suaveolens</i> var. <i>suaveolens</i>	+	

## Site BW18

<b>Date</b>	24/09/2018
<b>Botanist</b>	Kellie Bauer-Simpson and Lisa Chappell
<b>Quadrat Size</b>	10 x 10 m
<b>NW Corner Coordinates</b>	409099mE 6534394mN
<b>Vegetation Unit</b>	EtBeAn - <i>Eucalyptus todtiana</i> , <i>Banksia attenuata</i> and <i>Banksia menziesii</i> low sparse woodland over <i>Bossiaea eriocarpa</i> , <i>Hibbertia hypericoides</i> and <i>Petrophile linearis</i> low isolated shrubs over <i>Alexgeorgea nitens</i> , <i>Lyginia imberbis</i> and <i>Mesomelaena pseudostygia</i> sparse sedgeland
<b>Slope</b>	gentle
<b>Landform</b>	mid slope
<b>Soil Colour</b>	pale grey
<b>Soil Type</b>	sand
<b>Litter</b>	2%
<b>Bare Ground</b>	30%
<b>Fire Age</b>	5--10 years
<b>Vegetation Condition</b>	Very Good
<b>Disturbances/Impacts</b>	possible dieback



Name	Height (m)	Cover (%)
<i>Banksia menziesii</i>	10	5
<i>Eucalyptus tottiana</i>	10	3
<i>Banksia attenuata</i>	7	6
<i>Xanthorrhoea preissii</i>	1.2	4
<i>Eremaea pauciflora</i>	1	20
<i>Stirlingia latifolia</i>	1	4
<i>Mesomelaena pseudostygia</i>	0.4	2
<i>Calytrix flavescens</i>	0.3	2
<i>Acacia stenoptera</i>	+	
<i>Alexgeorgea nitens</i>	+	
<i>Amphipogon turbinatus</i>	+	
<i>Anigozanthos humilis</i>	+	
<i>Bossiaea eriocarpa</i>	+	
<i>Bossiaea ornata</i>	+	
<i>Burchardia congesta</i>	+	
<i>Caesia micrantha</i>	+	
<i>Calectasia cyanea</i>	+	
<i>Caustis dioica</i>	+	
<i>Conostephium pendulum</i>	+	
<i>Conostylis setigera</i>	+	
<i>Daviesia decurrens</i>	+	
<i>Drosera erythrorhiza</i>	+	
<i>Drosera macrantha</i>	+	
<i>Hibbertia ?spicata</i> subsp. <i>spicata</i>	+	
<i>Hibbertia acerosa</i>	+	
<i>Hibbertia hypericoides</i>	+	
<i>Hovea trisperma</i>	+	
<i>Hypolaena exsulca</i>	+	
<i>Lepidosperma squamatum</i>	+	
<i>Lepidosperma tenue</i>	+	
<i>Leptomeria empetrifomis</i>	+	
<i>Leucopogon squarrosus</i> subsp. <i>squarrosus</i>	+	
<i>Lomandra hermaphrodita</i>	+	
<i>Lomandra preissii</i>	+	
<i>Loxocarya cinerea</i>	+	
<i>Lyginia imberbis</i>	+	
<i>Melaleuca trichophylla</i>	+	
<i>Neurachne alopecuroidea</i>	+	
<i>Petrophile linearis</i>	+	
<i>Physopsis spicata</i>	+	
<i>Podotheca gnaphalioides</i>	+	



Name	Height (m)	Cover (%)
<i>Pyrorchis nigricans</i>	+	
<i>Stackhousia monogyna</i>	+	
<i>Stylidium diuroides</i> subsp. <i>diuroides</i>	+	
<i>Stylidium leptophyllum</i>	+	
<i>Stylidium piliferum</i>	+	
<i>Stylidium repens</i>	+	
<i>Synaphea spinulosa</i>	+	
<i>Tetralia octandra</i>	+	
<i>Trachymene pilosa</i>	+	
* <i>Ursinia anthemoides</i>	+	
<i>Xanthosia huegelii</i>	+	

## Site BWC01

<b>Date</b>	22/11/2018
<b>Botanist</b>	Kellie Bauer-Simpson and Lisa Chappell
<b>Quadrat Size</b>	10 x 10 m
<b>NW Corner Coordinates</b>	407837mE 6536212mN
<b>Vegetation Unit</b>	BaXpUa - <i>Banksia attenuata</i> low sparse woodland (with occasional <i>Banksia menziesii</i> ) over <i>Xanthorrhoea preissii</i> mid isolated shrubs over <i>Bossiaea eriocarpa</i> , <i>Hibbertia hypericoides</i> and <i>Petrophile linearis</i> low isolated shrubs over * <i>Ursinia anthemoides</i> , <i>Conostylis aculeata</i> and <i>Hypochaeris glabra</i> isolated herbs
<b>Slope</b>	moderate
<b>Landform</b>	upper slope
<b>Soil Colour</b>	Very pale brown
<b>Soil Type</b>	Sand
<b>Litter</b>	6%
<b>Bare Ground</b>	45%
<b>Fire Age</b>	5-10 years
<b>Vegetation Condition</b>	Very Good - Excellent
<b>Disturbances/Impacts</b>	Few weeds, possible dieback



Name	Height (m)	Cover (%)
<i>Banksia attenuata</i>	4	15
<i>Eucalyptus todtiana</i>	3	3
<i>Eremaea pauciflora</i>	0.8	5
<i>Stirlingia latifolia</i>	0.8	2
<i>Hibbertia hypericoides</i>	0.6	10
<i>Mesomelaena pseudostygia</i>	0.5	2
<i>Loxocarya cinerea</i>	0.15	2
<i>Alexgeorgea nitens</i>	+	
<i>Allocasuarina humilis</i>	+	
<i>Anigozanthos manglesii</i>	+	
<i>Austrostipa elegantissima</i>	+	
<i>Banksia menziesii</i>	+	
<i>Bossiaea eriocarpa</i>	+	
* <i>Briza maxima</i>	+	
<i>Bromus arenarius</i>	+	
<i>Calytrix leschenaultii</i>	+	
<i>Conostephium minus</i>	+	
<i>Conostylis aculeata</i>	+	
<i>Corynotheca micrantha</i>	+	
<i>Cristonia biloba</i>	+	
<i>Drosera macrantha</i>	+	
* <i>Gladiolus caryophyllaceus</i>	+	
<i>Gompholobium tomentosum</i>	+	
<i>Haemodorum</i> sp.	+	
* <i>Hypochaeris glabra</i>	+	
<i>Laxmannia squarrosa</i>	+	
<i>Lepidobolus preissianus</i>	+	
<i>Lomandra hermaphrodita</i>	+	
<i>Melaleuca trichophylla</i>	+	
<i>Nemcia capitata</i>	+	
<i>Podotheca gnaphalioides</i>	+	
<i>Scaevola spinescens</i>	+	
<i>Stylidium amoenum</i>	+	
<i>Stylidium piliferum</i>	+	
* <i>Ursinia anthemoides</i>	+	
<i>Xanthorrhoea preissii</i>	+	
<i>Jacksonia floribunda</i>	ASS	
<i>Neurachne alopecuroidea</i>	ASS	
<i>Nuytsia floribunda</i>	ASS	
<i>Petrophile linearis</i>	ASS	
<i>Pimelea angustifolia</i>	ASS	

## Site BWC02

<b>Date</b>	22/11/2018
<b>Botanist</b>	Kellie Bauer-Simpson and Lisa Chappell
<b>Quadrat Size</b>	10 x 10 m
<b>NW Corner Coordinates</b>	408063mE 6536144mN
<b>Vegetation Unit</b>	EtBeAn - <i>Eucalyptus todtiana</i> , <i>Banksia attenuata</i> and <i>Banksia menziesii</i> low sparse woodland over <i>Bossiaea eriocarpa</i> , <i>Hibbertia hypericoides</i> and <i>Petrophile linearis</i> low isolated shrubs over <i>Alexgeorgea nitens</i> , <i>Lyginia imberbis</i> and <i>Mesomelaena pseudostygia</i> sparse sedgeland
<b>Slope</b>	gentle
<b>Landform</b>	upper slope
<b>Soil Colour</b>	Very pale brown
<b>Soil Type</b>	Sand
<b>Litter</b>	8%
<b>Bare Ground</b>	30%
<b>Fire Age</b>	>10years
<b>Vegetation Condition</b>	Ex-VG
<b>Disturbances/Impacts</b>	Few weeds, possible dieback



Name	Height (m)	Cover (%)
<i>Eucalyptus todtiana</i>	5	6
<i>Banksia attenuata</i>	4	8
<i>Eremaea pauciflora</i>	1.2	4
<i>Hibbertia hypericoides</i>	0.8	35
<i>Acacia pulchella</i>	+	
<i>Alexeorgea nitens</i>	+	
<i>Amphipogon turbinatus</i>	+	
<i>Bromus arenarius</i>	+	
<i>Calytrix flavescens</i>	+	
* <i>Gladiolus</i> sp.	+	
Haemodoraceae sp.	+	
* <i>Hypochaeris glabra</i>	+	
<i>Lepidobolus preissianus</i>	+	
<i>Mesomelaena pseudostygia</i>	+	
<i>Opercularia vaginata</i>	+	
<i>Podotheca gnaphalioides</i>	+	
<i>Scaevola spinescens</i>	+	
<i>Scholtzia involucreta</i>	+	
<i>Stirlingia latifolia</i>	+	
<i>Stylidium brunonianum</i>	+	
<i>Trachymene pilosa</i>	+	
* <i>Ursinia anthemoides</i>	+	
* <i>Wahlenbergia capensis</i>	+	
<i>Allocasuarina humilis</i>	ASS	
<i>Banksia menziesii</i>	ASS	
* <i>Briza maxima</i>	ASS	
<i>Burchardia congesta</i>	ASS	
<i>Lomandra hermaphrodita</i>	ASS	
<i>Nuytsia floribunda</i>	ASS	
<i>Petrophile linearis</i>	ASS	
<i>Pimelea angustifolia</i>	ASS	
<i>Xanthorrhoea preissii</i>	ASS	

## Site BWC03

<b>Date</b>	22/11/2018
<b>Botanist</b>	Kellie Bauer-Simpson and Lisa Chappell
<b>Quadrat Size</b>	10 x 10 m
<b>NW Corner Coordinates</b>	408573mE 6537712mN
<b>Vegetation Unit</b>	EtBeAn - <i>Eucalyptus todtiana</i> , <i>Banksia attenuata</i> and <i>Banksia menziesii</i> low sparse woodland over <i>Bossiaea eriocarpa</i> , <i>Hibbertia hypericoides</i> and <i>Petrophile linearis</i> low isolated shrubs over <i>Alexgeorgea nitens</i> , <i>Lyginia imberbis</i> and <i>Mesomelaena pseudostygia</i> sparse sedgeland
<b>Slope</b>	moderate
<b>Landform</b>	mid slope
<b>Soil Colour</b>	Brown
<b>Soil Type</b>	Loamy sand
<b>Litter</b>	20%
<b>Bare Ground</b>	15%
<b>Fire Age</b>	>10years
<b>Vegetation Condition</b>	Very Good - Excellent
<b>Disturbances/Impacts</b>	Few weeds, possible dieback



Name	Height (m)	Cover (%)
<i>Banksia attenuata</i>	5	6
<i>Banksia menziesii</i>	4	3
<i>Eucalyptus todtiana</i>	3	2
<i>Calytrix variabilis</i>	2	30
<i>Xanthorrhoea preissii</i>	1.5	3
<i>Eremaea pauciflora</i>	1.2	6
<i>Stirlingia latifolia</i>	1	3
<i>Mesomelaena pseudostygia</i>	0.4	5
<i>Acacia stenoptera</i>	+	
<i>Alexgeorgea nitens</i>	+	
<i>Astroloma glaucescens</i>	+	
<i>Bossiaea eriocarpa</i>	+	
<i>Calytrix flavescens</i>	+	
<i>Conospermum stoechadis</i> subsp. <i>sclerophyllum</i>	+	
<i>Conostephium minus</i>	+	
<i>Conostylis aculeata</i>	+	
<i>Conostylis setigera</i>	+	
<i>Daviesia triflora</i>	+	
<i>Drosera macrantha</i>	+	
<i>Gompholobium tomentosum</i>	+	
<i>Hibbertia acerosa</i>	+	
<i>Hibbertia huegelii</i>	+	
<i>Jacksonia floribunda</i>	+	
<i>Lepidobolus preissianus</i>	+	
<i>Lepidosperma tenue</i>	+	
<i>Leucopogon squarrosus</i> subsp. <i>squarrosus</i>	+	
<i>Lomandra hermaphrodita</i>	+	
<i>Lyginia imberbis</i>	+	
<i>Lysinema ciliatum</i>	+	
<i>Melaleuca trichophylla</i>	+	
<i>Petrophile linearis</i>	+	
<i>Philothea spicata</i>	+	
<i>Stylidium amoenum</i>	+	
<i>Tricoryne elatior</i>	+	
<i>Verticordia nitens</i>	+	
<i>Eucalyptus marginata</i>	ASS	

## Site BWC04

<b>Date</b>	22/11/2018
<b>Botanist</b>	Kellie Bauer-Simpson and Lisa Chappell
<b>Quadrat Size</b>	10 x 10 m
<b>NW Corner Coordinates</b>	408570mE 6537453mN
<b>Vegetation Unit</b>	EtBeAn - <i>Eucalyptus todtiana</i> , <i>Banksia attenuata</i> and <i>Banksia menziesii</i> low sparse woodland over <i>Bossiaea eriocarpa</i> , <i>Hibbertia hypericoides</i> and <i>Petrophile linearis</i> low isolated shrubs over <i>Alexgeorgea nitens</i> , <i>Lyginia imberbis</i> and <i>Mesomelaena pseudostygia</i> sparse sedgeland
<b>Slope</b>	moderate
<b>Landform</b>	mid slope
<b>Soil Colour</b>	Brown
<b>Soil Type</b>	Loamy sand
<b>Litter</b>	15%
<b>Bare Ground</b>	15%
<b>Fire Age</b>	>10years
<b>Vegetation Condition</b>	Very Good
<b>Disturbances/Impacts</b>	Few weeds, possible dieback

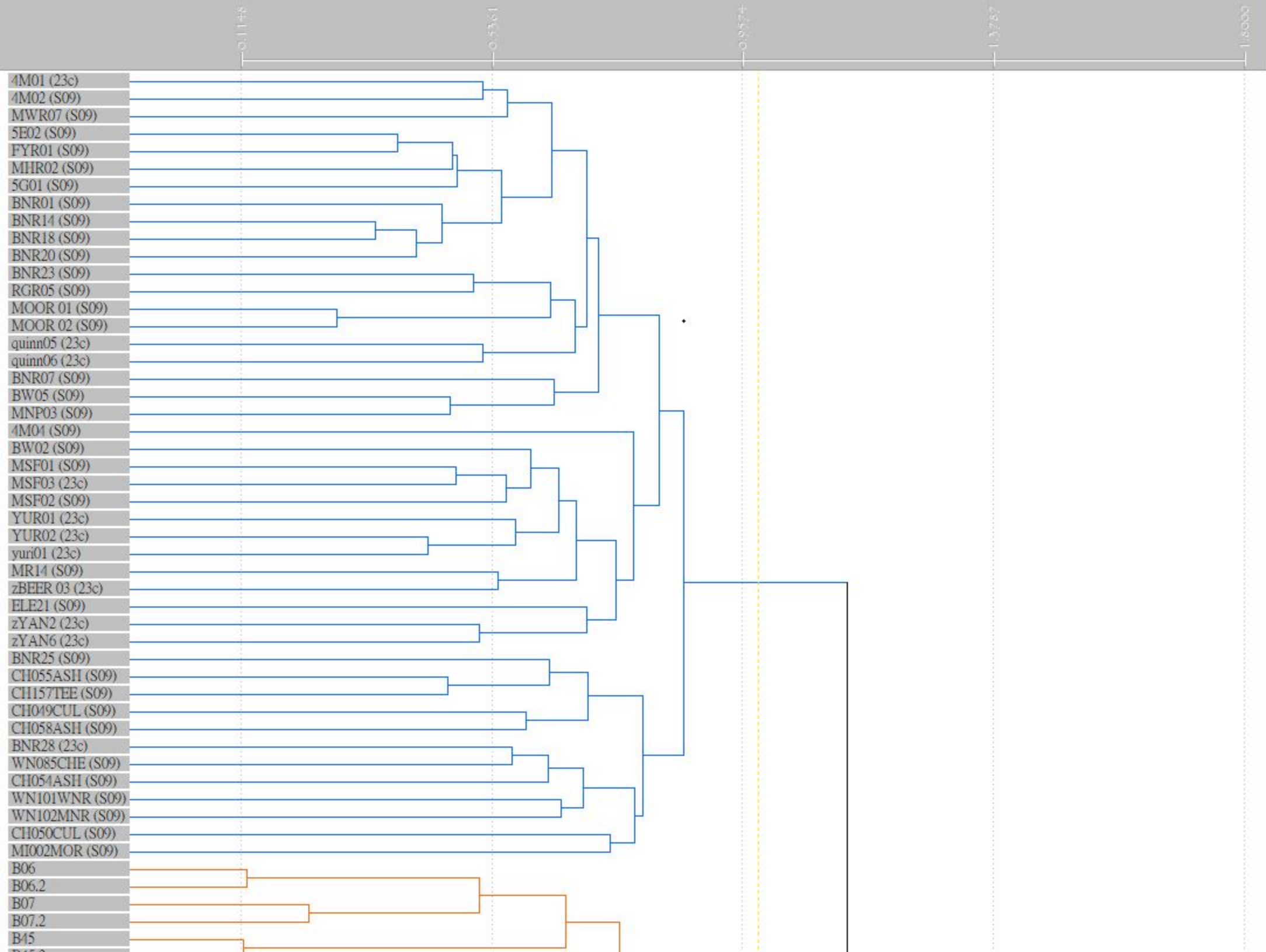


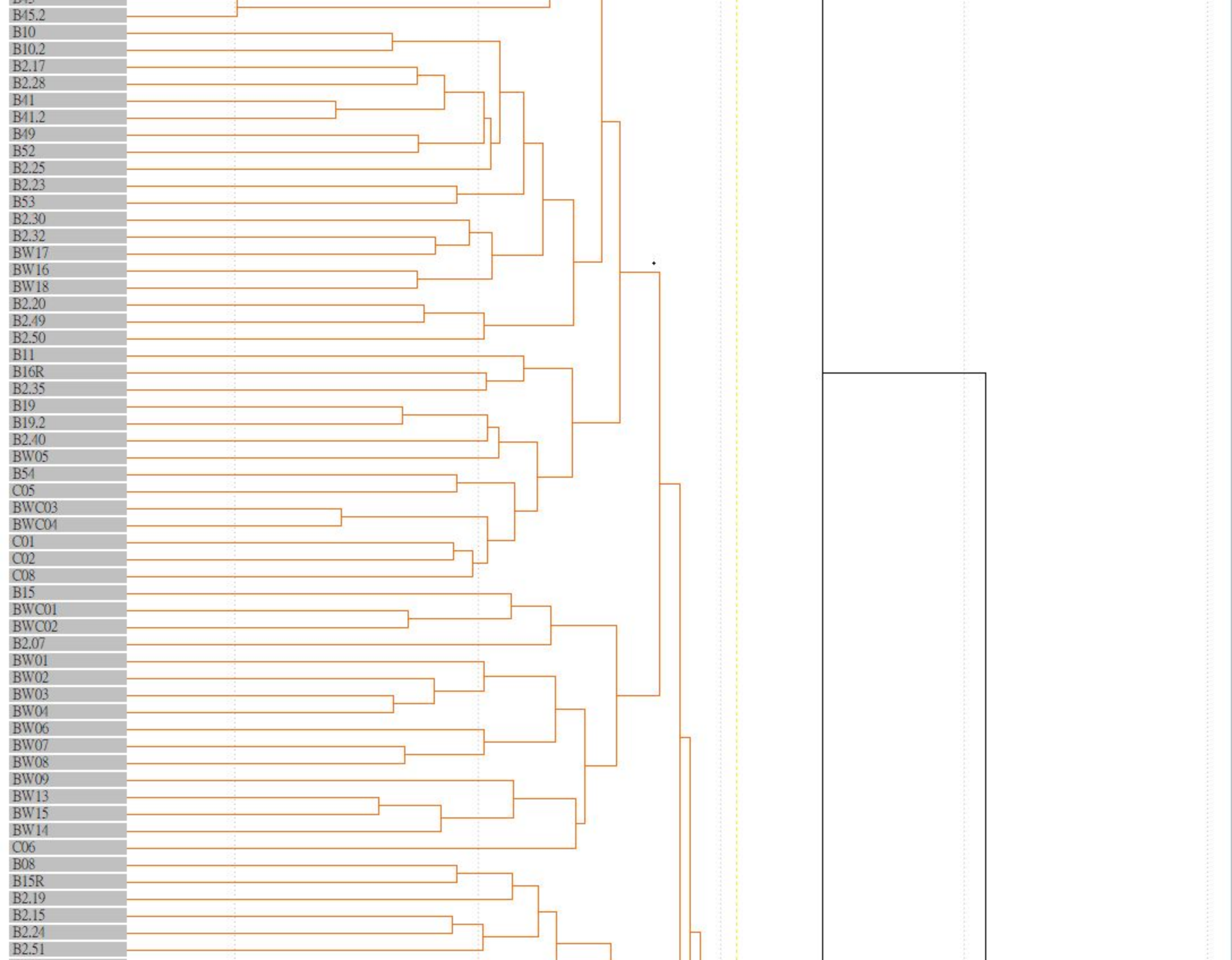


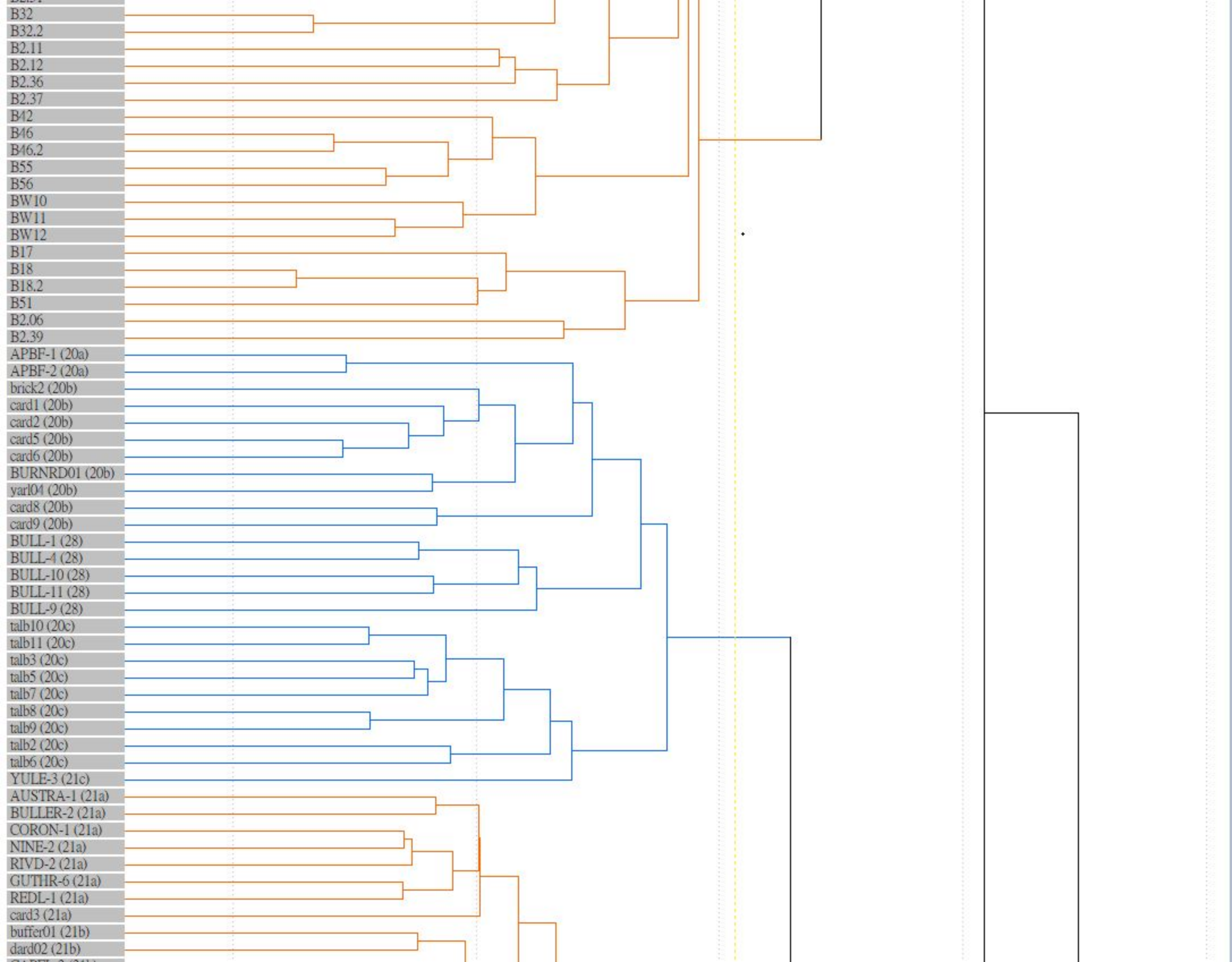
Name	Height (m)	Cover (%)
<i>Banksia attenuata</i>	5	10
<i>Banksia menziesii</i>	4	3
<i>Calytrix variabilis</i>	2	20
<i>Allocasuarina humilis</i>	1.5	6
<i>Eremaea pauciflora</i>	1.3	10
<i>Stirlingia latifolia</i>	1.2	3
<i>Bossiaea eriocarpa</i>	0.3	2
<i>Acacia stenoptera</i>	+	
<i>Alexgeorgea nitens</i>	+	
<i>Amphipogon turbinatus</i>	+	
<i>Astroloma glaucescens</i>	+	
<i>Conospermum stoechadis</i> subsp. <i>sclerophyllum</i>	+	
<i>Conostylis aculeata</i>	+	
<i>Conostylis setigera</i>	+	
<i>Cristonia biloba</i>	+	
<i>Daviesia triflora</i>	+	
<i>Desmocladus fasciculatus</i>	+	
<i>Drosera macrantha</i>	+	
<i>Gastrolobium capitatum</i>	+	
* <i>Gladiolus caryophyllaceus</i>	+	
<i>Hibbertia acerosa</i>	+	
<i>Hibbertia huegelii</i>	+	
<i>Laxmannia squarrosa</i>	+	
<i>Lepidobolus preissianus</i>	+	
<i>Lepidosperma tenue</i>	+	
<i>Leucopogon squarrosus</i> subsp. <i>squarrosus</i>	+	
<i>Lomandra hermaphrodita</i>	+	
<i>Loxocarya cinerea</i>	+	
<i>Lyginia imberbis</i>	+	
<i>Lysinema ciliatum</i>	+	
<i>Melaleuca trichophylla</i>	+	
<i>Mesomelaena pseudostygia</i>	+	
<i>Petrophile linearis</i>	+	
<i>Philothea spicata</i>	+	
<i>Scholtzia involucrata</i>	+	
<i>Stirlingia latifolia</i>	+	
<i>Stylidium piliferum</i>	+	
<i>Stylidium repens</i>	+	
<i>Synaphea spinulosa</i>	+	
<i>Verticordia nitens</i>	+	
<i>Xanthosia atkinsoniana</i>	+	
<i>Daviesia divaricata</i> subsp. <i>divaricata</i>	ASS	

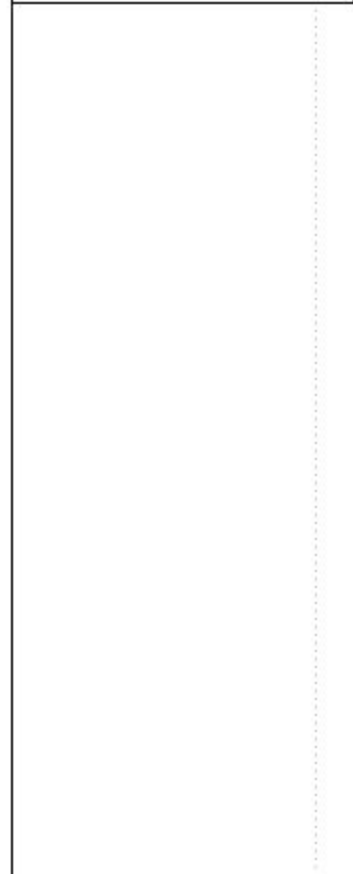
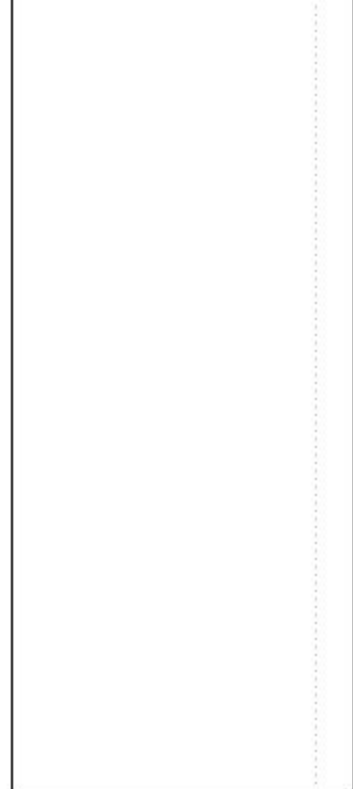
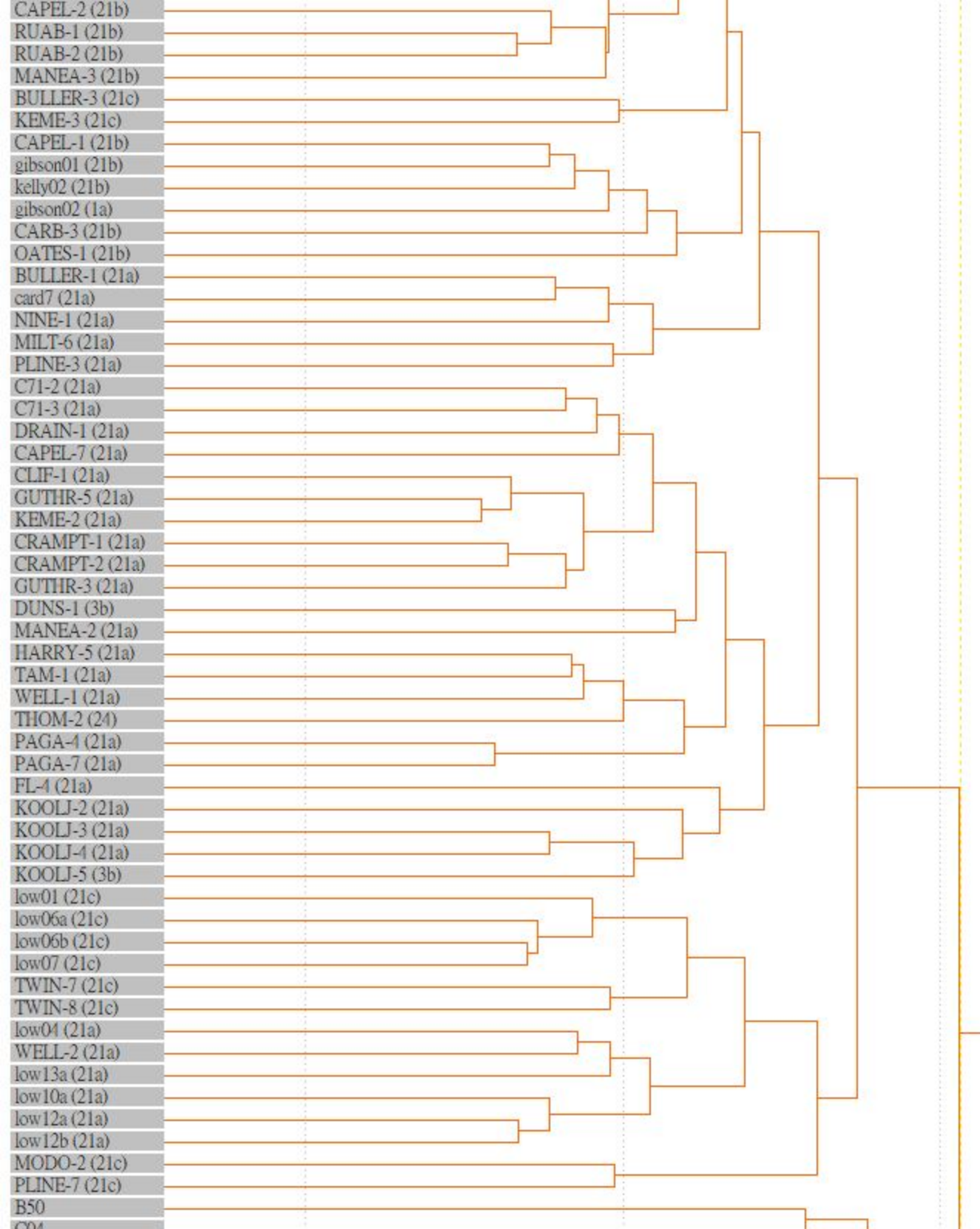
## **APPENDIX D – COMPILED QUADRAT CLUSTER ANALYSIS**

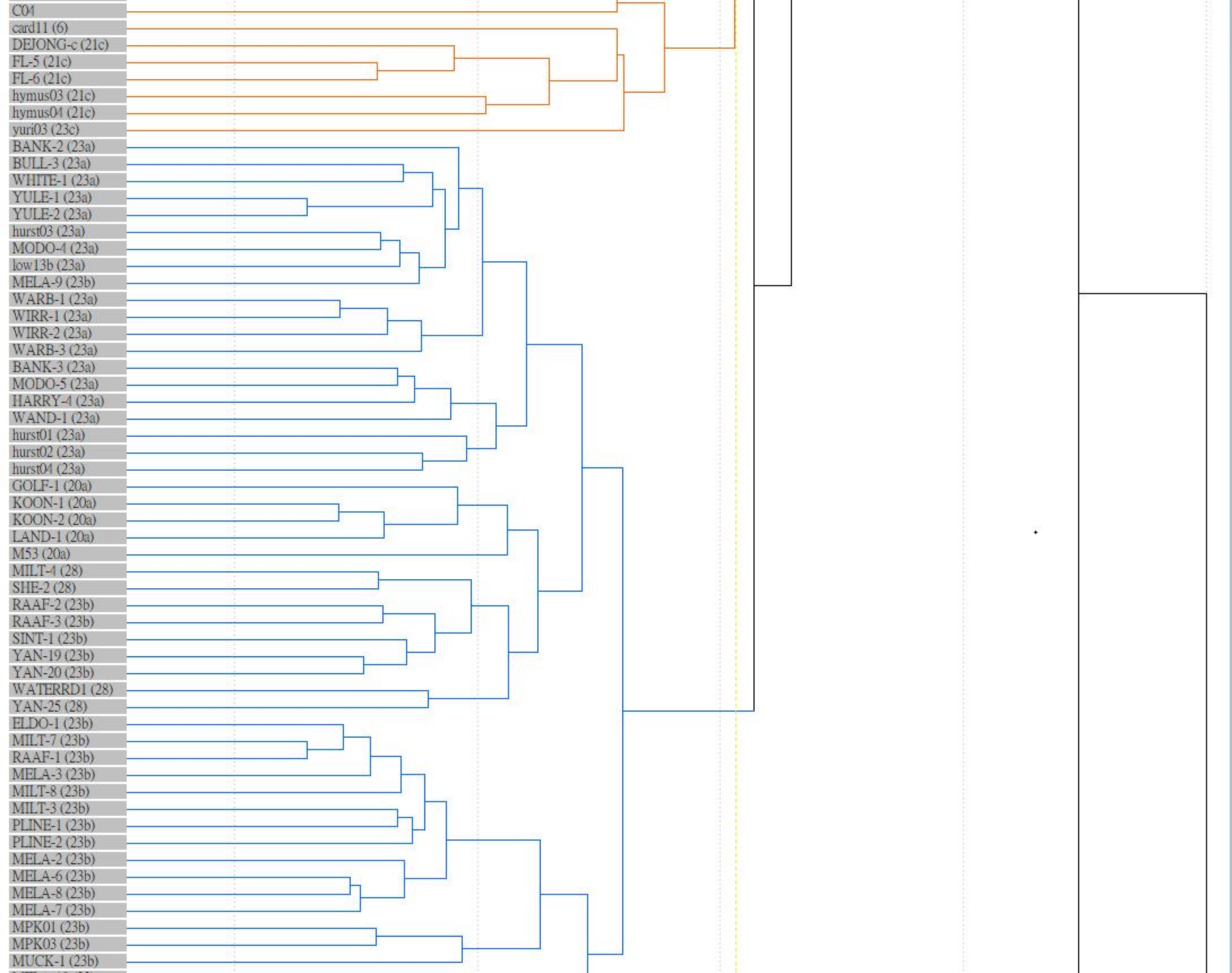
# Column Fusion Dendrogram

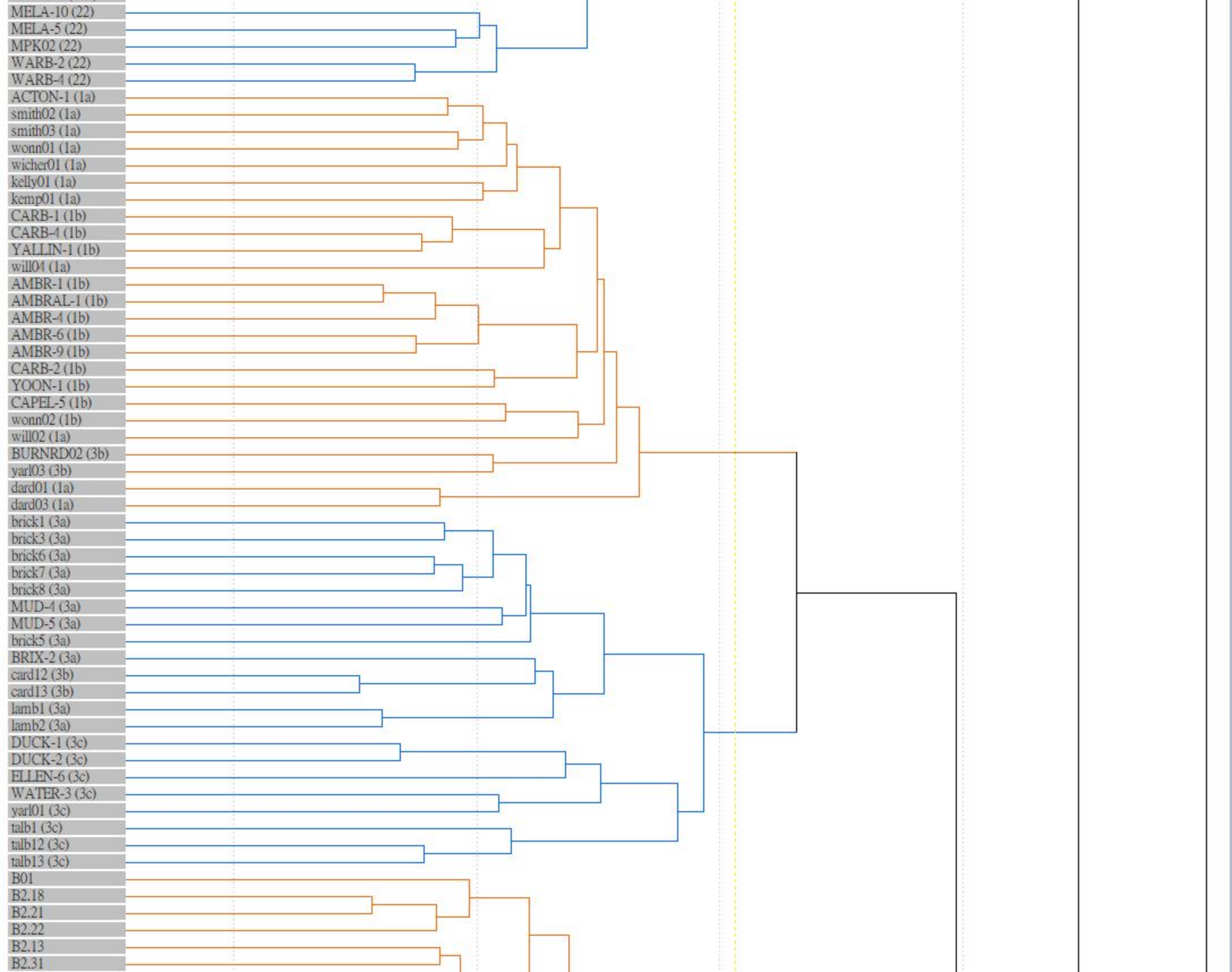




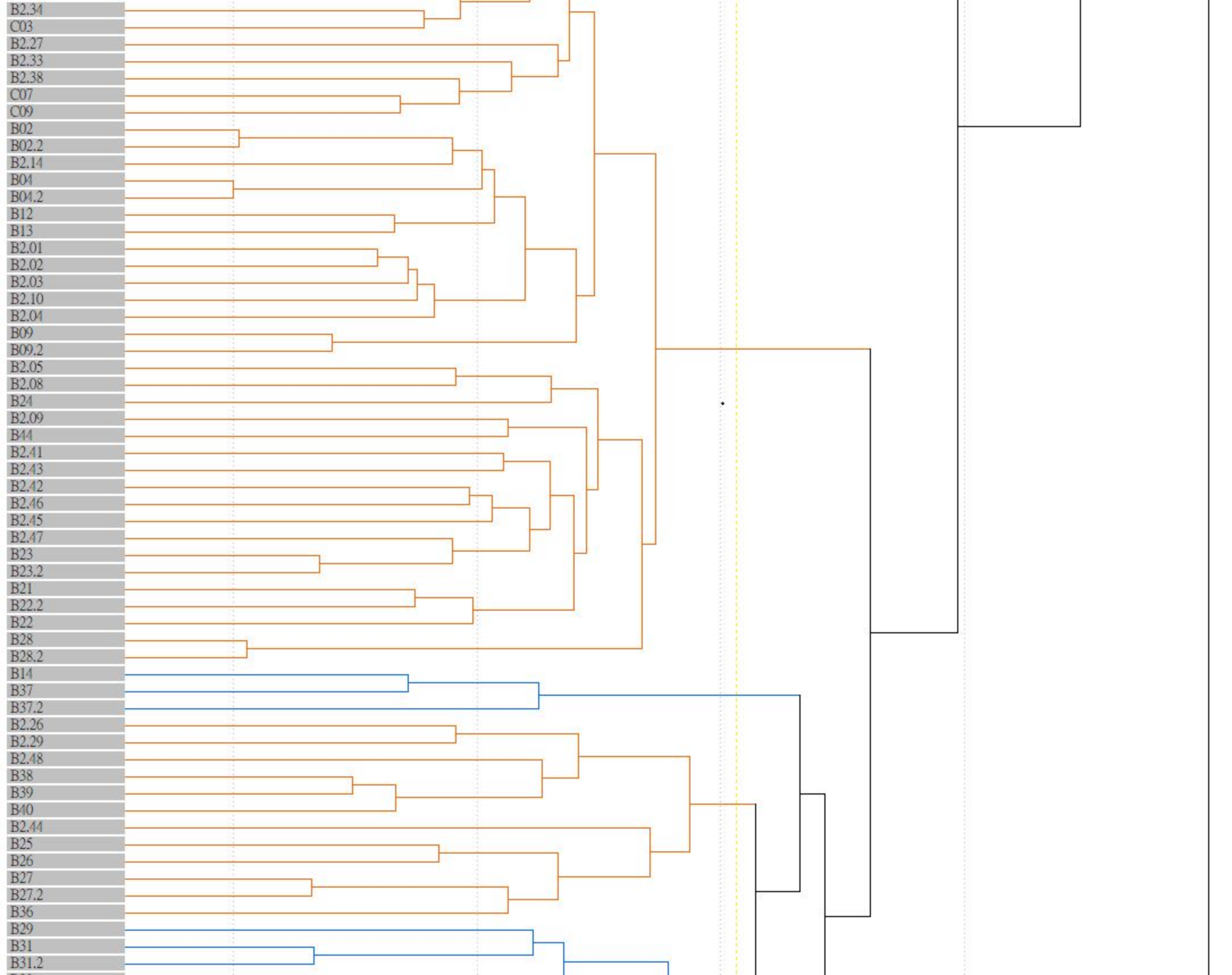


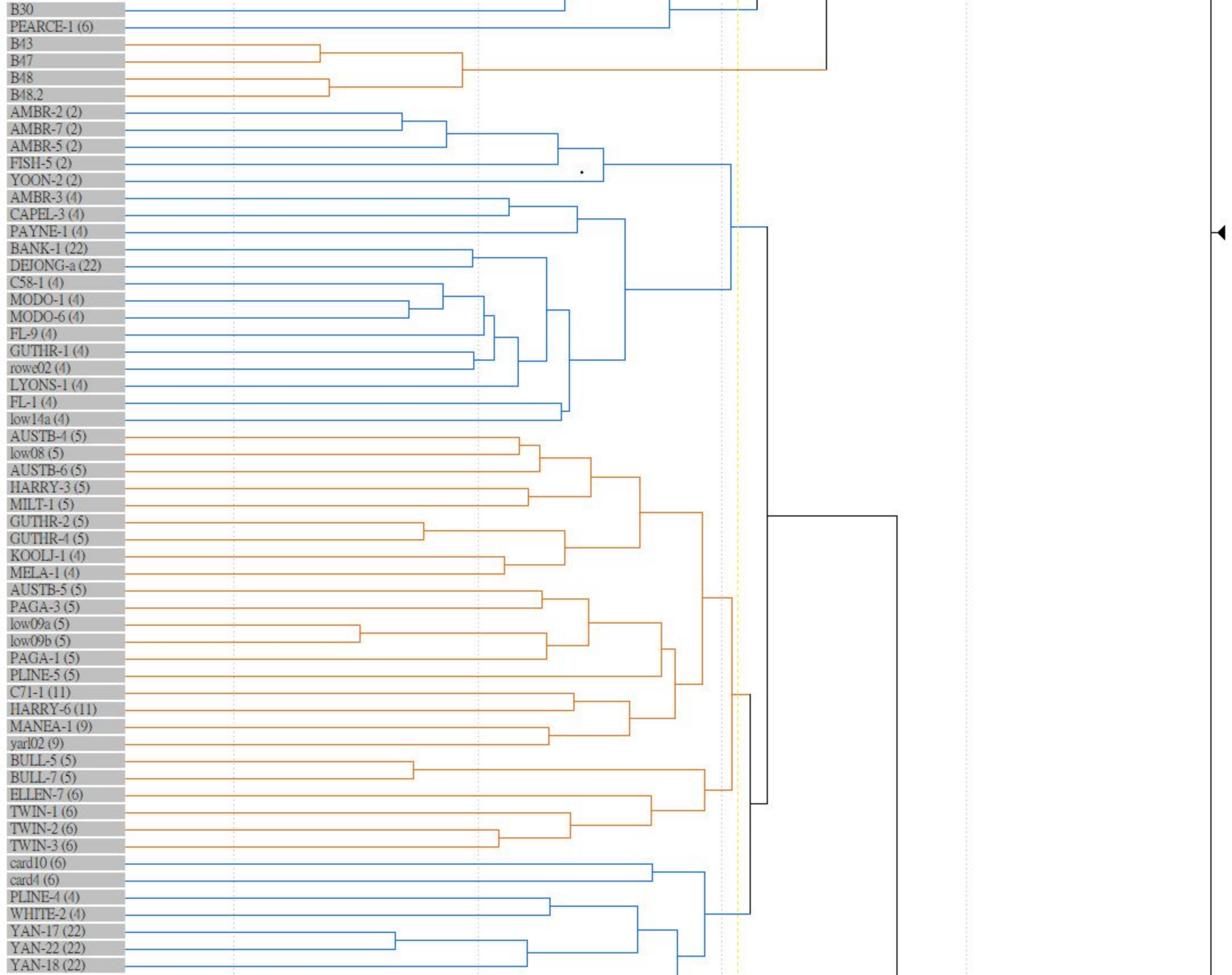


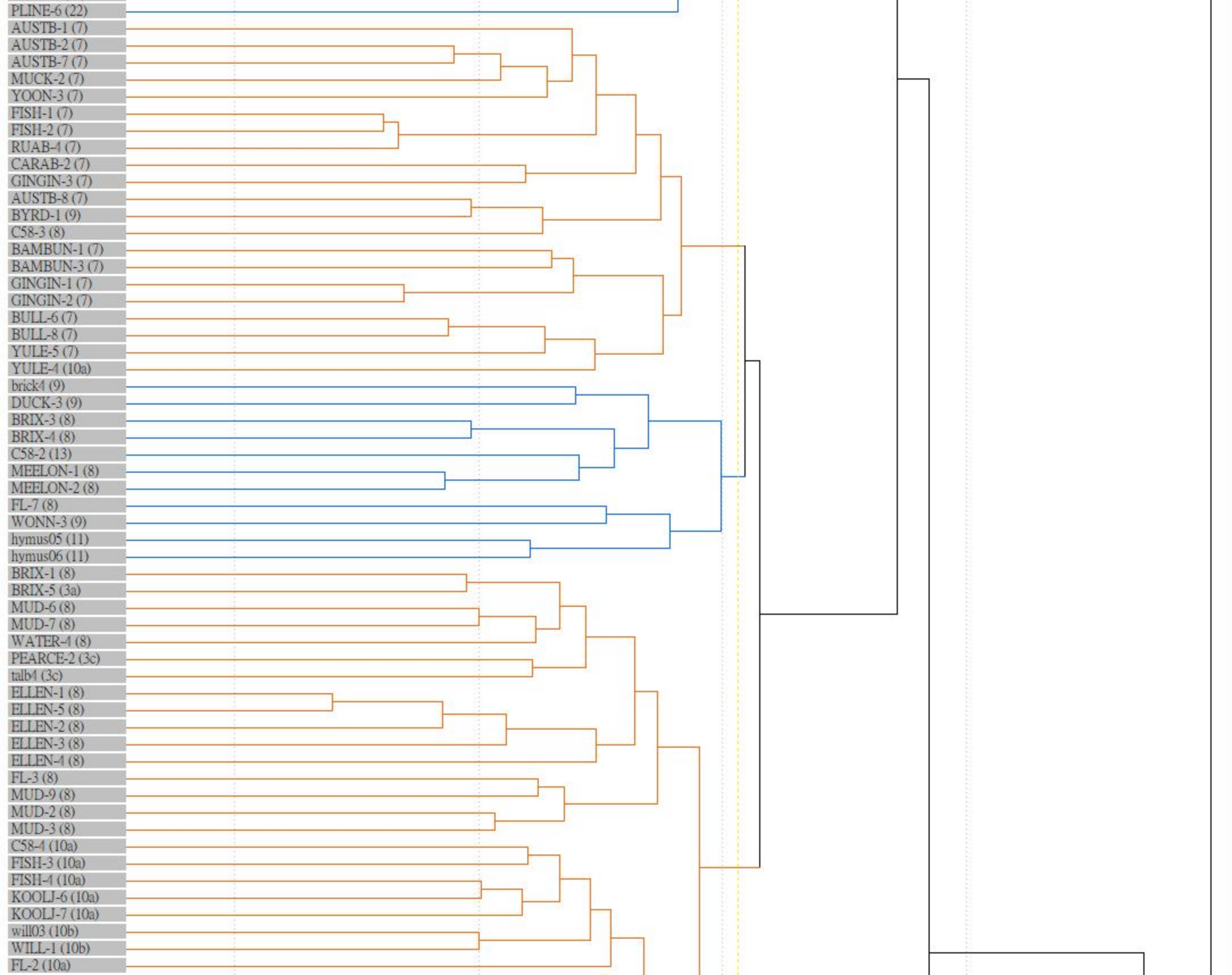


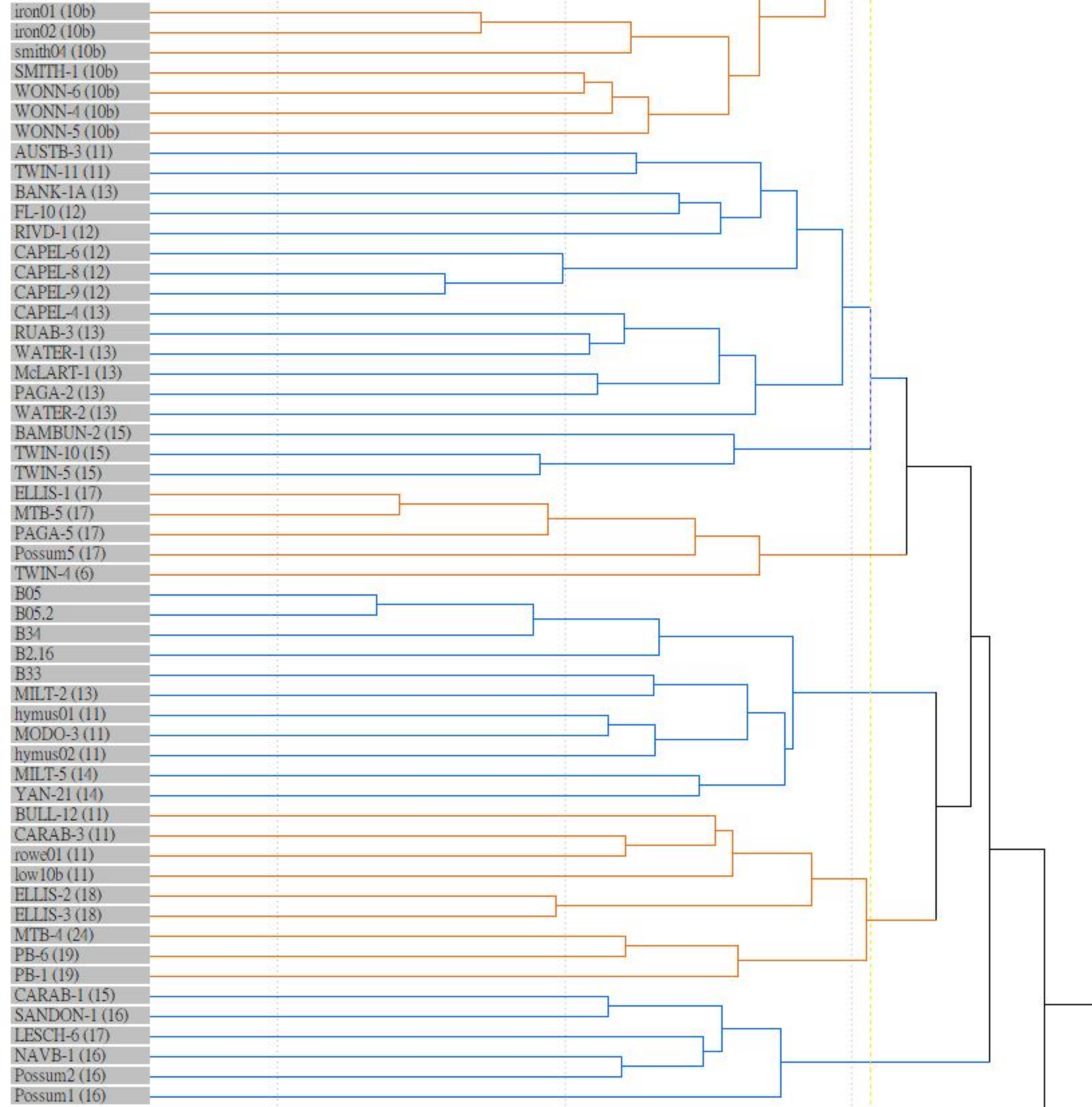


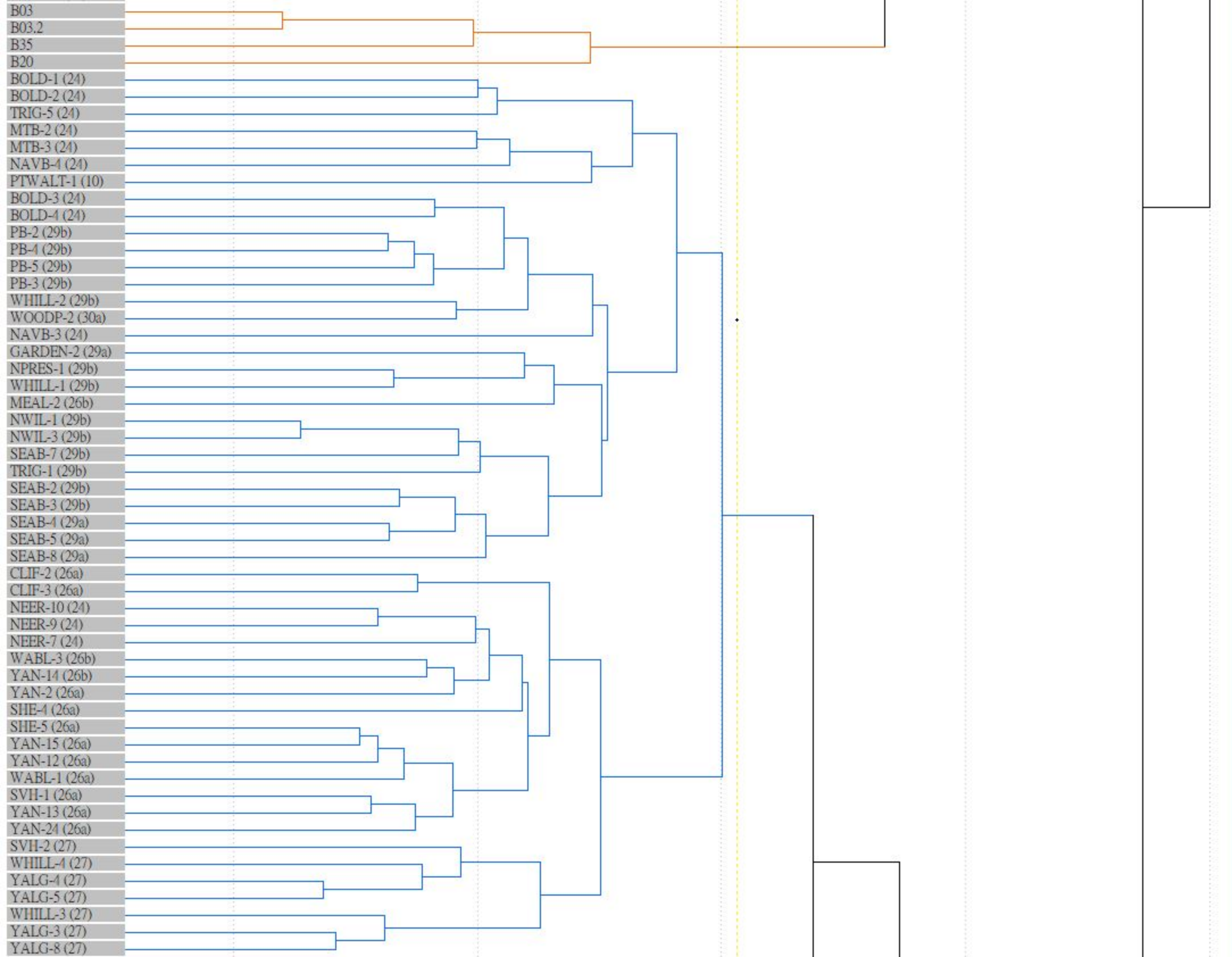


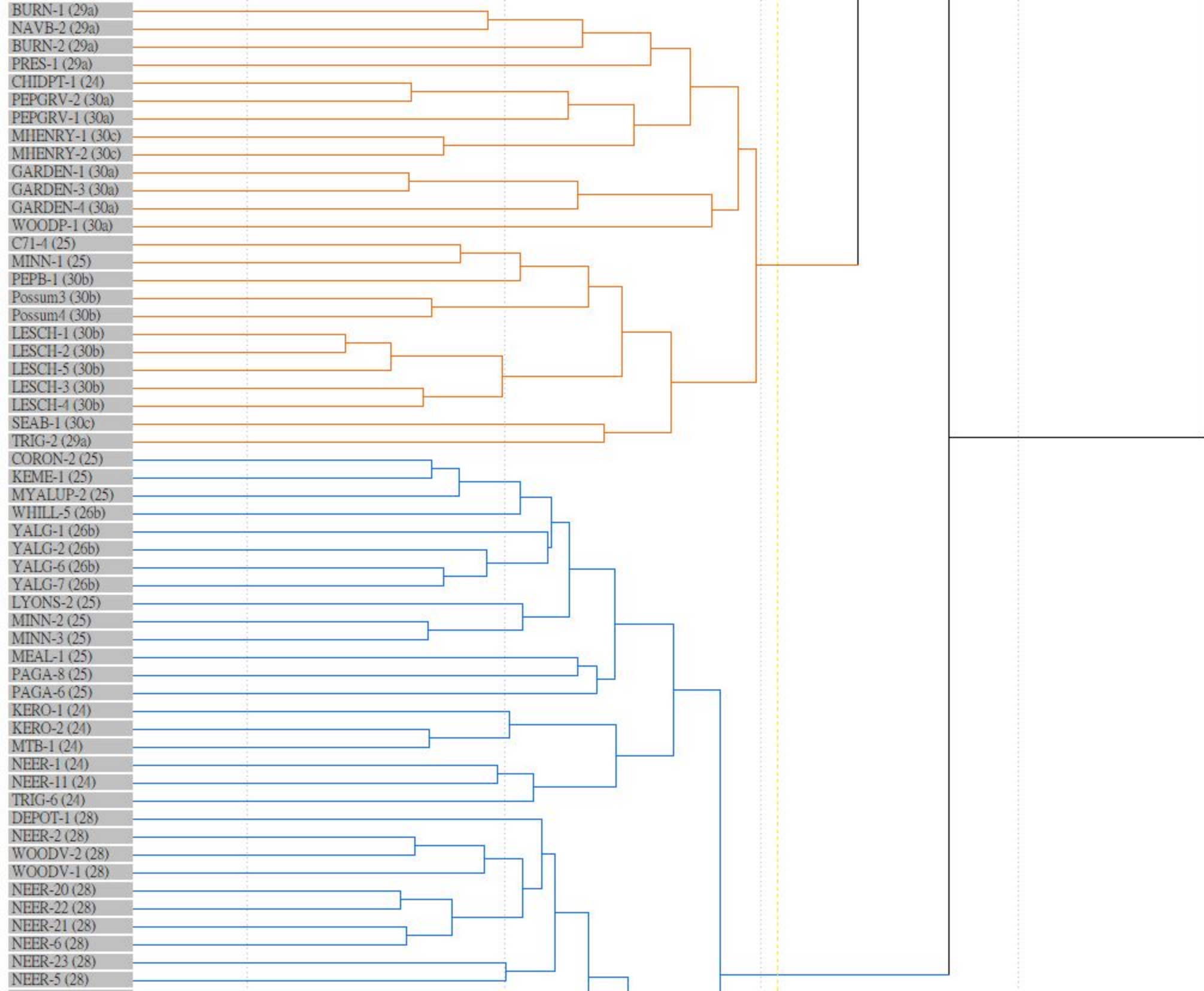


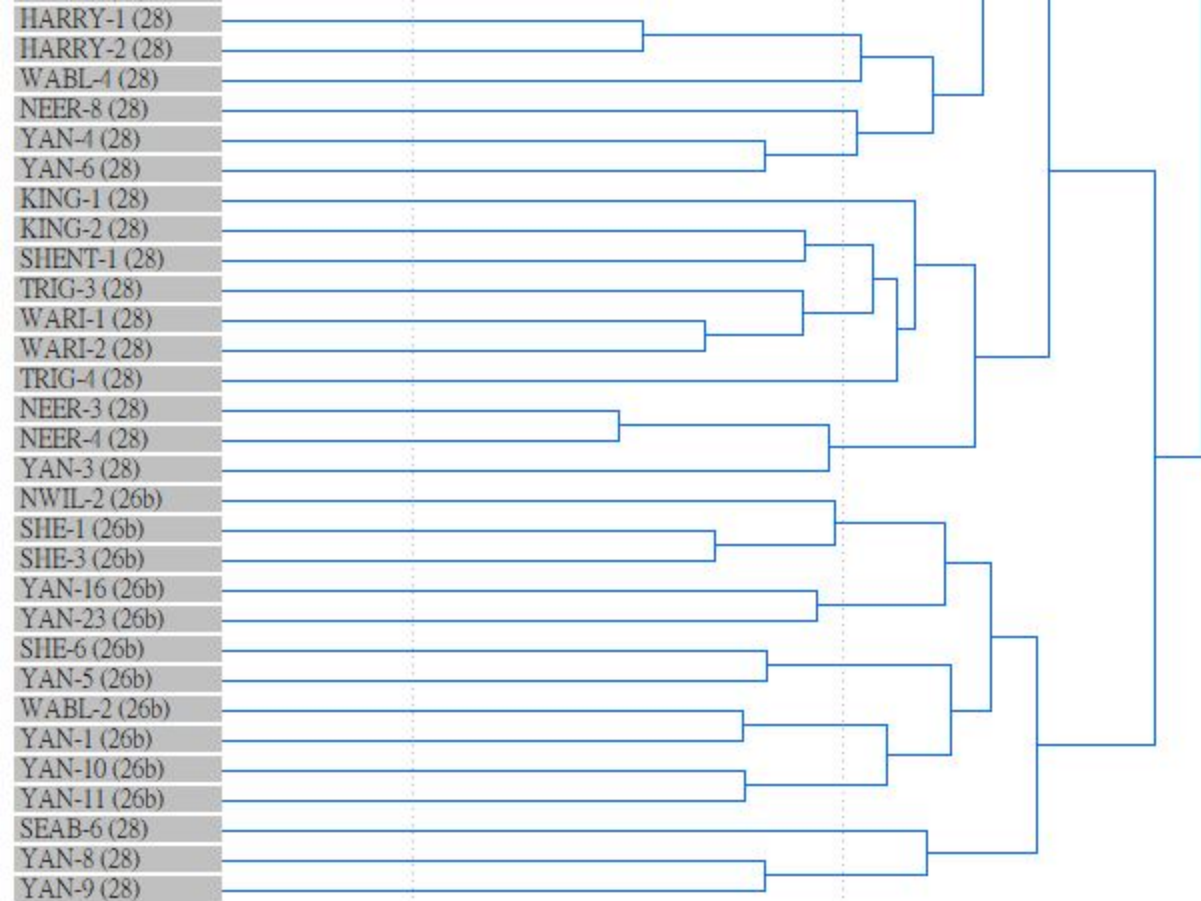












## **APPENDIX E - BANKSIA WOODLAND QUADRAT CLUSTER ANALYSIS**



# Row Fusion Dendrogram

