



Memorandum

30 November 2020

To Main Roads Western Australia

Copy to

From GHD Pty Ltd

Tel +61 6222 8222

Subject Tonkin Highway Corridor
Hale Road Vegetation Assessment

Job no. 12530063

1 Introduction

1.1 Background

Main Roads Western Australia (Main Roads) is developing the Tonkin Grade Separated Interchanges (Hale Road and Welshpool Road) (the project). Main Roads referred the project to the Environmental Protection Authority (EPA) in November 2019. Main Roads requested the EPA suspend the public comment period on the referral until Hale Road/Tonkin Highway intersection design options were further considered and the preferred design option approved by the Minister. As well as revising the Hale Road/Tonkin Highway intersection, Main Roads have also commissioned additional technical studies including vegetation, flora and black cockatoo assessments to support the EPA referral.

1.2 Scope of works and purpose of this memorandum

Main Roads commissioned GHD Pty Ltd (GHD) to undertake a site visit to confirm the ecological values of areas which were not previously surveyed by Woodman in 2019-2020. The purpose of the site visit was to describe and map vegetation types and condition, clearly differentiating native remnant vegetation from planted vegetation, and record and map potential and actual breeding habitat and foraging habitat for black cockatoos. The vegetation type and condition mapping will align with mapping from adjacent areas completed by Woodman (2020).

This memorandum documents the methods and results of the site visit and is intended to inform and support the environmental approvals for the project.

1.3 Survey area

The survey area for the site visit included three small areas located in the vicinity of the Hale Road/Tonkin Highway intersection. The survey area covered 0.73 hectares (ha).

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1.4 Limitations and assumptions

This memorandum has been prepared by GHD for Main Roads and may only be used and relied on by Main Roads for the purpose agreed between GHD and the Main Roads as set out in Section 1.2 of this memorandum.

GHD otherwise disclaims responsibility to any person other than Main Roads arising in connection with this memorandum. GHD also excludes implied warranties and conditions, to the extent legally permissible. The services undertaken by GHD in connection with preparing this memorandum were limited to those specifically detailed in the memorandum and are subject to the scope limitations set out in the memorandum.

The opinions, conclusions and any recommendations in this memorandum are based on conditions encountered and information reviewed at the date of preparation of the memorandum. GHD has no responsibility or obligation to update this memorandum to account for events or changes occurring subsequent to the date that the memorandum was prepared. The opinions, conclusions and any recommendations in this memorandum are based on assumptions made by GHD described in this memorandum. GHD disclaims liability arising from any of the assumptions being incorrect.

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2 Methodology

2.1 Desktop assessment

Prior to the field assessment, a desktop assessment was undertaken to identify relevant information pertaining to the survey area. The desktop assessment included a review of:

- Previous vegetation surveys and mapping provided by Main Roads that covered areas adjacent to the survey area (e.g. Woodman 2020)
- Aerial imagery of the survey area.

2.2 Vegetation assessment

GHD ecologist Erin Lynch (Flora collection licence: FB62000081-2) completed a vegetation assessment of the survey area on 8 July 2020. The assessment was undertaken to identify and map the vegetation types and condition within the survey area, clearly differentiating areas of native and non-native vegetation.

The survey methodology employed by GHD was undertaken with reference to the EPA *Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA 2016).



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Field survey methods involved traversing the survey area by foot and recording vegetation type and condition as well as taking representative photographs. Vegetation types were identified and boundaries delineated using field data/observations and confirmed by viewing aerial imagery. The vegetation types described within the survey area were aligned with those described by Woodman (2020) in the adjacent areas. Full floristics were not recorded.

The vegetation condition was assessed and mapped in accordance with the vegetation condition rating scale for the South West and Interzone Botanical Provinces of WA (devised by Keighery (1994) and adapted by EPA (2016)).

2.3 Black cockatoo habitat assessment

A targeted Black Cockatoo habitat assessment was undertaken in conjunction with the vegetation survey to identify and map suitable foraging habitat and actual and potential breeding trees (suitable breeding tree with a Diameter at Breast Height (DBH) greater than 500 mm) within the survey area.

The survey was conducted in accordance with the EPBC Act referral guidelines for three threatened black cockatoo species: Carnaby's Cockatoo (Endangered) *Calyptorhynchus latirostris*, Baudin's Cockatoo (Vulnerable) *Calyptorhynchus baudinii*, and Forest Red-tailed Black Cockatoo (Vulnerable) *Calyptorhynchus banksii naso* (Department of Sustainability, Environment, Water, Populations, and Communities (DSEWPaC 2012).

3 Results

3.1 Vegetation

The majority of the survey area has been cleared with minimal remnant native vegetation remaining. Remnant native vegetation exists as individual or stands of trees consisting of *Corymbia calophylla* and *Eucalyptus rudis*. Other vegetated areas remaining within the survey area are completely dominated by introduced species including **Leptospermum laevigatum*, **Acacia longiflora* and **Arundo donax* and planted native (non-local) species such as *Calothamnus rupestris* and *Callistemon* sp.

The condition of the vegetation remaining within the survey area is assessed as Completely Degraded, with little to no native species remaining. The understorey has been completely cleared throughout the survey area.


Previously cleared areas, including the existing road network infrastructure, has been mapped as Cleared.

The results of the assessment and representative photographs of each vegetation type is presented in Table 1. Mapping of the vegetation types and condition is presented in Figure 1, Attachment 1.




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Table 1 Vegetation types identified within the survey area

Code	Broad vegetation type	Location	Area (ha)	Photograph
CC/ER	<p>Individual or stands of <i>Corymbia calophylla</i> and <i>Eucalyptus rudis</i> over introduced species (parkland cleared).</p> <p>Small dense patch of *<i>Arundo donax</i> with juvenile <i>E. rudis</i> located at the western end of the survey area.</p>	Hardey E Rd	0.016	 
LL	<p>Individual or stands of *<i>Leptospermum laevigatum</i> over introduced species.</p> <p>Other associated species included *<i>Acacia longiflora</i> and juvenile introduced Eucalypt species.</p>	Hale Rd, south of Tonkin Hwy	0.014	
RV7	<p>Recently planted vegetation / landscaping along Hale Road. Planted species include <i>Xanthorrhoea preissii</i>, <i>Anigozanthos</i> sp., and other native tube stock species.</p>	Hale Rd, north of Tonkin Hwy	0.009	



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Code	Broad vegetation type	Location	Area (ha)	Photograph
Cleared	<p>Completely cleared or modified areas. Includes existing road network infrastructure, pathways, houses and parkland. Some scattered planted trees/shrubs but no intact native vegetation.</p> <p>Individual or stands of <i>Calothamnus rupestris</i> and <i>Callistemon</i> sp. over completely cleared understorey occur along Hale Road, north of Tonkin Hwy. These shrubs are not locally native species.</p>	Majority of the survey area.	0.691	

3.2 Black cockatoo assessment

Two potential Black Cockatoo habitat trees were identified within the survey area, one *Corymbia calophylla* (Marri) and one *Eucalyptus rudis* (Flooded gum). The Marri did not contain any hollows, however the Flooded gum contained one small hollow (approximately 7 cm in diameter) which was occupied by an active bee hive. No suitable breeding hollows were identified within the survey area.

The scattered Marri and Flooded gum trees provide suitable foraging habitat for Black Cockatoo species (vegetation type CC/ER). There is approximately 0.016 ha of suitable foraging habitat within the survey area which is considered to have low to moderate value. Fresh and old foraging evidence (chew marks) by Forest Red-tailed Black Cockatoos was observed on Marri nuts.

No evidence of roosting by Black Cockatoos was observed within the survey area. The survey area is not considered to contain suitable roosting habitat for Black Cockatoos.

Black Cockatoo foraging and potential habitat trees are shown in Figure 2, Attachment 1.



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4 References

Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) 2012, EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species: Carnaby's Black Cockatoo, Baudin's Black Cockatoo and Forest red-tailed Black Cockatoo, Canberra, Department of Sustainability, Environment, Water, Population and Communities.

Environmental Protection Authority (EPA) 2016, Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment, Perth, Environmental Protection Authority.

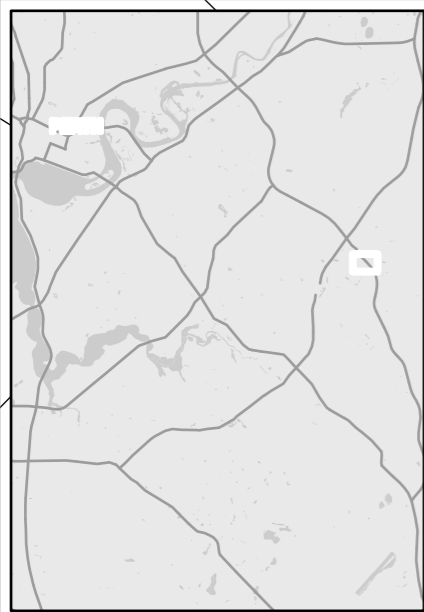
Keighery, BJ 1994, Bushland Plant Survey: A Guide to Plant Community Survey for the Community, Nedlands, Australia, Wildflower Society of Western Australia (Inc.).

Woodman Environmental 2020, Tonkin Grade Separated Interchanges, Biological Survey and Targeted Black Cockatoo Habitat Assessment. Unpublished report prepared for Main Roads Western Australia.

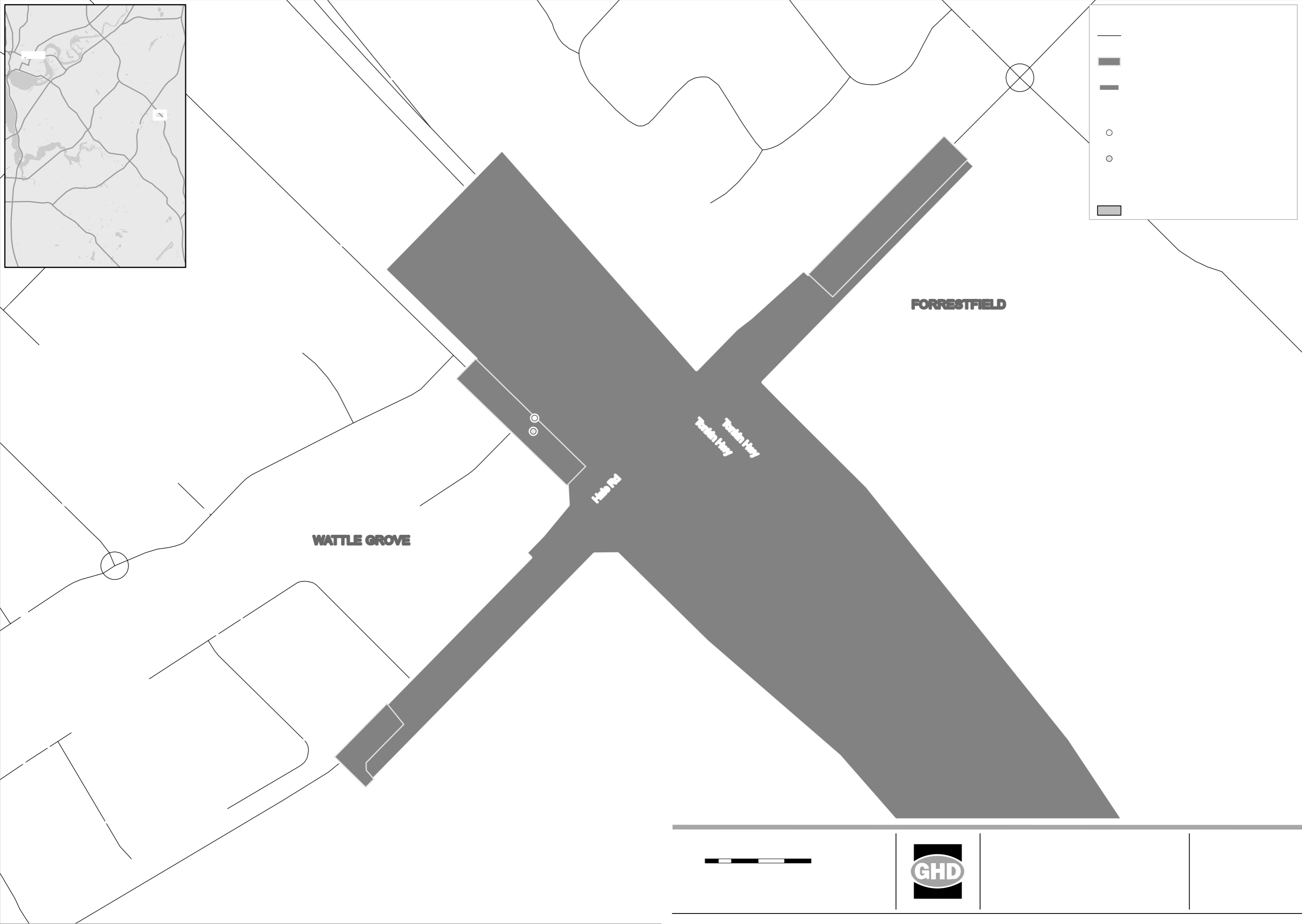


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Attachment 1 – Figures



A legend box in the top-right corner contains five symbols: a thin horizontal line, a thick horizontal line, a thin horizontal line, a small circle, and a larger circle. These symbols correspond to different features on the map, such as roads, boundaries, or specific points of interest.



A scale bar is located at the bottom left of the map, showing a series of alternating black and white segments. To its right is the GHD logo, which consists of the letters 'GHD' in a white font inside a black oval, which is itself inside a black square. To the right of the logo are two empty rectangular boxes.