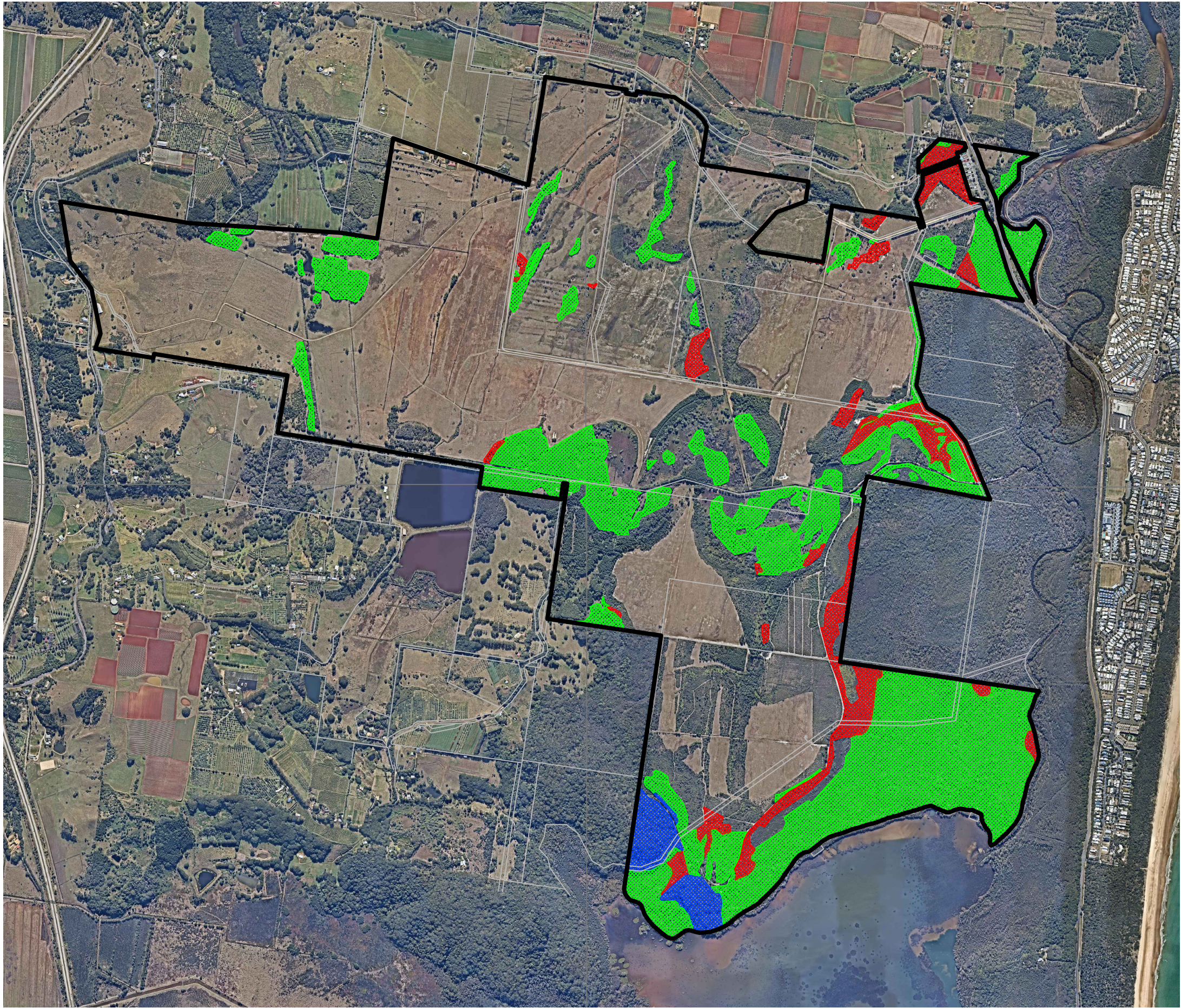




LEGEND

- Kings Forest Boundary
- KOALA HABITAT ONSITE (214.49ha)**
- ▨ Primary Koala Habitat (33.17ha)
 - ▨ Secondary (A) Koala Habitat (169.11ha)
 - ▨ Secondary (B) Koala Habitat (12.21ha)

0 500m
1 : 20 000

SOURCE: JWA March to August Site
Investigations 2018; Near Map 08/08/18 Aerial

SCALE: 1 : 20 000 @ A3

JWA PTY LTD
Ecological Consultants

CLIENT
Project 28 Pty Ltd
PROJECT
Koala Plan of Management
Kings Forest
Melaleuca Drive, Duranbah, NSW
Shire of Tweed

FIGURE 17

PREPARED: BW
DATE: 28 September 2018
FILE: N97017_KPOM.dwg

TITLE
**EXISTING
KOALA HABITAT**

7 KOALA HABITAT LINKAGES AND KOALA DISPERSAL

7.1 Introduction

Linkages between areas of suitable habitat are known to be important for the dispersal of individual Koalas within their home ranges and the dispersal of individuals to form new home ranges. The following sections provide a review of relevant literature and discusses habitat connectivity and opportunities for dispersal in a regional, sub-regional/local and Kings Forest site context.

7.2 Review of Relevant Literature

Fauna dispersal has the potential to play a critical role in the maintenance and regulation of existing populations and in the establishment of new populations (Sharp 1997). Eberhard (1978) and Gall (1980) separate populations of Koalas into three (3) groups:

- Residents;
- Nomads; and
- Dispersing young.

Upon reaching maturity (1-2 years) the young may remain for a time within the maternal home range area, even persisting until their third year (Eberhard 1978), but invariably disperse from the maternal home range area (Dr S. Phillips, 2013 *pers. comm.*). They may travel many kilometres, often in excess of 40-50 km over a period of a few weeks (AKF undated; Gall 1980). This is the group which would most depend upon adequate corridors between habitat patches. Gall (1980) found that three (3) dispersing Koalas had moved distances of 1 km, 4 km and 11 km and were capable of ranging widely. Studies of dispersal patterns in a regional Koala population in south-east Queensland (Dique *et al.* 2003), demonstrated that the mean straight-line distance between the natal and breeding home ranges for males and females was similar, being 3.5 km (range 1.1 - 9.7 km) and 3.4 km (range 0.3 - 10.6 km) respectively.

Koalas have also been shown to go for random wanders/exploratory movements (Smith 1979; Dique *et al.* 2003) and may disappear from a colony for a time with females tending to travel less distances (Gall 1981). Competition for mates, competition for resources and the avoidance of inbreeding are the three (3) mechanisms for dispersal that are most commonly postulated within the literature (Greenwood 1980 and 1983; Dobson 1982; Johnson 1986; Johnson and Gaines 1987; Dique *et al.* 2003).

Research has shown that habitat links for Koalas include both forested and cleared areas, as studies have shown that Koalas will travel over cleared land containing only scattered trees (Ellis *et al.* 2009). Radio tracking data has provided evidence that Koalas will utilise culverts in order to traverse the landscape (Taylor and Goldingay 2003) and studies by Callaghan and Phillips (1997, 1998a and 1998b), Hopkins and Phillips (2009), and AMBS (2012) also document the use of underpasses by Koalas.

7.3 Habitat Connectivity and Opportunities for Dispersal

7.3.1 Introduction

The following sections discuss Koala habitat connectivity and opportunities for Koala dispersal at a regional, sub-regional/local and Kings Forest site level.

7.3.2 Regional

In a regional context, the Kings Forest site is significantly isolated (in terms of wildlife movement) from areas of regionally significant habitat. This is due to physical barriers to movement including the Tweed River and extensive agricultural and residential development to the north, Tweed Coast Road and the Pacific Ocean to the east and the Pacific Motorway, and agricultural lands to the west (**FIGURE 1**). The Pacific Motorway in particular is discussed within the NSW Scientific Committee final determination to list Koalas between the Tweed and Brunswick Rivers east of the Pacific Highway as an endangered population as a significant barrier to the movement of Koalas and likely cause of significant fatalities. Fauna linkages to the north and west of the site are highly disturbed. Thus, currently the only effective connections with other significant habitat areas are to the south of the site (Carrick 2009).

7.3.3 Sub-regional/Local

The lack of habitat connections to the north of Kings Forest is demonstrated within the Tweed Coast Koala Habitat Study (Phillips *et al.* 2011) in which indicative meta-population boundaries and linkages between habitat areas are provided (**FIGURE 13**). Phillips *et al.* (2011) has identified three (3) distinct Koala populations that occur in the general locations of Kings Forest, Round Mountain and Pottsville Wetlands. Although Koala activity was detected outside of these localities, primarily to the north and west outside of the above-mentioned localities, the long term prognosis for these outliers is poor in the absence of recruitment from other source populations (Phillips *et al.* 2011).

7.3.4 Kings Forest Site

Habitat connectivity and opportunities for dispersal have been addressed at every stage of the Kings Forest development approval process. Although Koalas have been demonstrated to traverse areas that are predominantly cleared, the results of radio-tracking of Koalas across the Kings Forest site (JWA 2000) suggest that Koalas generally move through vegetated corridors on and adjacent to the site. These movement corridors have been designated as the East-West, Cudgen Creek, Cudgen Lake and Forest Hills corridors (**FIGURE 18**). The evidence appears to indicate that the only effective connections with Koala habitats in the locality will be to the south and south-west of the Kings Forest site.

At the request of Tweed Shire Council, an assessment of the potential to link Koala habitat on the Kings Forest site to the Eviron Road overpass was also completed during the preparation of this KPoM. **FIGURE 18** shows the general location of a wildlife corridor to the Eviron Road underpass. This corridor area should be the subject of habitat embellishment in the future.