Chytrid fungus is a waterborne pathogen that causes the disease Chytridiomycosis in frogs. The fungus grows in the keratinised epidermis of adult frogs and in the keratinised mouthparts of tadpoles, however it is not currently known how the chytrid fungus kills infected frogs. Only adults are susceptible and mortality can be high, depending upon the species infected and local environmental conditions. Once the chytrid zoospores are released into water, they remain viable for up to 24 hours. The fungus is known to be spread by humans through the handling of infected frogs and tadpoles or the transport of zoospores in water. Chytridiomycosis has the potential to significantly impact on frog populations within the wetland on the site.

4.6 Summary

The assessment of the wetland community on the Subject site has revealed the following:

- The vegetation within the wetland is generally in good condition;
- Vegetation communities which form the wetland are representative of an Endangered Ecological Community (*TSC Act 1995*);
- The habitat provided by the wetland potentially supports a number of Threatened fauna species;
- Whilst the hydrological integrity of the wetland may have been historically impacted, the ecological functioning of the wetland does not appear to have been significantly impacted; and
- A number of management issues have the potential to impact on the wetland in the future.

Overall, the wetland community on the Subject site is considered to hold high conservation significance.

5 IMPACTS AND AMELIORATION

5.1 Impacts of the Proposed Development

5.1.1 Potential Impacts on Flora

The Proposed development for the construction of the River Heights Tourist Park will result in the loss of vegetation. **FIGURE 10** shows the relationship of the development layout to vegetation communities occurring on the Subject site.

The Subject site covers approximately 18.02 hectares, the majority of which is covered with native plant communities. Approximately 8.23 hectares will be lost for the construction of the tourist park. There will be further vegetation loss (2.54 hectares) associated with the creation of Asset Protection Zones (APZ's) for bushfire protection. Approximately 1.45 hectares will be removed from the inner protection zone, and 1.09 hectares from the outer protection zone. A summary of vegetation types to be lost and their respective areas is shown in **TABLE 5**.

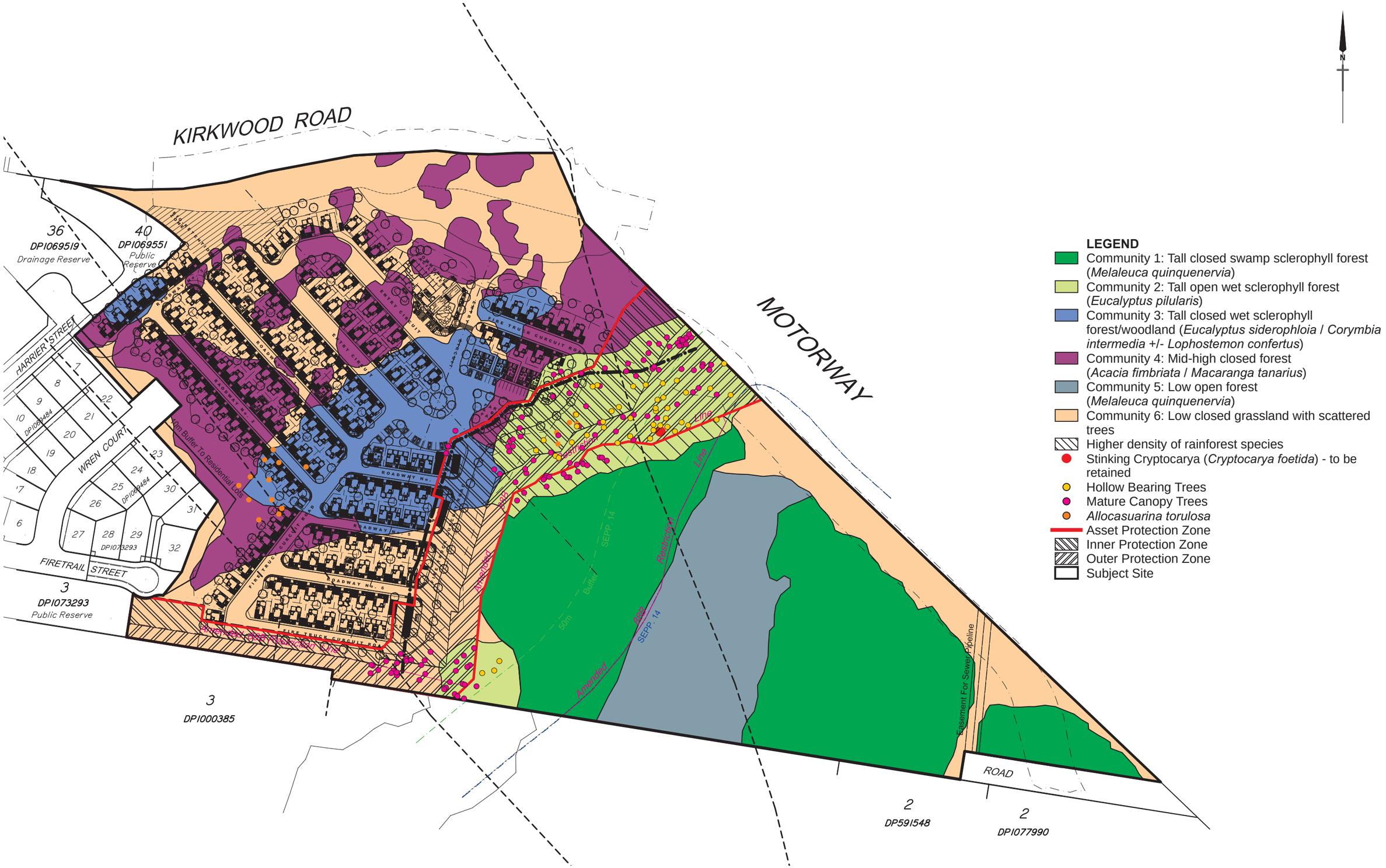
TABLE 5
IMPACTS ON SITE VEGETATION

Vegetation Community	Total Area (ha)	Tourist park (ha)	APZ (ha)		Total Remove (ha)	Retain (ha)
			IPZ	OPZ		
1	4.18	-	-	-	-	4.18
2 Rainforest*	1.36 0.24	0.06 -	0.51 -	0.65 -	1.22 -	0.14 0.24
3	1.82	1.65	0.18	-	1.82	0.00
4	2.92	2.78	0.14	-	2.92	0.00
5	1.53	-	-	-	-	1.53
6	5.81	3.74	0.62	0.44	4.80	1.01
TOTAL	**17.88**	**8.23**	**1.45**	**1.09**	**10.77**	**7.11**

* Higher density Rainforest Species as part of Community 2.

Additional impacts on vegetation communities and plants include:

- Potential for degradation of retained areas of vegetation;
- Potential for degradation of retained areas of vegetation within SEPP 14 Coastal Wetlands;
- Clearance of areas of the Subject site represents a loss of habitat available for plant dispersal and will reduce visits by pollination and dispersal vectors;
- Disturbance to the Subject site creates opportunities for weeds to colonise. Weeds may be introduced to the Study site in construction materials or by vehicles. Deliberate planting of weeds and potential weeds may occur following occupation of the Subject site. Such species, as well as species included in landscape plantings, may escape to retained areas of vegetation;



SOURCE: JWA Site Investigations; Paul Ziukelis Architects (Ref: Kirkwood_sp_siteplan Aug 2013.dwg); Michel Group Services (Ref: 8241-32.pdf & 8241-33.pdf)

SCALE: 1 : 2500 @ A3

JWA PTY LTD
Ecological Consultants

CLIENT
Kirkwood Estates Pty Ltd

PROJECT
Ecological Assessment
Lot 33 DP1073293
Kirkwood Road, Tweed Heads South, NSW
Tweed Shire Council LGA

FIGURE 10

PREPARED: BW
DATE: 29 August 2013
FILE: N10017_Veg.cdr

TITLE
IMPACT ON VEGETATION COMMUNITIES

- The removal of vegetation from the Subject site represents a loss of organic material;
- Residents may create walking tracks through bushland areas. This may result in direct loss of vegetation, change in vegetation structure and increased opportunities for weeds and disturbance adapted animal species; and
- Occupation of the site may increase the risk of fire release into surrounding vegetation.

5.1.1.1 Hollow bearing trees

Forty-three (43) hollow-bearing trees and a further one-hundred and twenty-four (124) mature canopy trees have been identified on the Subject site (**FIGURE 9**). These trees are predominantly Blackbutts with a small number of Grey Ironbarks. The majority of these trees are located within proposed Asset Protection Zones (APZs) (refer **FIGURE 11**). In light of this and the fact that there is little or no canopy crown separation between many of these trees, it is considered likely that a number of hollow-bearing trees will require removal in accordance with the Standards for Asset Protection Zones (NSW Rural Fire Service).

5.1.2 Potential Impacts on Fauna

The Proposed development will result in some loss of foraging, sheltering and breeding habitat for native fauna occurring in the Locality. This loss may have a range of impacts including:

- Loss of forage habitat for nectarivorous and insectivorous fauna species, including the loss of autumn/winter flowering plants;
- Minor decrease in the size of local fauna populations and increased susceptibility to threatening processes acting in the Locality;
- Minor decrease in the size of the prey base for carnivorous species;
- Increased fragmentation of habitat in the Locality;
- Some decrease in the genetic base for local fauna populations;
- Loss of sheltering and breeding habitat for native fauna;
- Reduction in opportunities for movement through the site;
- Removal of hollow-bearing trees;
- Loss of eucalypts and flowering shrubs decreasing the food supply for nectarivores;
- Animals may be killed or injured during the clearance of vegetation;
- Domestic dogs and cats prey on native fauna and may have significant impacts on the populations of native species;