

**Attachment 1 – Revised TEC PEC Tables
from the ERD (ELA, 2019)**

Table 5-1: Vegetation types within the development envelope

ID	Vegetation type	Landform and substrate	Conservation significance	Extent in survey area ¹	Extent in development envelope (DE)		Extent in DE in Degraded or better condition	
				ha	ha	% DE	ha	% DE ²
VT01	<i>Acacia saligna</i> and <i>Xanthorrhoea preissii</i> tall shrubland	Slopes of dunes with brown sandy soils		34.33	15.75	21.62	13.81	23.91
VT02	<i>Banksia sessilis</i> and <i>Melaleuca systena</i> mid-shrubland	Slopes of dunes with yellow sandy soils	Northern Spearwood shrublands and woodlands (PEC) (SCP24)	5.60	5.24	7.19	5.24	9.08
VT03	<i>Banksia sessilis</i> and <i>Spyridium globulosum</i> tall shrubland	Dune swales with brown sandy soils	Northern Spearwood shrublands and woodlands (PEC) (SCP24)	13.24	8.57	11.76	8.44	14.63
VT03a	<i>Spyridium globulosum</i> tall shrubland This vegetation type is very similar to VT03, but <i>Banksia sessilis</i> is either not present or occurs as isolated plants	Dune swales with brown sandy soils		5.17	2.80	3.84	2.80	4.86
VT04	<i>Banksia attenuata</i> , <i>B. menziesii</i> low woodland	Undulating plain with brown-yellow sandy soils	Banksia woodlands (TEC) / Banksia dominated woodlands (PEC)	6.88	4.75	6.52	4.75	8.22
VT05	<i>Lomandra</i> sp. herbland	Dunes ridges with white to brown sandy soils		15.34	5.31	7.29	5.31	9.20

ID	Vegetation type	Landform and substrate	Conservation significance	Extent in survey area ¹	Extent in development envelope (DE)		Extent in DE in Degraded or better condition	
VT06	<i>Eucalyptus gomphocephala</i> tall woodland The majority of Tuart trees present within this vegetation type are planted (>25 years ago). There is one patch of original Tuart woodland which contains large mature trees and a more complete native understorey.	Slopes of dunes with brown sandy soils	Tuart (<i>Eucalyptus gomphocephala</i>) woodlands of the SCP (PEC)	8.56	2.13	2.92	2.13	3.69
VT07	<i>Eucalyptus sp.</i> and <i>Agonis flexuosa</i> woodland	Slopes of dunes with brown sandy soils		0.32	0.32	0.44	0.32	0.55
VT08	<i>Melaleuca huegelii</i> and <i>M. systema</i> shrubland	Upper slopes and ridge of dunes with brown to yellow sandy soils and numerous limestone out-cropping	<i>Melaleuca huegelii</i> – <i>M. systema</i> shrublands on limestone ridges (SCP 26a)	0.05	0.05	0.07	0.05	0.09
VT09	<i>Banksia attenuata</i> woodland	Undulating plain and dune swales with brown sandy soils	Banksia woodlands (TEC) / Banksia dominated woodlands (PEC)	12.99	4.01	5.50	4.01	6.95
VT10	<i>Xanthorrhoea preissii</i> shrubland	Slopes of dunes with brown sandy soils		1.63	1.46	2.00	1.46	2.54
VT13	Scattered Natives	Undulating plain and dunes slopes with sandy soils		9.79	3.04	4.17	0.84	1.45
VT12	Planted	Undulating plain and dunes slopes with sandy soils		22.08	8.87	12.17	8.56	14.38
Subtotal (native vegetation types)				135.98	62.30	85.49	57.73	100
CL	Cleared	-		11.81	10.56	14.49	-	-
Total				147.80	72.86	100	57.73	100

Source: Adapted from GHD 2018 and 2019

¹ As per GHD 2018 – includes the development envelope and additional survey area

² Percentage of vegetation type in Degraded or better condition within the 72.86 ha development envelope

Table 5-2: TECs and PECs within the development envelope

Ecological community	Conservation status	Associated vegetation type (GHD 2018)	Extent in survey area ¹ (ha)	Extent in development envelope (ha)
State listed				
<i>Melaleuca huegelii</i> – <i>M. systema</i> shrublands on limestone ridges (Gibson et al. 1994 type 26a) SCP	Endangered under Western Australia's BC Act	VT08	0.05	0.05
Banksia dominated woodlands of the SCP IBRA region PEC	Priority 3 (iii) ²	VT04, VT09	20.68	8.76
Northern Spearwood shrublands and woodlands ('community type 24') PEC	Priority 3 (i) ³	VT02, VT03	19.85	13.81
Tuart (<i>Eucalyptus gomphocephala</i>) woodlands of the SCP PEC	Priority 3 (iii) ³	VT06	8.56	2.13
EPBC listed				
Banksia dominated woodlands of the SCP TEC	Endangered under Commonwealth EPBC Act	VT04, VT09	18.36	8.13

1. As per GHD (2018) – includes development envelope and additional survey area

2. Priority 3 (iii) are communities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, inappropriate fire regimes, clearing, hydrological change.

3. Priority 3 (i) are communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation. Source: GHD (2018; 2019)

Table 5-3: Condition rating of TECs and PECs within the development envelope and surrounds

Ecological community	Condition rating	Extent in survey area ¹ (ha)	Extent in development envelope (ha)	Within Bush Forever Site 289		
				Extent (ha)	Extent inside 'Railways' MRS reservation (ha)	Extent outside 'Railways' MRS reservation (ha)
<i>Melaleuca huegelii</i> – <i>M. systema</i> shrublands on limestone ridges (Gibson et al. 1994 type 26a) SCP	Very Good	0.05	0.05	0.05	0.03	0.02
	Total	0.05	0.05	0.05	0.03	0.02
Banksia dominated woodlands of the SCP TEC (EPBC listing)	Excellent	3.01	2.04	0	0	0
	Very Good	9.48	4.09	3.325	1.46	1.86
	Very Good - Good	1.52	0.11	0.105		0.10
	Good	3.44	1.79	0.757	0.04	0.71
	Degraded	0.10	0.10	0.104	0.06	0.04
	Total	17.55	8.13	4.29	1.57	2.72
Banksia dominated woodlands of the SCP IBRA region PEC	Excellent	3.01	2.05	0	0	0
	Very Good	10.08	4.45	3.68	1.75	1.93
	Very Good - Good	1.52	0.10	0.10	0	0.11
	Good	4.95	1.84	0.76	0.04	0.71
	Degraded	0.32	0.32	0.10	0.06	0.04
	Total	19.88	8.76	4.65	1.86	2.79
Northern Spearwood shrublands and woodlands ('community type 24') PEC	Excellent	1.49	1.29	0	0	0
	Very Good	9.36	7.46	0.93	0.28	0.65
	Very Good - Good	0.98	0	0	0	0
	Good	2.95	2.04	0.54	0	0.54
	Good - Degraded	0.66	0	0	0	0

Ecological community	Condition rating	Extent in survey area ¹ (ha)	Extent in development envelope (ha)	Within Bush Forever Site 289		
				Extent (ha)	Extent inside 'Railways' MRS reservation (ha)	Extent outside 'Railways' MRS reservation (ha)
	Degraded	3.22	2.89	0.27	0.02	0.25
	Total	18.84	13.68	1.74	0.30	1.43
Tuart (<i>Eucalyptus gomphocephala</i>) woodlands of the SCP PEC	Good	0.38	0	0	0	0
	Good - Degraded	2.23	0.05	0.05	0.05	0
	Degraded	5.95	2.08	1.43	0	1.43
	Total	8.56	2.13	1.48	0.05	1.43

¹ As per GHD(2018) - includes development envelope and additional survey area

Source: GHD (2018; 2019)

Table 5-4: Extent of Banksia Woodlands TEC within the development envelope

Patch ID	Vegetation type	Vegetation condition and extent (ha) ¹	Comments
Patch 1	VT04	Very Good: 0.68 Good: 1.03 Total area: 1.71	Areas mapped as the TEC are part of a larger patch that extends east and west of the development envelope. Aerial imagery indicates this patch is approximately 20 ha. It is estimated that approximately 9% of the patch occurs within the development envelope ² .
Patch 2	VT04	Excellent: 0.13 Total area: 0.13	Areas mapped as the TEC are part of a larger, isolated patch that occurs directly adjacent to the survey area. Aerial imagery indicates this patch is approximately 1.64 ha, and it is estimated that approximately 8% of the patch occurs within the development envelope. ²
Patch 3	VT04	Excellent: 1.92 Very Good: 0.08 Total area: 2.00	Areas mapped as the TEC are part of a larger patch that extends mostly west of the development envelope. This patch is separated from Patch 1 (which occurs to the north) by areas of VT03 and VT05. Aerial imagery indicates this patch is approximately 13 ha, and it is estimated that approximately 15% of the patch occurs within the development envelope. ²
Patch 4	VT04 VT09	Good: 0.40 Total area: 0.40	Areas mapped as the TEC are part of a patch that extends both north and south of the development envelope. Vegetation mapping by GHD and Eco Logical Australia (ELA 2018; Appendix O) indicates the Banksia vegetation adjacent to the survey area is Good to Very Good in condition. Aerial imagery and the ELA mapping indicates this patch is approximately 2.17 ha. It is estimated that approximately 18% of the patch occurs within the development envelope.
Patch 5	VT09	Very Good: 2.13 Very Good to Good: 0.10 Degraded: 0.10 Total area: 2.33	Areas mapped as the TEC are part of a larger patch that extends south/south-west of the GHD survey area. Vegetation mapping by ELA (2018; Appendix O) indicates the Banksia vegetation adjacent to the survey area is Good to Very Good in condition. Aerial imagery and the ELA mapping indicates this patch is approximately 28 ha. It is estimated that approximately 8% of the patch occurs within the development envelope. The Degraded portion has is considered part of the TEC as it is surrounded by Very Good and Good condition vegetation.
Patch 6	VT09	Very Good: 1.20 Good: 0.35 Total area: 1.55	Areas mapped as the TEC are part of a patch that extends east of the development envelope. GHD mapping indicates this patch is approximately 2.93 ha in Good or Very Good condition. It is estimated that 53% of the patch occurs within the development envelope.

¹ Calculated using raw data reported in GHD 2018

² For Patches 1, 2 and 3, where condition mapping does not exist outside the development envelope, it has been assumed that the condition of the patch outside the development envelope would reflect that within it.

³ As per item 3 in Table 2 of the Response to Submissions – the area of Patch 5 has been increased to include the 0.10 ha patch in degraded condition.

Table 5-5: Mapped extent of TECs and PECs at local and regional scales and representation within conservation areas

Ecological community	Scale	Current extent remaining ¹ (ha)	Current extent in conservation areas (DBCA Legislated Lands and Waters, and Bush Forever Sites) ¹		Current extent using GHD data for the survey area ² (ha)	Extent in development envelope ³ (ha)	Extent after Proposal implementation	
			Area (ha)	% of current extent			ha	% of current extent
<i>Melaleuca huegelii</i> – <i>M. systema</i> shrublands (TEC) (SCP 26a)	NW subregion	100.84	81.21	80.54	100.89	0.05	100.84	99.95
	1 km buffer	0	-	-	0.05	0.05	0	0
Banksia dominated woodlands of the SCP IBRA Region PEC ⁴	NW subregion	16,836.81	15,532.33	92.25	16,839.24	8.76	16,830.48	99.95
	1 km buffer	125.45	62.90	50.14	127.88	8.76	119.12	93.15
Northern Spearwood shrublands and woodlands (SCP24) PEC	NW subregion	332.59	329.22	98.99	351.43	13.68	337.75	96.11
	1 km buffer	0	-	-	18.84	13.68	5.16	27.37
Tuart (<i>Eucalyptus gomphocephala</i>) woodlands of the SCP PEC	NW subregion	3,643.73	2,047.84	56.20	3,652.29	2.13	3,650.16	99.94
	1 km buffer	18.76	18.40	98.06	27.32	2.13	25.19	92.20

Source: Adapted from GHD (2019) using numbers extracted from DBCA datasets provided by PTA

¹ Numbers based on DBCA dataset only

² Numbers provided by PTA extracted using GHD mapping for the survey area and DBCA mapping outside of this

³ As per GHD mapping (2018)

⁴ Banksia woodlands (TEC) is a subset of the Banksia dominated woodlands of the SCP IBRA Region PEC

Table 5-6: Cumulative impacts to TECs and PECs

Ecological community	Scale	Current extent ¹	Current extent within Part 2 development envelope (ha)	Current extent within Part 1 development envelope (ha)	Current extent within ULDO areas (ha) ¹	Cumulative extent (ha)	Proportion of current extent (%) ²
SCP 26a	NW subregion	100.84	0.05	0.53	0	0.58	0.58
	1 km buffer	0.05	0.05	0.40	0	0.45	100 ³
Banksia PEC ⁴	NW subregion	16,836.43	8.76	14.17	203.01	225.94	1.34
	1 km buffer	125.06	8.76	1.01	39.84	49.61	39.66
SCP24 PEC	NW subregion	332.59	13.68	16.05	0	29.73	8.94
	1 km buffer	0	13.68	9.25	0	22.93	100 ³
Tuart PEC	NW subregion	3,643.46	2.13	0.32	156.97	159.10	4.37
	1 km buffer	124.97	2.13	0	13.12	15.25	12.20

¹ Excludes overlaps with the YRE Part 1 and Part 2 development envelopes.

² Includes GHD mapping for the survey area.

³ Cumulative extents are greater than current extent due to discrepancy between GHD mapping in the Part 1 development envelope and the DBCA dataset.

⁴ Banksia Woodlands TEC is a subset of Banksia PEC.

Source: GHD (2019)

Table 5-7: Estimated extent of EPBC listed Banksia Woodlands TEC

Scale	Pre-European extent ¹ (ha)	Current extent ¹ (ha)	Extent within the development envelope ² (ha)	Proportion of current extent (%)
NW subregion	39011.90	17,363.15	8.13	0.05

¹ Calculated using vegetation associations comprising a major component of the Banksia Woodlands ecological community as listed in the Conservation Advice (TSSC 2016)

² As mapped by GHD (2018)