



Memorandum

15 August 2017

To Water Corporation

Copy to

From

Subject Additional Survey Area - Black Cockatoo Trees Job no. 6135763

1 Introduction

1.1 Project background

The Water Corporation proposes to construct new infrastructure to improve the supply of water to the towns of Balingup, Mullalyup and Kirup, as a component of the broader Warren Blackwood Water Supply Scheme. This will potentially involve clearing of vegetation and fauna habitat for the construction and installation of this infrastructure.

A previous Spring Flora and Fauna Survey Report was prepared by Astron Environmental Services in 2013 covering the majority of the project area (Astron 2013), however since that time, the location of some of the components of the project have changed. As a result, a further survey of the areas not previously covered was required to identify the key ecological values. This survey was conducted by GHD in May 2017 (GHD 2017). It has since been identified that some segments along the original survey area had not been thoroughly surveyed for Black Cockatoo habitat trees.

GHD was commissioned by the Water Corporation to undertake a targeted Black Cockatoo Tree survey for segments along the proposed alignment not previously surveyed by GHD. The purpose of the survey was to ensure potential Black Cockatoo habitat trees have been identified within the survey boundary and recorded. The results of this assessment will be used to assess the ecological impact of the project, assist with the project design (refining the disturbance footprint) and inform the environmental approvals process.

The limitations and assumptions outlined in the GHD biological assessment report (GHD 2017) also apply to this memorandum.

1.2 Survey area

The survey areas are located within the Shires of Donnybrook – Balingup and Bridgetown – Greenbushes, between the towns of Mullalyup and Greenbushes (Figure 1). The combined length of the survey areas is approximately 4.6 km with a width of approximately 12 m.

2 Survey methodology

Two GHD ecologists, Erin Lynch and Angela Benkovic undertook a targeted Black Cockatoo tree survey within the survey areas on the 8-9 August 2017. The tree 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*



Memorandum

baudinii, and Forest Red-tailed Black Cockatoo (Vulnerable) *Calyptorhynchus banksii naso*, (Department of Sustainability, Environment, Water, Populations, and Communities (DSEWPaC 2012).

The assessment included the identification, description and recording of:

- Potential and actual breeding habitat (relevant tree species with a DBH of >500 mm for Jarrah, Marri and Flooded Gum (*Eucalyptus rudis*) or DBH of >300 mm for Wandoo or Salmon Gum)
- Existing tree hollows and any evidence of use by Black Cockatoos (a suitable nesting hollow currently able to support breeding was defined as a tree hollow with an entrance diameter greater than 100-150 mm which would allow entry of a Black Cockatoo)
- The diameter at breast height (DBH) of trees with existing hollows
- Potential night roosting habitat and foraging evidence.

3 Results – Black Cockatoo Trees

The Black Cockatoo tree survey identified 222 potential breeding trees of suitable DBH (Jarrah and Marri >500 mm) from within or immediately adjacent to the survey area (Figure 1). Trees of this size are considered to have nesting potential now, or will develop hollows within 100 years. Of the 222 trees, 36 were identified with potentially suitable hollows for Black Cockatoo nesting (with a hollow diameter greater than 100-150 mm, to allow entry of Black Cockatoo).

The size of a hollow is an estimate as the assessment was undertaken from ground level, there is the potential for the actual hollow size to be greater than 100 mm. In addition there may be more hollows present which could not be identified from ground level. None of the trees recorded showed signs of breeding or roosting by Black Cockatoos. There was however old and fresh foraging evidence on Marri nuts (Forest Red-tailed Black Cockatoo) observed along the alignment.

4 References

Astron Environmental Services 2013, *Greenbushes to Kirup Pipeline Route Vegetation, Flora and Fauna Assessment*, unpublished report prepared for Water Corporation, October 2013.

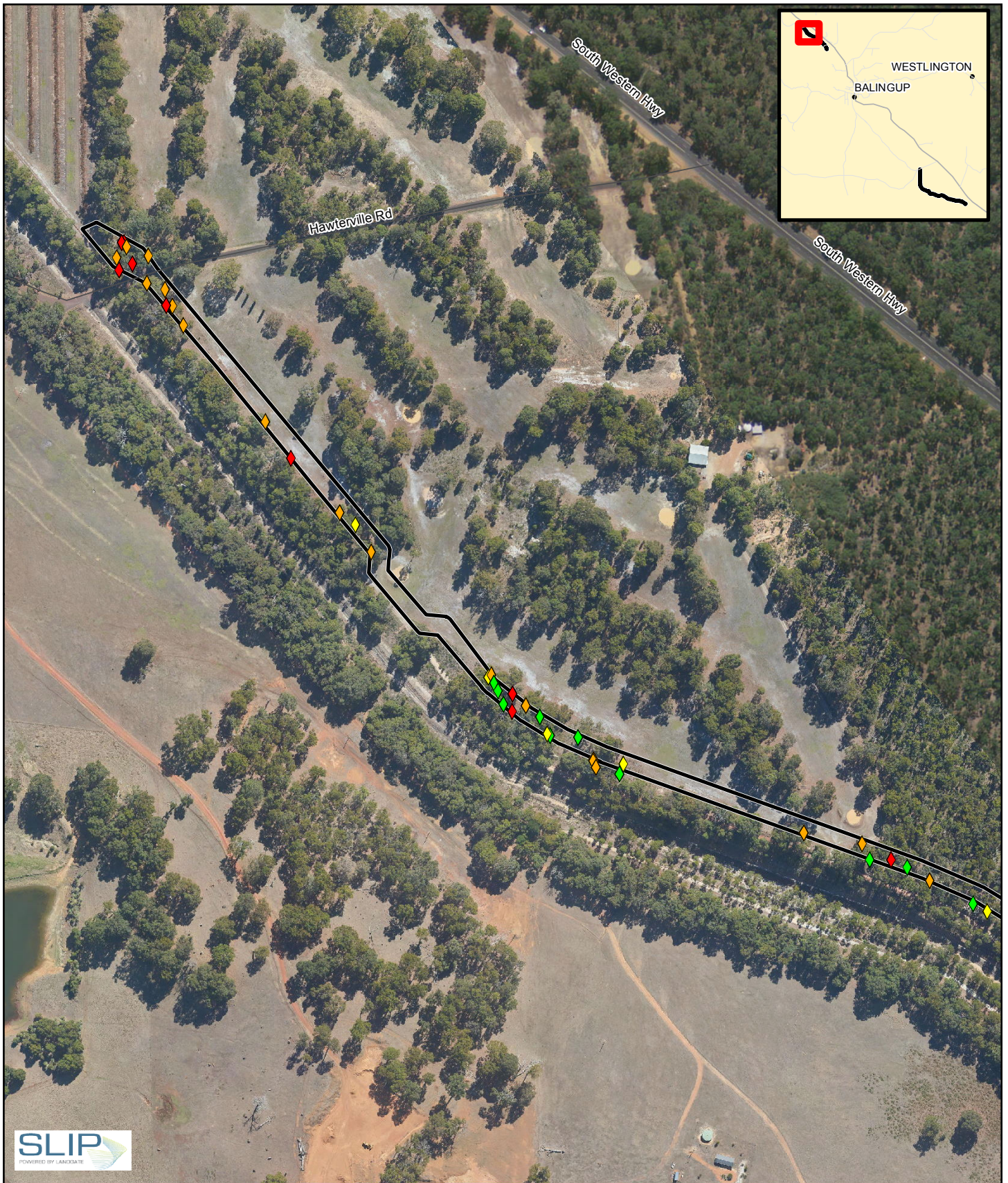
DSEWPaC 2012, *EPBC Act Referral Guidelines for Three Threatened Black Cockatoo Species: Carnaby's Black Cockatoo, Baudin's Black Cockatoo and Forest red-tailed Black Cockatoo*, Canberra, Department of Sustainability, Environment, Water, Population and Communities.

GHD 2017, *Greenbushes to Kirup Link Biological Assessment*, unpublished report prepared for Water Corporation, August 2017.

Regards

A handwritten signature in blue ink, appearing to read 'Erin Lynch', is written over a light blue circular stamp. The initials 'pp' are written in the bottom left corner of the stamp.

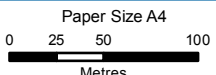
Erin Lynch
Ecologist



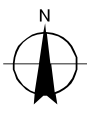
LEGEND

Black Cockatoo Habitat

- ◆ Jarrah (*Eucalyptus marginata*) – hollows
- ◆ Marri (*Corymbia calophylla*) – no hollows
- ◆ Jarrah (*Eucalyptus marginata*) – hollows
- Additional Survey Area
- Local Road



Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

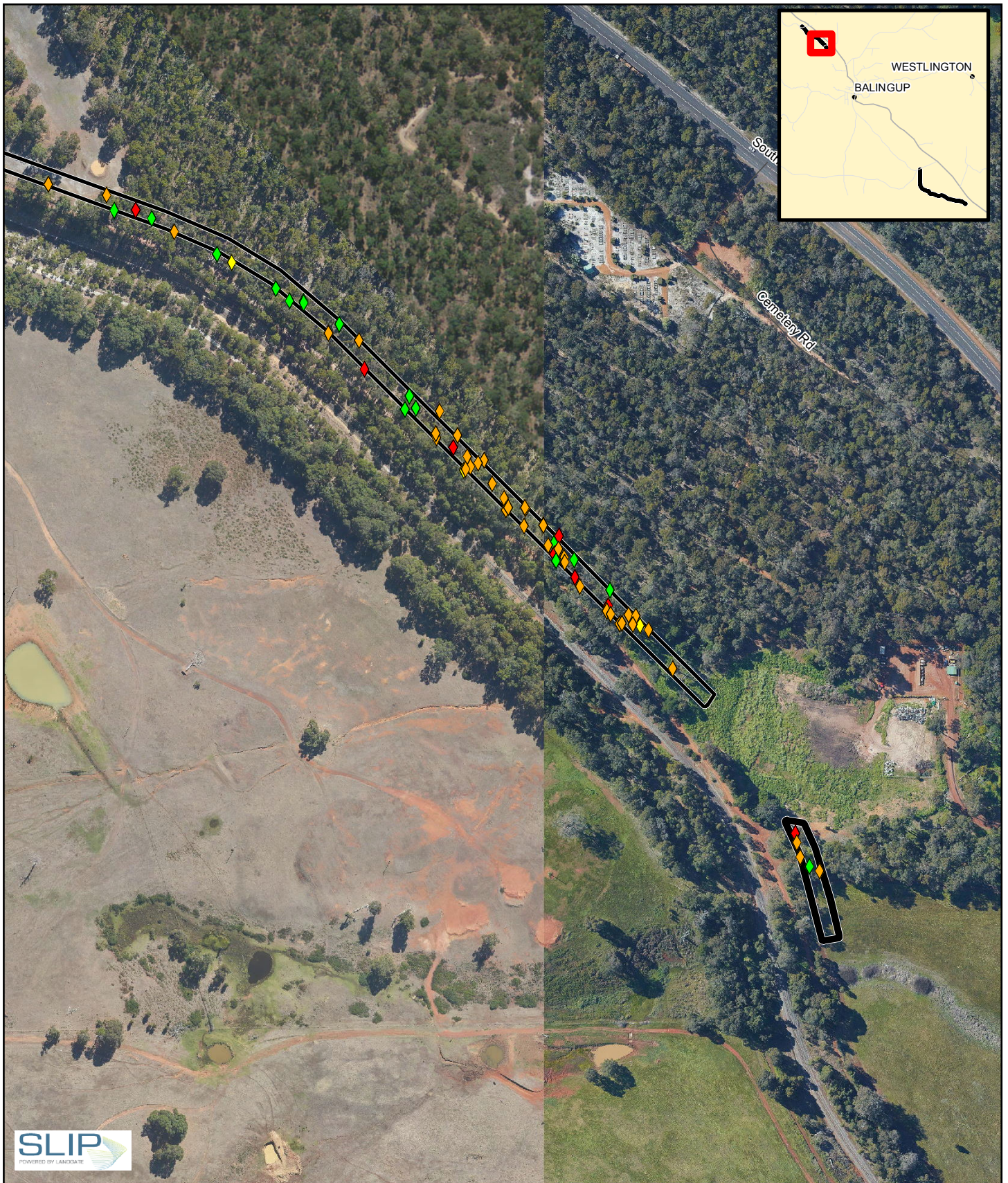


Water Corporation
Greenbushes to Kirup Link EIA and Approvals
Additional Survey Area

Job Number | 61-35763-01
Revision | A
Date | 16 Aug 2017

Black Cockatoo Observations

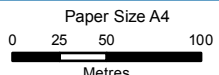
Figure 1



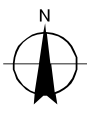
LEGEND

Black Cockatoo Habitat

- ◆ Jarrah (*Eucalyptus marginata*) – hollows
- ◆ Marri (*Corymbia calophylla*) – no hollows
- ◆ Jarrah (*Eucalyptus marginata*) – hollows
- ◆ Marri (*Corymbia calophylla*) – no hollows
- Additional Survey Area
- Local Road



Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

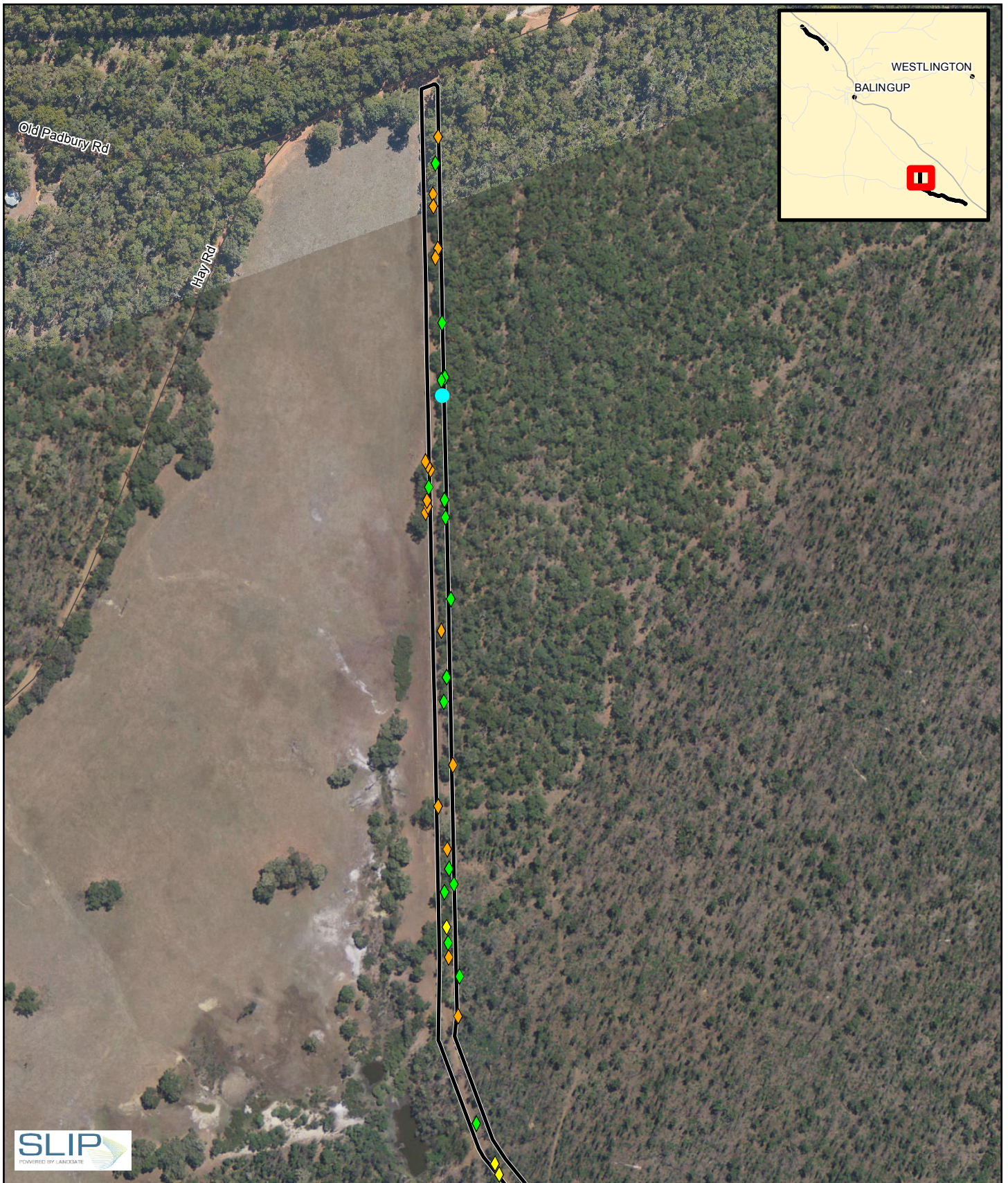


Water Corporation
Greenbushes to Kirup Link EIA and Approvals
Additional Survey Area

Job Number | 61-35763-01
Revision | A
Date | 16 Aug 2017

Black Cockatoo Observations

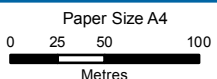
Figure 1



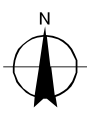
LEGEND

Black Cockatoo Habitat

- ◆ Marri (*Corymbia calophylla*) – no hollows
- ◆ Jarrah (*Eucalyptus marginata*) – no hollows
- ◆ Jarrah (*Eucalyptus marginata*) – hollows
- Local Road
- Additional Survey Area



Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

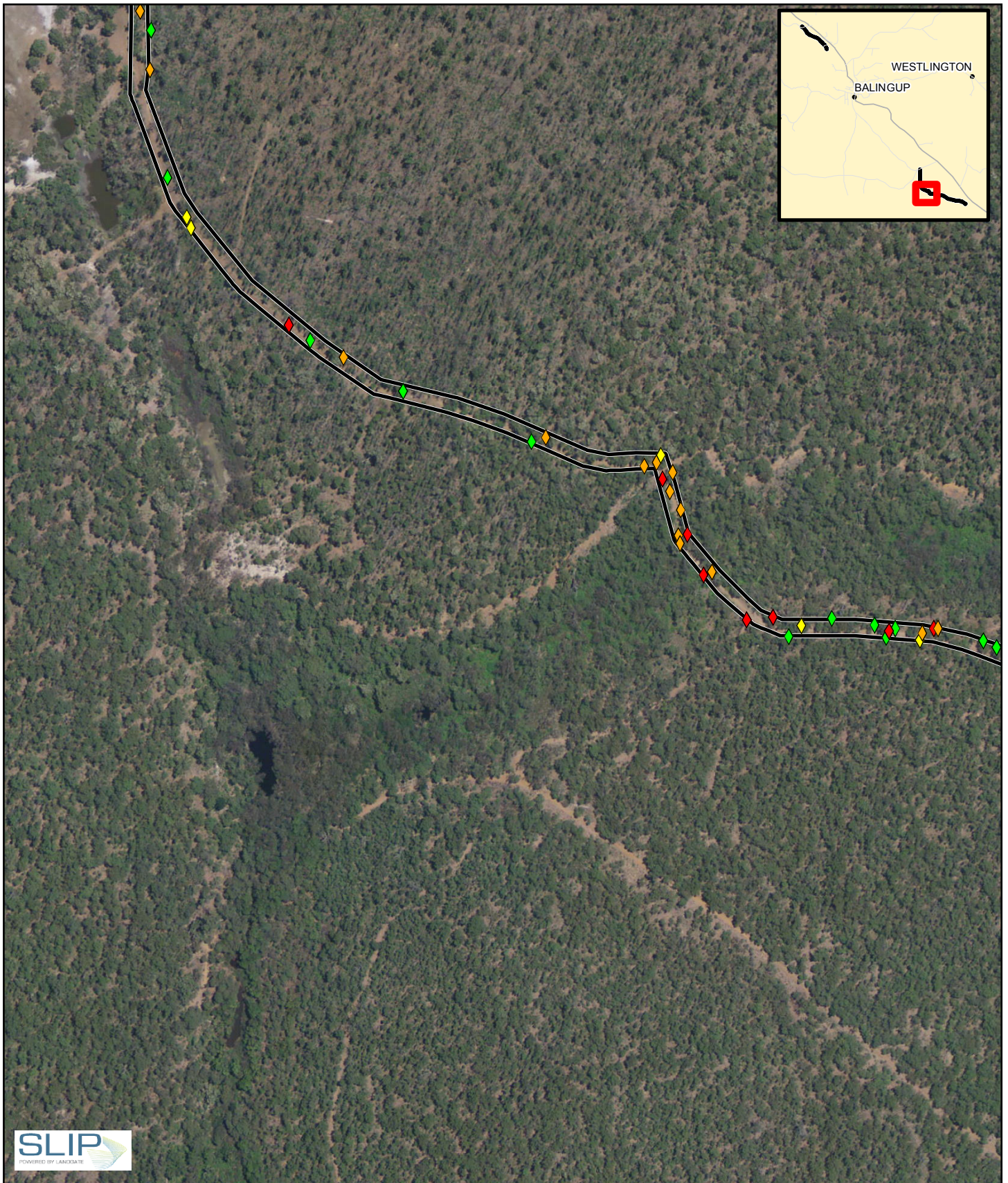


Water Corporation
Greenbushes to Kirup Link EIA and Approvals
Additional Survey Area

Job Number | 61-35763-01
Revision | A
Date | 16 Aug 2017

Black Cockatoo Observations

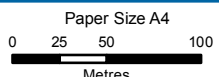
Figure 1



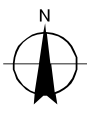
LEGEND

Black Cockatoo Habitat

- ◆ Marri (*Corymbia calophylla*) – no hollows
- ◆ Jarrah (*Eucalyptus marginata*) – no hollows
- ◆ Jarrah (*Eucalyptus marginata*) – hollows
- ◆ Marri (*Corymbia calophylla*) – hollows
- Additional Survey Area



Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

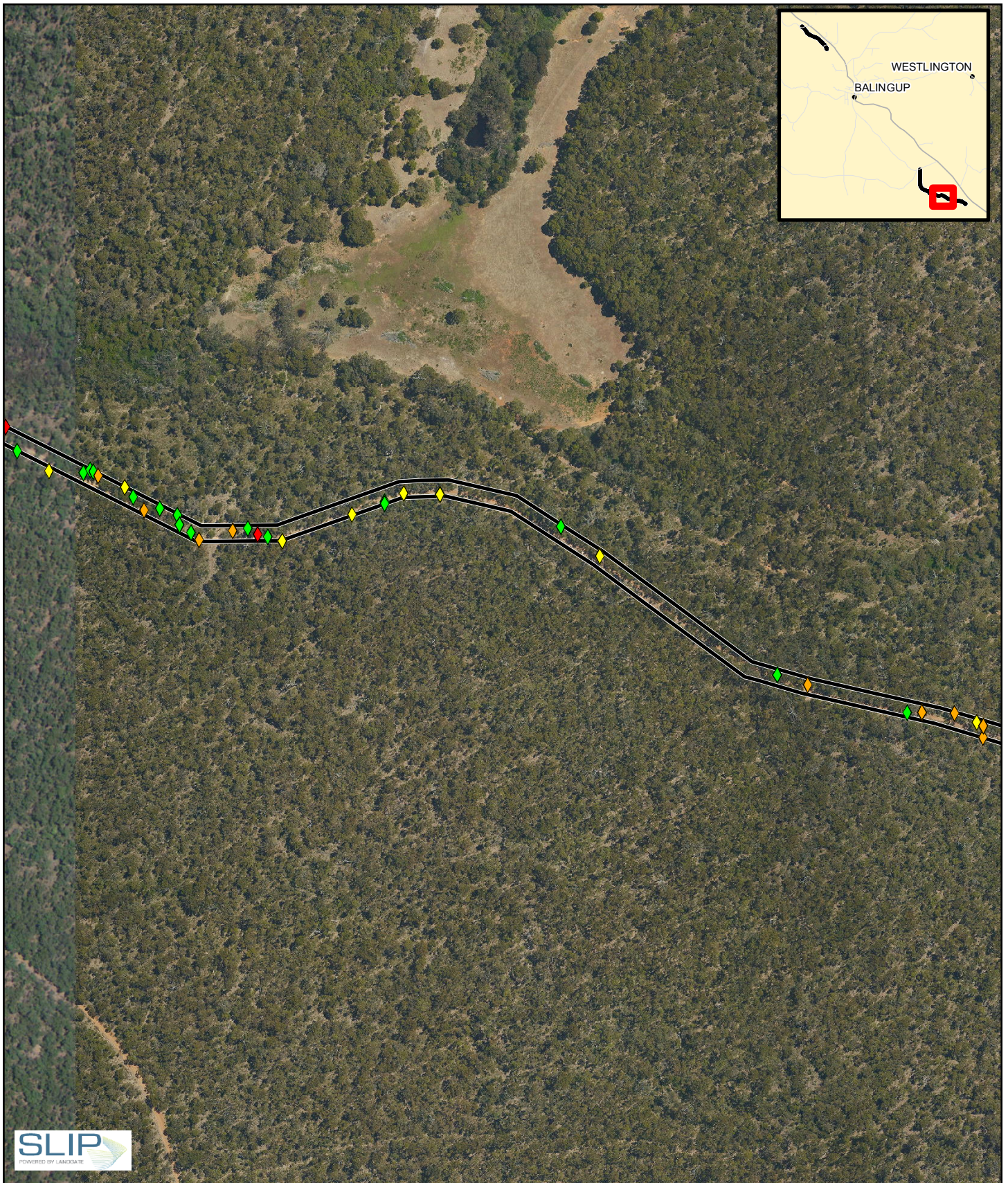


Water Corporation
Greenbushes to Kirup Link EIA and Approvals
Additional Survey Area

Job Number	61-35763-01
Revision	A
Date	16 Aug 2017

Black Cockatoo Observations

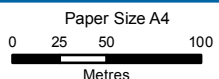
Figure 1



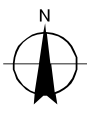
LEGEND

Black Cockatoo Habitat

- ◆ Marri (*Corymbia calophylla*) – no hollows
- ◆ Jarrah (*Eucalyptus marginata*) – no hollows
- ◆ Jarrah (*Eucalyptus marginata*) – hollows
- ◆ Marri (*Corymbia calophylla*) – hollows
- Additional Survey Area



Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50

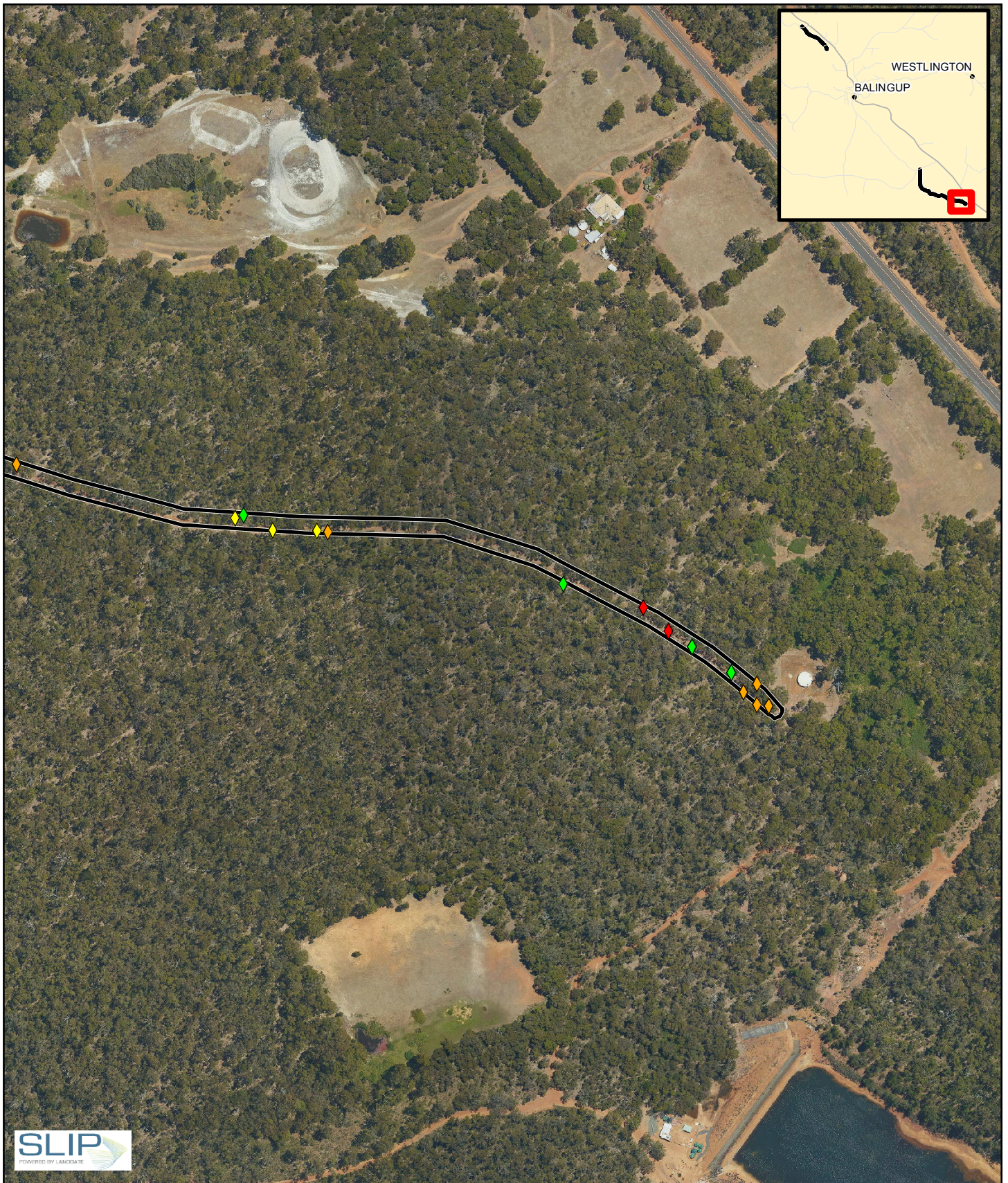


Water Corporation
Greenbushes to Kirup Link EIA and Approvals
Additional Survey Area

Job Number	61-35763-01
Revision	A
Date	16 Aug 2017

Black Cockatoo Observations

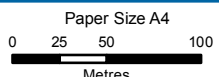
Figure 1



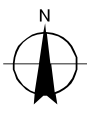
LEGEND

Black Cockatoo Habitat

- ◆ Marri (*Corymbia calophylla*) – no hollows
- ◆ Jarrah (*Eucalyptus marginata*) – no hollows
- ◆ Jarrah (*Eucalyptus marginata*) – hollows
- ◆ Marri (*Corymbia calophylla*) – hollows
- Additional Survey Area



Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 50



Water Corporation
Greenbushes to Kirup Link EIA and Approvals
Additional Survey Area

Job Number	61-35763-01
Revision	A
Date	16 Aug 2017

Black Cockatoo Observations

Figure 1