

## Memorandum

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Subject	Targeted Chuditch Survey - Toodyaya Road Widening Wheatbelt Survey Area		
From	Jared Leigh		
File/Ref No.	60344161	Date	15-Dec-2016

### 1.0 Introduction and Background

Main Roads Western Australia (Main Roads) proposes to widen approximately 50 km of Toodyaya Road to increase road user safety (the Project). AECOM Australia Pty Ltd (AECOM) was engaged to conduct biological assessments to inform project scoping and environmental approvals. The biological assessments identified the potential for the Chuditch (*Dasyurus geoffroii*) to utilise habitats within the Project area. This targeted study was conducted to assess the presence of the Chuditch within the wheatbelt section of the Study area.

The Chuditch has a white spotted, brown pelage, large rounded ears, pointed muzzle, large dark eyes and is the largest carnivorous marsupial in Western Australia. The tail is about three quarters of the head and body length, and has a black brush over the distal portion (DEC, 2012a). It is generally active from dusk to dawn, and utilises horizontal hollow logs or earth burrows as dens or refuge. To be suitable as den sites, logs must have a diameter > 30 cm and a hollow with 7-20 cm diameter and a minimum length of one metre (McGregor *et al.*, 2014). Annually, an adult female Chuditch will utilise an estimated average of 66 logs and 110 burrows within her home range (Orell and Morris, 2004). The Chuditch is listed as Vulnerable under both the *Environment Protection and Biodiversity Conservation Act 1999* [EPBC Act] and the *Wildlife Conservation Act 1950* [WC Act].

Formerly the Chuditch occurred over nearly 70% of the Australian continent from Western Australia across to Queensland, New South Wales and Victoria (DEC, 2012a). Currently The Chuditch only occurs in areas dominated by sclerophyll forest or drier woodland, heath and mallee shrubland (Van Dyck & Strahan, 2008). The majority of records are found in the contiguous Jarrah forests of south-western Australia (DotEE, 2015). The species is thought to occur in the local area from four records within seven kilometres of the Study Area, the most recent in 2009.

### 2.0 Methodology

The targeted survey was undertaken by focussing on the preferred habitats within the broader Eucalypt Woodland fauna habitat defined by AECOM (2016). This included a desktop assessment and field surveys. The methodologies for these components are described below.

#### 2.1 Desktop assessment

The desktop assessment included:

- identifying potentially suitable and preferred habitat within the wheatbelt section of the Study area
- identifying potentially suitable areas for deployment of motion activated cameras.

The field survey included:

- conducting onground assessments on the suitability of the potentially suitable habitats identified during the desktop assessment. Preferable habitat was assessed dependant on the presence of dense understorey and canopy cover, as well as by the presence of potential den sites, and steep-sloping forest and riparian vegetation (Orell & Morris, 1994)
- conducting transects approximately every 50 m through potentially preferred habitats, searching for indirect evidence (e.g. scats, dens, prints) of the Chuditch
- installing motion activated cameras throughout preferred habitats. Twenty-six Bushnell Trophy Cam HD cameras were installed within the most suitable habitats along the wheatbelt section of the Study area (Table 1). Cameras were generally left out for 14 nights, with batteries, bait and HD cards checked after seven nights. Cameras were installed on a downward facing bracket approximately 1.5 m above the ground, such that the camera lens and sensor were facing vertically downwards towards the non-reward 'Chuditch' bait (Plate 1). Vertical camera orientation has been shown by Smith and Coulson (2012) to provide a valid, superior method to horizontal orientation, depending on the target species. 'Chuditch' bait was made using 1.5 kg meat meal, 500 g sardines, 500 mL fish oil, 1 kg of chicken mince and 1.5 kg oats.



Plate 1 Camera Configuration

## 3.0 Results and Discussion

No indirect evidence of the Chuditch was recorded along transects in any of the vegetation units / habitats searched. Sixteen predator scats were collected along these transects and subsequently analysed by [www.scatsabout.com.au](http://www.scatsabout.com.au) to confirm whether predators had been feeding on the Chuditch. None of the 16 predominantly Fox (*Vulpes vulpes*) and Dog (*Canis lupis*) scats contained any Chuditch material.

**Table 1 Camera Locations**

Camera ID	Easting	Northing
CAM1	-31.6826	116.3268
CAM2	-31.6822	116.3271
CAM3	-31.683	116.3274
CAM4	-31.6857	116.3259
CAM5	-31.6809	116.3277
CAM6	-31.6775	116.3378
CAM7	-31.6789	116.3329
CAM8	-31.6785	116.3352
CAM8	-31.6782	116.3351
CAM9	-31.6756	116.349
CAM10	-31.6071	116.4379
CAM11	-31.6064	116.439
CAM12	-31.6064	116.4395
CAM13	-31.6748	116.351
CAM14	-31.673	116.353
CAM15	-31.6781	116.3365
CAM16	-31.6777	116.3394
CAM17	-31.6788	116.3342
CAM18	-31.6801	116.3291
CAM20	-31.7135	116.2892
CAM21	-31.7125	116.291
CAM22	-31.711	116.292
CAM23	-31.7098	116.2932
CAM24	-31.6054	116.4456
CAM25	-31.6045	116.4487
CAM26	-31.6053	116.4425

DEC (2012b) states that the sizeable areas (>20,000 ha) are required for Chuditch to survive in an area. Cameras were generally therefore positioned in areas of the Study area that were parts of a larger continuous habitat. However, no photos of the Chuditch were captured on any of the 26 cameras. Photos were captured of the Western Brush Wallaby (*Macropus irma*), Common Brushtail Possum (*Trichosurus vulpecula*), Western Grey Kangaroo (*Macropus fuliginosus*) Fox (*Vulpes vulpes*), Cat (*Felis catus*), Dog (*Canis lupis*), Bobtail Lizard (*Tiliqua rugosa*), Dugite (*Pseudonaja affinis*), Sand Monitor (*Varanus gouldii*), Echidna (*Tachyglossus aculeatus*), as well as several rodent, dragon, skink, bird and lepidoptera species.



**Plate 2 Species Photographed**

Camera trapping has been found to be the most effective method of detecting species at low or moderate densities (DSEWPac, 2011), and is ideally suited for surveying rare, elusive, nocturnal and / or crepuscular species (Forest Products Commission, 2016). Given the number of cameras installed within the most suitable habitat within the Study area, and the highly fragmented (into small linear corridors) nature of the habitat within the Study area, it is believed that the Chuditch (*Dasyurus geoffroii*) would be at low abundance, if present.

As noted, much of the Study area contains linear corridors of habitat that would be utilised by the Chuditch (*Dasyurus geoffroii*) to move through the area, if present. DEC (2012b) states that habitats critical to the survival and maintenance of important Chuditch (*Dasyurus geoffroii*) populations comprise areas of natural vegetation that the Chuditch uses to move from one area to another. Given the highly fragmented nature of the habitat within the Wheatbelt, it is recommended that habitat corridors be left uncleared wherever possible.

Don't hesitate to contact the undersigned for further information.

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