



## **KINGS FOREST RESIDENTIAL DEVELOPMENT**

### **REPORT TO THE INDEPENDENT PLANNING COMMISSION**

**SUPPLEMENTARY RESPONSE TO THE NSW DEPARTMENT OF  
PLANNING & ENVIRONMENT RECOMMENDED CONDITIONS  
OF APPROVAL FOR PART 3A SECTION 75W MODIFICATION  
APPLICATION (MP08\_0194 MOD 4)**

**MARCH 2019**

**A REPORT PREPARED FOR PROJECT 28 PTY LTD**



## DOCUMENT CONTROL

### Revision History *(office use only)*

Issue	Version	Draft/ Final	Date Sent	Distributed To	Copies	Media	Delivery
1	Rw1	Draft	19.03.19	Leda / JWA	1	Word	Email
2	Rw2	Final	21.03.19	IPC	1	PDF	Email

### Client Issue

Version	Date	Author		Reviewer	
		Name	Initials	Name	Initials
Rw2	21.03.19	James Warren	JW	Adam McArthur	AM



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## 1 BACKGROUND

James Warren & Associates has been engaged by Project 28 Pty Ltd to prepare a Supplementary Response document addressing issues arising from:

- a Tweed Shire Council (TSC) letter of 6 March 2019 to the NSW Independent Planning Commission (IPC) titled “TSC comments on Applicants Response to Submissions and revised Koala Plan of Management - Kings Forest Modification MP08/0194 (council reference DA11/0565.03)”. The TSC document was the subject of a meeting between the TSC and the IPC on 13 March 2019; and
- a Public Forum held at Salt Beach Kingscliff on Tuesday 12 March 2019. The Public Forum was convened by the IPC to enable the public to provide their comments on the proposed MOD 4 application by Project 28. MOD 4 (mostly) relates to the Kings Forest Koala Plan of Management (KPoM).

MOD 4 was lodged in 2017 and has been assessed by TSC, the NSW Department of Planning and Environment (DoPE), and NSW Office of Environment & Heritage (OEH), all of whom provided reports of their assessments. The DoPE report also appended a document containing recommended conditions of Approval. The recommended conditions related specifically to the issues raised in the MOD 4 application.

James Warren & Associates prepared a Response document addressing the DoPE, OEH and TSC submissions to the MOD application. This Response document was submitted to the IPC in February 2019. As noted above, on 6 March 2019, TSC prepared a further response to the James Warren & Associates Response document for discussion with the IPC.



## 2 TSC AND PUBLIC FORUM ISSUES

The TSC letter of 6 March 2019 was relatively comprehensive in dealing with the few KPoM issues remaining to be finalised. The issues raised in the Public Forum were, to a significant degree, consistent with those contained in the TSC letter. In addressing the TSC issues it is considered that all issues raised in the Public Forum will also be addressed.

Issues arising from the TSC Comments document (6 March 2019) and the Public Forum are summarised as follows:

1. Regardless of a condition requiring the planting of 27 hectares of Koala food trees, TSC and the Public Forum expressed concerns with regard to an uncertainty that the planting would occur. There were comments expressing:
  - a desire for the 27 hectare offsite offset to be the subject of an agreement prior to the issuing of a Construction Certificate (CC) to clear vegetation and commence bulk earthworks;
  - the view that a financial settlement of the offset requirement is not an option and that there should be certainty that the 27ha would be revegetated.
2. The requirement for fencing to be provided between the residential areas in Precincts 12-14 (Cudgen Paddock) and the Golf Course. This would allow Koalas to access the Golf Course and the food trees therein and improve the connectivity through Precincts 12-14 generally;
3. Off leash dog areas;
4. Rehabilitation performance criteria; and
5. Fencing and underpasses through environmental areas and the requirement for underpasses to be provided prior to the fencing or clearing of vegetation.



### 3 SUPPLEMENTARY RESPONSES

#### 3.1 Issue 1 - 27 Hectare Offsite Offset

*The requirement for a 27 hectare offsite offset to be the subject of an agreement prior to the issuing of a Construction Certificate (CC) to clear vegetation and commence bulk earthworks. The preference is that a financial settlement of the offset requirement is not an option.*

Existing Condition 45(1) (a) states that:

The Koala Plan of Management shall be revised as follows:

- 1) A revised offset strategy for the loss of Koala food trees incorporating the following:
  - a. the restoration and planting of Koala food trees offsite (a 27ha area of land has been nominated by OEH and identified in Map 1. (attached)).

Project 28 submits that it should not be put in a position where it necessarily needs to negotiate a new agreement with OEH to vegetate an area within Cudgen Nature Reserve. Condition 45(1) (a) simply notes that an area of (then) 27ha within the reserve had been nominated by OEH. It does not **require** that this particular area be the subject of the restoration and planting.

TSC in their letter of 6 March 2019 state that allowing approval of details of an alternative offset site to be provided 6 months after the approval of a Construction Certificate “potentially allows the proponent to carry out clearing without any certainty about the delivery of the required offset”. It should be noted however that the 27 ha off-site offset forms only one component of the overall proposed compensatory/offset package which additionally includes: 6.26 ha of compensatory koala habitat within the east-west corridor, and the creation of a minimum of 62.51 ha of compensatory koala habitat on residual lands on-site. It is also important to note that the above compensatory habitat works will be staged to allow habitat creation and subsequent population monitoring to be completed prior to the commencement of subsequent development stages. The following table has been extracted from Section 10.5.5 of the KPOM and shows the cumulative net gain of koala habitat as the development progresses.

**DEVELOPMENT STAGE/PRECINCT SPECIFIC OFFSETS**

Development Stage	Precinct	Koala Habitat to be Retained	Koala Habitat to be Removed	Koala Offset Created Habitat	Cumulative Net gain/loss
Stage 1	Precinct 1	5.00 ha	0	0	+6.90 ha
	Precinct 2	4.46 ha	0	1.05 ha	
	Precinct 3	0.51 ha	2.30 ha	0.96 ha	
	Precinct 4	0	0.07 ha	0	
	Precinct 5	27.39 ha	0	7.26 ha	



Development Stage	Precinct	Koala Habitat to be Retained	Koala Habitat to be Removed	Koala Offset Created Habitat	Cumulative Net gain/loss
Stage 2	Precinct 6	0	0	0.44 ha	+ 7.34 ha
Stage 3	Precinct 7	2.02 ha	1.10 ha	5.04 ha	+ 11.28 ha
Stage 4	Precinct 8	2.13 ha	1.09 ha	6.69 ha	+ 16.87 ha
Stage 5	Precinct 9	0	1.89 ha	1.08 ha	+ 16.06 ha
Stage 6	Precinct 10	0	0	5.82 ha	+ 21.88 ha
Stage 7	Precinct 11	8.11 ha	1.27 ha	14.73 ha	+ 35.34 ha
Stage 8	Precincts 12-14	156.44 ha	0.28 ha	25.70 ha	+ 60.77 ha
	<b>TOTAL</b>	<b>206.05 ha</b>	<b>8.00 ha</b>	<b>68.77 ha</b>	

TSC have proposed a revised Condition 45(1) (a) recommending that most, if not all, of the 27 ha must be found in a Koala Activity Precinct (KAP) or Koala Linkage Precinct (KLP) in the Tweed Shire LGA. If TSC or OEH are unable to assist, then Project 28 may wish to plant the 27 hectares on the Kings Forest site. An allowance for these various options/combinations must be contained in this part of the condition.

Project 28 propose to amend the proposed Condition 45(1) as follows:

- 1. The following offsets must be provided to compensate for the loss of 1.59 ha of primary and 6.42 ha of secondary (Class A) koala habitat on-site:**
- a) the creation of 6.26 ha of compensatory koala habitat within the east-west corridor**
- b) the creation of a minimum of 62.51 ha of compensatory koala habitat on residual lands on-site**
- c) the on-site compensatory koala habitat, inclusive of the east-west corridor must comprise:**
- i. 9.69 ha of primary koala habitat (Forest red gum dominant);**
- ii. 30.74 ha of primary koala habitat (Swamp mahogany dominant);**
- iii. 25.01 ha of primary koala habitat (Forest red gum/secondary species); and**
- iv. 3.33 ha of secondary koala habitat.**
- d) the restoration and planting of koala food trees on 27 ha of land within any one of (or a combination of) Cudgen Nature Reserve, in a Koala Activity Precinct in the Tweed Shire Council local government area or in a Koala Linkage Precinct in the Tweed Shire Council local government area, or on the Kings Forest site, any such restoration and planting site being first as approved by the Secretary.**



Additionally, Project 28 propose to amend condition 45A (2) as follows:

## **2. Offsite Offset**

**Update Section 10 of the Koala Plan of Management dated 4 October 2018, to include a framework for securing and implementing the 27 ha off-site required under Condition 45A above. This framework must specify:**

**a) That 27 ha of koala food tree planting will be undertaken in any one of (or a combination of) the Cudgen Nature Reserve, a Koala Activity Precinct in the Tweed Shire Council local government area, a Koala Linkage Precinct in the Tweed Shire Council local government area, or the Kings Forest site;**

**b) any request for the Secretary’s approval of a restoration and planting site pursuant to Condition 45 of this approval must be lodged within 36 months of the issue of the first Construction Certificate permitting vegetation clearing or bulk earthworks;**

**c) that all koala food tree planting must commence within 36 months of the Secretary approving the restoration and planting site pursuant to Condition 45 of this approval;**

**d) that all off-site koala food tree planting will be finalised within 5 years of planting commencing in accordance with c) above; and**

**e) the mechanisms required to secure the in-perpetuity conservation of any koala food tree planting(s) located outside Cudgen Nature Reserve.**

## **3.2 Issue 2 - Cudgen Paddock Fencing**

*The requirement for fencing to be provided between the residential areas in Precincts 12-14 (Cudgen Paddock) and the Golf Course. This would allow Koalas to access the Golf Course and the food trees therein and improve the connectivity through Precincts 12-14 generally.*

The Golf Course layout was included as part of the suite of approved plans in the Concept Plan approval (06\_0318). This approved layout occurred within much of what would be the otherwise required 50 metre buffer zone between the residential areas and the Environmental Protection Zone (EPZ); essentially the Golf Course acts as the buffer to the adjacent EPZ. **ATTACHMENT 1** shows an overlay of the Golf Course layout, the proposed compensatory koala habitat and the proposed location of the exclusion fencing on the boundary of the EPZ. The overlay clearly shows that there is very little area available within or adjacent to the Golf Course for compensatory koala habitat.

Whilst the KPoM prepared for the Concept Plan (EcoIndig 2009) envisaged koalas roaming through the Golf Course and also allowed for areas of plantings within the Golf Course, this was superseded in the KPoM prepared for the Project Approval in 2013 (08\_0194). There were numerous reasons for the philosophy shift to excluding koalas





from the Golf Course precinct including the practicalities of human access to the Golf Course and likely impacts to koalas inhabiting the Golf Course. The philosophy shift was accepted by DoPE via the Project Approval in 2013 and was confirmed by the Commonwealth in their approval in May 2015. Importantly, the compensatory plantings that were to be provided in the Golf Course for the Concept Approval have been replaced (in the latest KPoM) with equivalent plantings within the buffer and EP zones throughout the site. The 2009 KPoM proposed 24 hectares of planting within “Areas 2, 3 and 4” (Precincts 12-14, including the Golf Course) including a proposed revegetated north-south movement corridor. The current KPoM proposes 25.7 hectares of compensatory koala habitat over the same area (i.e. Precincts 12-14) but outside of the Golf Course. These areas have been selected to bolster existing habitat and will provide much more substantial movement corridors.

### 3.3 Issue 3 - Off Leash Dog Areas

Condition C2 (3) (f) states that the updated KPoM must provide stage specific detail on “specifications for any off-leash dog exercise areas to ensure appropriate separation from koala habitat.” This condition does not mandate that an off-leash dog exercise area must be provided. The condition uses the word “any”.

There is no intention to provide an off-leash dog exercise area within any koala habitat area. Further, an off-leash dog exercise area is not provided for in the Stage 1 application area. Consideration will be given to providing such an area in later applications over the western portion of the Kings Forest site i.e. Precincts 6-11.

### 3.4 Issue 4 - Rehabilitation Performance Criteria

It is noted that during a site inspection with representatives from TSC, OEH and DoPE on the 20<sup>th</sup> August 2018, M. Kingston (TSC) stated words to the effect that “Council would prefer to see dense plantings of primary koala food trees within compensatory habitat areas, in particular Forest Red Gum”. He stated that the planting would essentially resemble a plantation and would not involve shrubs or groundcovers. He also said that these components will recruit naturally over time.

Given that Project 28 have elected to plant large numbers of koala primary food trees (as requested by TSC) instead of re-establishing the pre-clearing Plant Community Types (PCT’s), it is agreed that the performance criteria need not be assessed against the “relevant PCT”. As requested by TSC the KPoM will be amended to include measurable indicators that define progress on establishing the plantings. Again, as requested by TSC, the KPoM will be amended to utilise a number of simple and easily defined indicators, framed in terms of establishment and maintenance periods.

TSC amendments to Condition 45A 4 (a) (ii) Vegetation Management are agreed.



TSC amendments to Condition 45A 4 (a) (iii) require that “where natural regeneration of native shrub and groundcover species has not occurred within the first 3 years of management, planting of suitable native shrub and groundcovers will be undertaken to achieve compliance with the vegetation integrity scores for each Plant Community Type (PCT) (pg. 16). This is in direct conflict with the statement by TSC that “the plantings are primarily for koalas and are not designed to replicate a particular Plant Community Type (PCT)” (pg. 2).

For the following reasons Project 28 cannot agree with this proposal:

- The TSC letter dated 6 March 2019 states the “the plantings are primarily for koalas and are not designed to replicate a particular Plant Community Type (PCT)”;
- Project 28 (until 2018) proposed to plant trees, shrubs and groundcovers so as to restore Plant Community Types (PCT’s) which mimicked the pre-clearing vegetation types.
- As discussed above, TSC (and OEH) insisted on replacing this proposal with the proposal to plant high densities of primary food trees, especially Forest red gum.
- This high density would provide substantially more primary food trees than previously proposed.
- The high density of primary food tree plantings would make the planting of shrubs and groundcovers impractical i.e. canopy closure would likely be achieved quickly due to dense tree plantings which would inhibit recruitment of shrubs and groundcovers, and the practicability of planting and maintaining shrubs and groundcovers amongst such dense tree plantings etc.
- TSC, OEH and DoPE have agreed that no shrubs or groundcovers would be planted.
- Project 28 agreed to amend their planting proposal on the basis that there would be no shrub or groundcover plantings.

Project 28 propose to amend Condition 45A (4) as follows:

#### **4. Vegetation Management**

**a) Update Appendix 6 of the Koala Plan of Management dated October 2018, to specify:**

**i. the performance indicators, performance criteria and corrective actions only apply to the compensatory koala habitat (i.e. the koala offset plantings);**

**ii. the establishment and maintenance period performance criteria for the following indicators: seedling survival, native canopy cover, weed presence, shrub and groundcover recruitment and infrastructure e.g. associated fencing and signage;**



- iii. Compliance with performance criteria will only relate to the Koala food tree plantings i.e. seedling survival, canopy cover, weed presence and infrastructure;
- iv. the management measures required to ensure the removal of slash pine will not result in the clearing of retained koala habitat;
- v. at the appropriate time, the tree species selection and planting densities for all planting proposed within the off-site offset area will be provided to the Department for the Secretary's approval; and
- vi. at the appropriate time, the details of any on-going monitoring and management measures, and the standards for achievement for all off-site koala food tree planting will be provided to the Department for the Secretary's approval.

### 3.5 Issue 5 - Underpass Requirements

*The requirement for underpasses to be provided prior to the fencing or clearing of vegetation and the requirement for temporary fencing along haul roads to be provided with gates which can be opened or closed during or after daily usage to allow access across the haul roads for fauna*

Project 28 will install all underpasses shown in **ATTACHMENT 2** (Figure 30A of the October 2018 KPOM). No additional underpasses are contemplated for construction. All underpasses will be constructed at the same time as the associated roads are constructed.

The protection of koalas (and other fauna) during haul road movements to and from the Cudgen Paddock (Precincts 12-14) can be achieved by implementing the TSC proposal to not use temporary fencing on either side of the roads during construction but, rather, include gates at either end of the environmental areas which would be closed at night thus allowing free movement between habitat areas at night. This proposal would need to be accompanied by construction management measures to minimise road strike during the day.

**ATTACHMENT 3** contains a letter from the Project Engineers - Mortons Urban Solutions (MUS). This letter confirms that Project 28 will comply with the relevant provisions contained in the TSC letter of 6 March 2019 (Condition 45A (6)).

The TSC proposed Conditions 45A (6) (a) i., ii. and iv. make mention of Wallum sedge frog habitat and of heathland regeneration areas. These matters are not for the KPOM and are dealt with in other specific management plans.

Project 28 will not be allowing koalas access to the Golf Course. TSC proposed Condition 45A (6) (a) v. is clearly not acceptable. The reasons for this have been set out clearly in **Section 3.2** above.



Project 28 propose the following amendments to Condition 45A (6) (a):

**6. Fencing and Koala Crossings**

**a) The Fencing Plan(s) contained in the Koala Plan of Management dated 4 October 2018 must be revised to demonstrate temporary or permanent fencing will not result in:**

**i. The clearing of any retained Koala habitat;**

**ii. The creation of isolated patches of compensatory Koala habitat;**

**iii. Barriers to Koala (and other wildlife) movement during the construction period.**

### **3.6 Additional Issues Raised by TSC in the 6 March 2019 Letter to IPC**

The TSC letter of 6 March 2019 addresses other conditions which were not covered during the Public Forum. These matters are as follows:

**Condition 45A (7) Contingency and Offset Strategy**

Project 28 do not propose to plant shrubs and groundcovers during the life of the project for various reasons discussed above. Performance criteria will therefore relate only to the primary koala food trees planted as compensatory habitat.

In relation to contingency measures for the declining Tweed Coast koala population, this was dealt with in the James Warren & Associates February 2019 Response to the NSW DoPE Recommended Condition of Approval Part 3A Section 75W Modification Application (MOD 4), reproduced below:

“It is important to note that the Tweed Coast Endangered koala population is under threat of extinction. This is the case prior to commencement of the Kings Forest development. It will be impossible to determine the role of the Kings Forest development (if any) in an ultimate extinction of the population (should such an event arise). It is, therefore, impractical and unfair to require Project 28 to provide a large sum of bond money to be lost to Project 28 if extinction occurs. Just because koala occupancy rates decline on the Kings Forest site in no way means that the Kings Forest development is specifically the cause of the decline. A wider (Tweed Coast) decline trend would ultimately cause a decline on the Kings Forest site, just as it has on the Koala Beach site near Pottsville to the south.”



Project 28 propose to amend Condition 45A (7) as follows:

## **7. Contingency and Offset Strategy**

**a) Revise Section 13.1 of the Koala Plan of Management dated 4 October 2018, to specify:**

### **Contingency Measures for the Establishment of the Compensatory Koala Habitat**

**i. Koala compensatory habitat tree offsets will be provided on an area for area basis, for any area of compensatory koala tree habitat that does not meet the required performance targets within 7 years; and**

**ii. identify the timing for providing any offsets required to achieve consistency with i) above.**

### **Contingency Measures to Address a Decline in Koala Numbers on Site**

**iii. An investigation of threatening processes, an assessment of the success of management strategies and consultation with all stakeholders will commence immediate upon monitoring showing that there has been a statistically significant decline in Koala occupancy rates on the Kings Forest site. This contingency measure will be in force until the completion of the project; and**

**iv. a report containing recommendations will be prepared and lodged with the Department, OEH and Tweed Shire Council.**

### **Administrative Changes**

Project 28 has dealt with a large number of administrative changes proposed in the TSC 15 November 2018 Response to Submissions. In their 6 March 2019 letter TSC propose changes to 8 f). This amendment replaces the words “Forest red gum” with “Koala offset”. Project 28 have no objection to this amendment.

TSC also propose to amend 8 g) i.e. “Address the relevant administrative changes recommended in Tweed Shire council’s submission dated 15 November 2018 in consultation with Council and to the satisfaction of the Secretary”. Project 28 cannot agree to including TSC as the primary consent agency to assess Project 28 responses to Council’s proposals. Project 28 consider that it is DoPE’s role to be the assessment agency in this regard.

### **Condition 46 Koala Infrastructure**

Project 28 do not agree with the TSC proposed amendments to Condition 46 (1) b. The issues have been discussed in detail in **Section 3.5** above and in the James Warren & Associates (February 2019) report. TSC propose a condition including a requirement that “fauna underpasses installed at intervals sufficient to allow unimpeded movement by wildlife including koalas across roads.” All underpasses have been located and shown in FIGURE 30A in the October 2018 KPoM. The wording of the conditions should therefore reflect the fact that all underpasses have fixed locations on the site.



TSC proposed amendments to Condition 46 (5) are acceptable to Project 28.

Project 28 recommend amendments to Condition 46 (6). The proposed erection of signage in accordance with this condition is not considered necessary, nor is the keeping of dogs in fenced enclosures. In accordance with the KPoM, no domestic dogs are to be brought onto the site during pre-construction and construction activities. The proposed development will emphasise the separation of residential areas (and pet dogs) from koala habitat. This will be achieved by way of constructing koala proof fencing and installing temporary road grids in the pre-construction phase as discussed in the KPoM. Any roaming dogs within the Kings Forest development would be responsibility of Tweed Shire Council and applicable by-laws.

Project 28 therefore propose to amend Condition 46 (6) as follows:

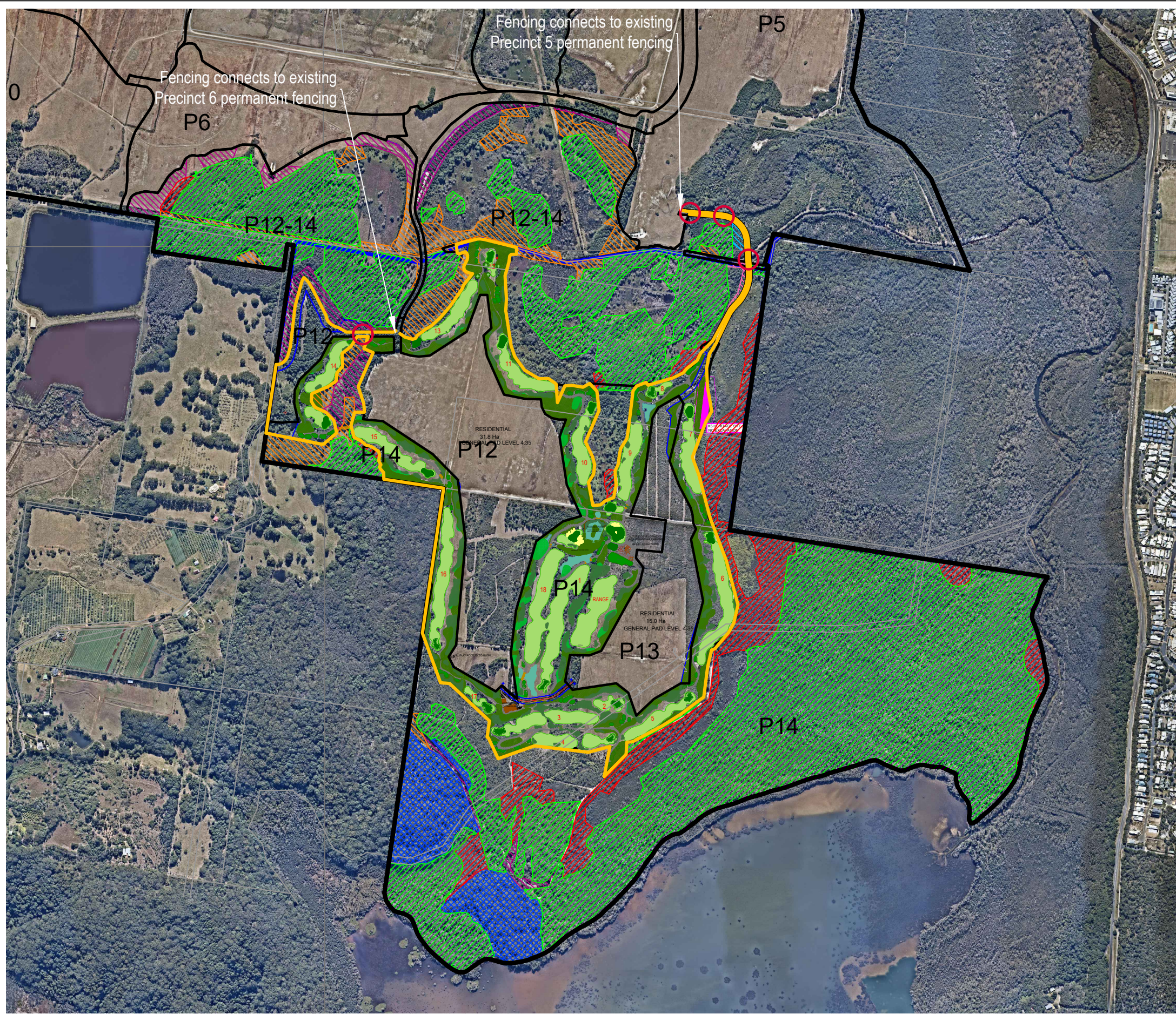
**6. Signage to be erected at 100m intervals along the margins of the EPZs and roadways stating “Environmental Protection Zone - No unauthorised entry.”**

Condition 64 Exclusion Fencing and Underpasses

The minor amendment to this condition is acceptable to Project 28.



## **ATTACHMENT 1 - OVERLAY OF GOLF COURSE LAYOUT, PROPOSED COMPENSATORY KOALA HABITAT AND EXCLUSION FENCING**



**LEGEND**

- 20m Outer Protection Zone Buffer to EPZ
- Precinct Boundary
- Kings Forest Boundary

**PROPOSED FENCING PLAN**

- Permanent Koala exclusion fencing
- Indicative underpass location

**KOALA HABITAT THAT WILL REMAIN AS HABITAT AFTER DEVELOPMENT**

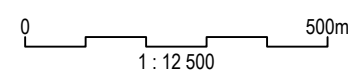
- Primary Koala habitat to remain after development
- Secondary (A) Koala habitat to remain after development
- Secondary (B) Koala habitat to remain after development

**KOALA COMPENSATORY HABITAT**

- Dry primary Koala habitat
- Dry primary Koala habitat plus dry heath
- Wet primary Koala habitat
- Wet primary Koala habitat plus wet heath
- Wet secondary Koala habitat

**PRECINCT 12-14 - RETAINED KOALA HABITAT & KOALA OFFSETS**

<b>Koala Habitat to be Retained (Ha)</b>	<b>Primary Koala Habitat</b>	17.08
	<b>Secondary (A) Koala Habitat</b>	127.24
	<b>Secondary (B) Koala Habitat</b>	12.21
<b>Koala Offsets (Ha)</b>	<b>Dry Primary Koala Habitat</b>	8.99
	<b>Dry Primary Koala Habitat Plus Dry Heath</b>	0.23
	<b>Wet Primary Koala Habitat</b>	14.64
	<b>Wet Primary Koala Habitat Plus Wet Heath</b>	0.23
	<b>Wet Secondary Koala Habitat</b>	1.61



SOURCE: JWA KPOM (2018) & March to August 2018 Site Investigations; Near Map 08/08/18 Aerial  
 SCALE: 1: 12 500 @ 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

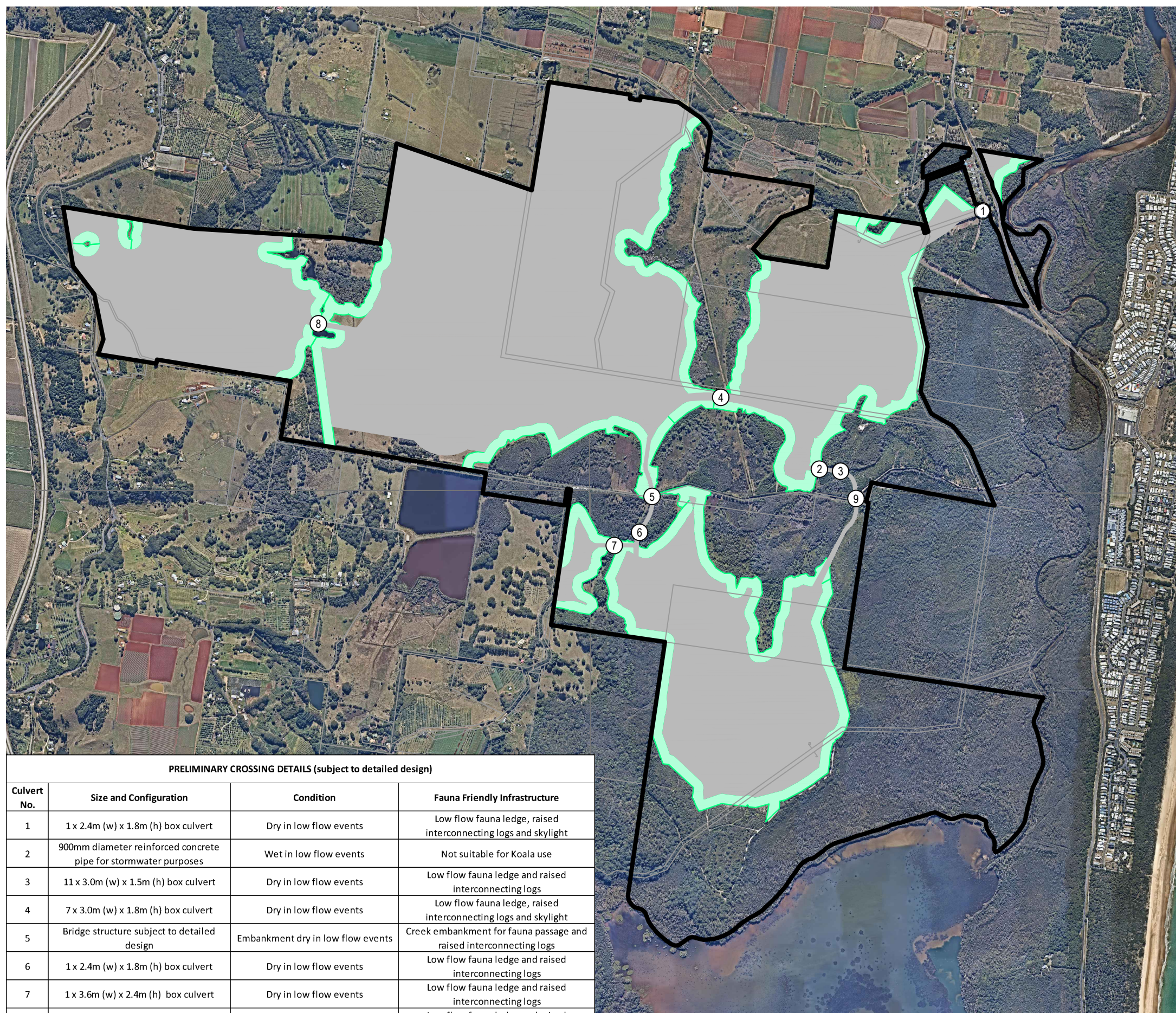
FIGURE 40B  
 PREPARED: BW  
 DATE: 18 March 2019  
 FILE: N97017\_KPOM Precincts.dwg

TITLE  
 POST-CONSTRUCTION  
 KOALA  
 MANAGEMENT ACTIONS  
 - PRECINCTS 12-14





## **ATTACHMENT 2 - FIGURE 30A OF THE OCTOBER 2018 KPOM**

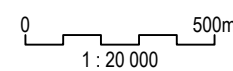


**LEGEND**

- # Indicative underpass location
- Development Footprint
- 50m Buffer to EPZ (only the inner 30 metres to be utilised for offsetting and dedication purposes)
- Kings Forest Boundary

**PRELIMINARY CROSSING DETAILS (subject to detailed design)**

Culvert No.	Size and Configuration	Condition	Fauna Friendly Infrastructure
1	1 x 2.4m (w) x 1.8m (h) box culvert	Dry in low flow events	Low flow fauna ledge, raised interconnecting logs and skylight
2	900mm diameter reinforced concrete pipe for stormwater purposes	Wet in low flow events	Not suitable for Koala use
3	11 x 3.0m (w) x 1.5m (h) box culvert	Dry in low flow events	Low flow fauna ledge and raised interconnecting logs
4	7 x 3.0m (w) x 1.8m (h) box culvert	Dry in low flow events	Low flow fauna ledge, raised interconnecting logs and skylight
5	Bridge structure subject to detailed design	Embankment dry in low flow events	Creek embankment for fauna passage and raised interconnecting logs
6	1 x 2.4m (w) x 1.8m (h) box culvert	Dry in low flow events	Low flow fauna ledge and raised interconnecting logs
7	1 x 3.6m (w) x 2.4m (h) box culvert	Dry in low flow events	Low flow fauna ledge and raised interconnecting logs
8	1 x 2.4m (w) x 1.8m (h) box culvert	Dry in low flow events	Low flow fauna ledge and raised interconnecting logs
9	1 x 2.4m (w) x 1.8m (h) double span 40m bridge structure	Embankment dry in low flow events	Creek embankment for fauna passage and raised interconnecting logs



SOURCE: MUS (Ref: SMUS17101715300.pdf)  
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 30A

PREPARED: BW  
DATE: 28 September 2018  
FILE: N97017\_KPOM.dwg

TITLE

INDICATIVE  
CULVERT  
LOCATIONS



## **ATTACHMENT 3 - LETTER FROM MORTONS URBAN SOLUTIONS**



Our Reference: 12301-BE1 [ID 723354]

**Civil Engineering  
Project Coordination  
Urban & Regional Planning**

18 March 2019

mortons@urbansolutions.net.au  
www.urbansolutions.net.au

Project 28 Pty Ltd  
PO Box 1914  
Surfers Paradise 417

MUS Pty Ltd t/as:  
Mortons - Urban Solutions  
ABN: 39 116 375 065

**Attention: Reg Van Rij**

Dear Reg

**Re: Koala Safe Passage Culvert Location and Construction timing, Kings Forest Development, Cudgen.**

Project 28 Pty Ltd have asked Morton-Urban Solutions, in our capacity as the project's civil engineering consultants for the Kings Forest Development, to advise the intended timing of the construction of the various koala safe passage culverts. The specifications and location of the culverts are provided for in Figure 30A of the Kings Forest Koala Plan of Management. The intended timing for construction is to have regard to koala protection fencing measures required and the need to maintain un-interrupted connectivity for koalas, and the construction of haul roads.

The culverts will be constructed prior to temporary and permanent koala protection fencing being completed in those areas where the culverts are required, and at the same time any related haul road is constructed. Alternatively, where it is difficult to construct the underpasses (culverts) prior to bulk earthworks and avoid temporary fencing on either side of haul roads during construction, thus impeding fauna movement, gates are to be installed at either end of the environmental areas which would be closed at night allowing free movement between habitat areas at night.

The information regarding the construction and timing of the culverts will be provided for in the relevant tender and construction contract documentation.

Yours faithfully

**Kevin Fox**  
**Mortons – Urban Solutions**

Encl: 1. Fig 30A-Koala Plan of Management, Kings Forest dated 28 September 2018

**GOLD COAST**

Suite 9/19 Short Street  
(PO Box 2484)  
Southport Q 4215  
tel: 07 5571 1099

**PERTH**

Unit 4/100 Railway Road  
Subiaco WA 6008  
tel: 08 9380 9700

**SUNSHINE COAST**

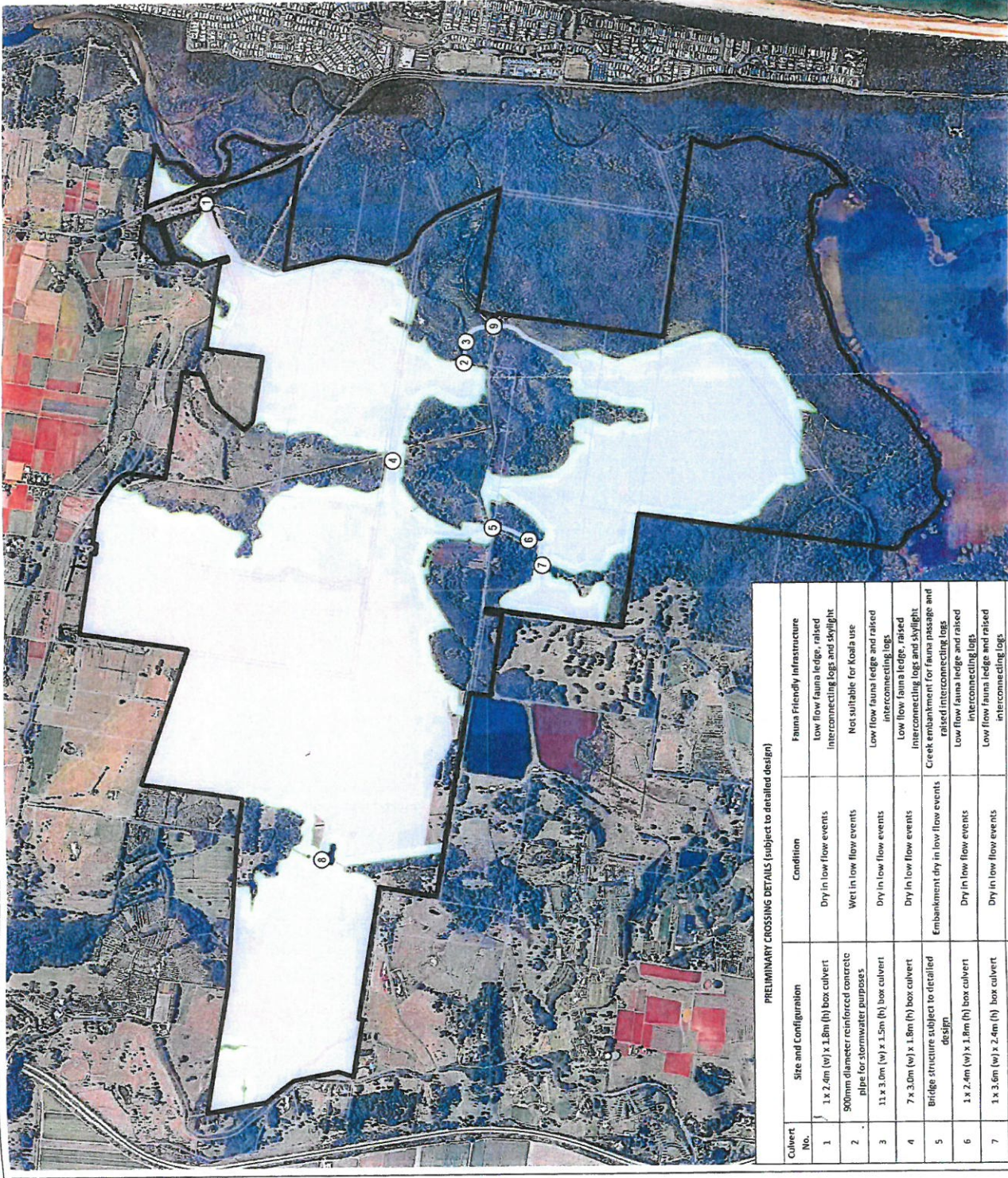
6 Osterley Avenue  
Caloundra Q 4551  
tel: 07 5499 7000  
fax: 07 5499 7712





**LEGEND**

- ① Indicative underpass location
- Development Footprint
- 50m Buffer to EPZ (only the inner 30 metres to be utilised for offsetting and dedication purposes)
- Kings Forest Boundary



**PRELIMINARY CROSSING DETAILS (subject to detailed design)**

Culvert No.	Size and Configuration	Condition	Fauna Friendly Infrastructure
1	1 x 2.4m (w) x 1.8m (h) box culvert	Dry in low flow events	low flow fauna ledge, raised interconnecting logs and skylight
2	900mm diameter reinforced concrete pipe for stormwater purposes	Wet in low flow events	Not suitable for Koala use
3	11 x 3.0m (w) x 1.5m (h) box culvert	Dry in low flow events	Low flow fauna ledge and raised interconnecting logs
4	7 x 3.0m (w) x 1.8m (h) box culvert	Dry in low flow events	low flow fauna ledge, raised interconnecting logs and skylight
5	Bridge structure subject to detailed design	Embankment dry in low flow events	Creek embankment for fauna passage and raised interconnecting logs
6	1 x 2.4m (w) x 1.8m (h) box culvert	Dry in low flow events	Low flow fauna ledge and raised interconnecting logs
7	1 x 3.0m (w) x 2.4m (h) box culvert	Dry in low flow events	Low flow fauna ledge and raised interconnecting logs
8	1 x 2.4m (w) x 1.8m (h) box culvert	Dry in low flow events	Interconnecting logs
9	1 x 2.4m (w) x 1.8m (h) double span 40m bridge structure	Embankment dry in low flow events	Creek embankment for fauna passage and raised interconnecting logs

SOURCE: MUIS (Ref. SMUJST7101715300) prof  
Near Map 0808818 Aerial

CLIENT: Project 28 Pty Ltd

PROJECT: Koala Plan of Management  
Kings Forest  
Malaureca Drive, Durambah, NSW  
Shire of Tweed

SCALE: 1:20,000 @ A3

AW PTY LTD  
Ecological Consultants

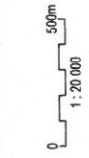


FIGURE 30A

INDICATIVE CULVERT LOCATIONS

PREPARED: BW  
DATE: 28 September 2018  
FILE: N97017\_KPOM.dwg