Memorandum

11 April 2018

To	Public Transport Authority		
Copy to			
From	Angela Benkovic	Tel	+61 8 6222 8361
Subject	Additional Information for the EPA regarding the Yanchep Rail Extension Survey & Report	Job no.	6136660

1 Introduction

1.1 Project background

The Public Transport Authority (PTA) is in the planning stage for the extension of the northern suburbs passenger railway, the Yanchep Rail Extension (the project). The proposed alignment extends from Butler Railway Station to the proposed Yanchep Railway Station.

An initial environmental investigation including a desktop and field survey was completed by GHD Pty Ltd (GHD) in spring 2010 (GHD 2011), with an additional survey completed in spring 2012 (GHD 2012). Due to the age of the previous surveys and refinements to the proposed alignment additional survey effort during spring 2016 and autumn, winter and summer 2017 (GHD 2018) were required.

1.2 Purpose of the memorandum

The PTA is referring the project to the Environmental Protection Authority (EPA) in two parts, Part 1 – Butler to Eglinton and Part 2 – Eglinton to Yanchep. The PTA referred Part 1 – Butler to Eglinton on the 25 January 2018.

To assist the EPA in their assessment, the PTA has requested biological information relevant to Part 1 and Part 2 to be presented separately. This memorandum documents biological factors relevant to Part 1 and Part 2 separately (where possible) based on the biological assessment of the survey area completed by GHD (2018). The limitations and assumptions outlined in the biological assessment report (GHD 2018) also apply to this memorandum.

1.3 Project location

The entire survey area is located between Butler and Yanchep, extending from Butler Railway Station to the proposed Yanchep Railway Station. Part 1 – Butler to Eglinton extends approximately 7.3 km and covers 75.61 ha. Part 2 – Eglinton to Yanchep extends approximately 8.7 km and covers 89.52 ha. These areas vary slightly from the development envelope and footprint as stated in the Environmental Impact Assessment referral supporting document (RPS 2018) as the survey assessed a larger area to allow refinement.

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2 Results

It should be noted that the biological assessment was undertaken for the entire survey area, therefore sample site locations and survey effort was stratified across the entire survey area. Flora diversity presented in this memorandum has been calculated based on the vegetation types present within Part 1 and / or 2 as well as quadrats/relevés data associated with each respective part of the overall survey area.

2.1 Vegetation types and conservation significant ecological communities

Part 1 – Butler to Eglinton

Thirteen vegetation types (VT02-VT06 and VT08-VT15) were recorded in Part 1 as described in Table 1. Conservation significant communities occurred in scattered patches along the length of Part 1; *Banksia* woodlands (TEC) / *Banksia* dominated woodlands (PEC) and Northern Spearwood shrublands and woodlands (PEC) (SCP24) dominated the conservation significant communities mapped. The vegetation located within the southern section of Part 1 (near residential development) was primarily in Degraded to Completely Degraded condition. Vegetation located south of Pipidinny Road was mostly in Excellent to Very Good condition.

Part 2 – Eglinton to Yanchep

Twelve vegetation types (VT01 – VT10, VT12 and VT13) were recorded in Part 2 as described in Table 1. Conservation significant communities also occurred in scattered patches along the length of Part 2; *Banksia* woodlands (TEC) / *Banksia* dominated woodlands (PEC), Northern Spearwood shrublands and woodlands (PEC) (SCP24) and Tuart (*Eucalyptus gomphocephala*) woodlands of the SCP (PEC) were the dominant conservation significant communities mapped. The vegetation within Part 2 was mostly in Degraded condition with patches of Good or better vegetation along its length.

Table 1 Recorded vegetation types

Vegetation type	Vegetation Type Description	Staging Plan Areas	Conservation Significant Communities
Acacia saligna and *Xanthorrhoea preissii* tall shrubland (VT01)	*Acacia saligna*, *Xanthorrhoea preissii* tall shrubland over mixed introduced sparse herbland/grassland	Part 2	N/A
Banksia sessilis and *Melaleuca systena* mid-shrubland (VT02)	*Banksia sessilis*, *Melaleuca systena, Calothamnus quadrifidus, Hakea lissocarpha* mid-shrubland over *Hibbertia hypericoides* low open shrubland over mixed sparse herbland	Part 1 & Part 2	Northern Spearwood shrublands and woodlands (PEC) (SCP24)

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Vegetation type	Vegetation Type Description	Staging Plan Areas	Conservation Significant Communities
Banksia sessilis and *Spyridium globulosum* tall shrubland (VT03)	*Banksia sessilis*, *Spyridium globulosum* tall shrubland over *Calothamnus quadrifidus*, *Melaleuca systena* low shrubland over open sedgeland *Mesomelaena pseudostygia*, *Desmocladus flexuosus*	Part 1 & Part 2	Northern Spearwood shrublands and woodlands (PEC) (SCP24)
Banksia attenuata, *B. menziesii* low woodland (VT04)	*Banksia attenuata*, *B. menziesii* low woodland over shrubland *Calothamnus quadrifidus*, *Hakea trifurcata*, *Hibbertia hypericoides*, *Xanthorrhoea preissii* over sparse sedgeland *Mesomelaena pseudostygia*, *Desmocladus flexuosus*.	Part 1 & Part 2	*Banksia* woodlands (TEC) / *Banksia* dominated woodlands (PEC)
Lomandra sp. herbland (VT05)	*Melaleuca systena*, *Hibbertia hypericoides* isolated shrubs over *Lomandra* sp. *Conostylis candicans*, *Kennedia prostrata* herbland.	Part 1 & Part 2	N/A
Eucalyptus gomphocephala tall woodland (VT06)	*Eucalyptus gomphocephala* tall woodland over *Spyridium globulosum* tall sparse shrubland	Part 1 & Part 2	Tuart (*Eucalyptus gomphocephala*) woodlands of the SCP (PEC)
Eucalyptus sp., *Agonis flexuosa* woodland (VT07)	*Eucalyptus* sp., *Agonis flexuosa* woodland over *Spyridium globulosum* sparse shrubland.	Part 1	N/A
Melaleuca huegelii and *M. systena* shrubland (VT08)	*Melaleuca huegelii*, *M. systena* *Grevillea preissii* shrubland over sparse herbland *Hardenbergia comptoniana*	Part 1 & Part 2	*Melaleuca huegelii – M. acerosa* (*M. systena*) shrublands on limestone ridges (TEC) (SCP26a)
Banksia attenuata woodland (VT09)	*Banksia attenuata* low woodland over *Melaleuca systena*, *Spyridium globulosum*, *Xanthorrhoea preissii* shrubland over sparse mixed sedgeland	Part 1 & Part 2	*Banksia* woodlands (TEC) / *Banksia* dominated woodlands (PEC)
Xanthorrhoea preissii shrubland (VT10)	*Xanthorrhoea preissii* tall shrubland over *Jacksonia* calcicola, *Hakea prostrata*, *Banksia dallanneyi* low open shrubland over *Lomandra* sp., *Conostylis* spp. open herbland	Part 1 & Part 2	N/A

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Vegetation type	Vegetation Type Description	Staging Plan Areas	Conservation Significant Communities
Eucalyptus decipiens woodland (VT11)	*Eucalyptus decipiens* woodland over *Banksia sessilis*, *Hibbertia hypericoides*, *Xanthorrhoea preissii* shrubland over *Conostylis aculeata*, *Mesomelaena pseudostygia*, *Desmocladus flexuosus* sparse herbland	Part 1	N/A
Planted (VT12)	Areas with planted shrubs and trees of both native and introduced species. Understorey is generally comprised of introduced herbs and grasses.	Part 2	N/A
Scattered Natives (VT13)	Areas with isolated native shrubs, normally *Acacia* spp., over mixed introduced grasses and herbs.	Part 1 & Part 2	N/A
Acacia rostellifera tall shrubland (VT14)	Occasional *Spyridium globulosum* with *Acacia rostellifera* tall shrubland over *Melaleuca systena* low isolated heath shrub over **Lagurus ovatus* and **Vulpia myuros* open grassland	Part 1	N/A
Banksia attenuata and *B. grandis* low woodland (VT15)	*Banksia attenuata, B. grandis* and *Allocasuarina fraseriana* low woodland over *Xanthorrhoea preissii* tall isolated clumps of shrubs over **Carpobrotus edulis*, **Pelargonium capitatum* and **Avena barbata* herbland/grassland.	Part 1	*Banksia* dominated woodlands (PEC)

2.2 Flora diversity

Part 1 – Butler to Eglinton

Within these vegetation types 238 flora taxa (including subspecies and varieties) representing 57 families and 146 genera were recorded. This total comprised of 176 native taxa and 62 introduced flora taxa.

Dominant families recorded for Part 1 included:

- Poaceae (27 taxa)
- Fabaceae (25 taxa)

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- Proteaceae (24 taxa).

Part 2 – Eglinton to Yanchep

Within these vegetation types 244 flora taxa (including subspecies and varieties) representing 56 families and 149 genera were recorded. This total comprised of 180 native taxa and 64 introduced flora taxa.

Dominant families recorded from the vegetation types recorded in Part 2 included:

- Poaceae (27 taxa)
- Fabaceae (26 taxa)
- Proteaceae (24 taxa).

2.3 Significant weeds

No Declared Pests as defined by the *Biosecurity and Agriculture Management Act 2007* (BAM Act) and/or Weeds of National Significance (WoNS) were recorded within Part 1 of the survey area.

Of the introduced flora taxa recorded in Part 2 of the survey area, four are listed as Declared Pests under the BAM Act and/or as a WoNS.

- **Gomphocarpus fruticosus* (Narrowleaf Cottonbush) – Declared Pest
- **Solanum linnaeanum* (Apple of Sodom) – Declared Pest
- **Lantana camara* (Common Lantana) – Declared Pest and WoNS
- **Asparagus asparagoides* (Bridal Creeper) - Declared Pest and WoNS.

2.4 Conservation significant flora

No conservation significant flora were recorded in Part 1. *Hibbertia spicata* subsp. *leptotheca* (Priority 3) was recorded in Part 2 within vegetation type VT08 – *Melaleuca huegelii* and *M. systena* shrubland (TEC 26a). This vegetation type occurred in both Part 1 and Part 2, but was more prevalent in Part 1 (Table 2)

Table 2 Extent and condition of VT08 in Part 1 and Part 2

Condition	Part 1 (ha)	Part 2 (ha)
Excellent	0.70	
Very Good	0.47	0.05
Good	0.02	
Degraded	0.04	
Total	**1.23**	**0.05**

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2.5 Conservation significant fauna

Of the three fauna species of conservation significance recorded during the field survey, Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) was observed regularly throughout the entire survey area. The Western Brush Wallaby (*Macropus irma*) and Rainbow Bee-eaters (*Merops ornatus*) were both sighted in Part 1 during the field surveys.

3 References

GHD 2011 *Northern Suburbs Railway Alignment from Romeo Rd (Alkimos) to Yanchep; Graceful Sun-moth Survey.* Unpublished Report for the Public Transport Authority (PTA)

GHD 2012 *Northern Suburbs Railway Alignment Butler to Yanchep Environmental Investigation,* Unpublished Report for the Public Transport Authority (PTA).

GHD 2018 *Yanchep Rail Extension Biological Assessment,* Unpublished Report for the Public Transport Authority (PTA).

RPS 2018 *Environmental Impact Assessment Yanchep Rail Extension: Part 1 – Butler Station to Eglinton Station* retrieved from: http://www.epa.wa.gov.au/sites/default/files/Referral_Documentation/Environmental%20Impact%20Assessment.pdf

Regards

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