

JAMES WARREN & Associates Pty Ltd

ENVIRONMENTAL CONSULTANTS



Flora and Fauna Issues (Response Report)

Lot 211 DP 1044292
Pacific Highway Moonee

JULY 2010

A REPORT PREPARED FOR
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1 INTRODUCTION

James Warren and Associates (JWA) completed a Flora and Fauna Assessment in 2007 that was submitted as part of the development application for Lot 211 DP 1044292 Pacific Highway, Moonee (the Subject site) (**FIGURE 1 & 2**). Two issues have been identified by Coffs Harbour City Council (CHCC) as requiring clarification and/or additional information. JWA have been engaged by Geoff Smyth Consulting to complete a response report. The issues were outlined in a letter, dated 19th January 2010, from Geoff Smyth Consulting and are as follows:

1. *“The translocation of the Moonee Quassia or other threatened species is not supported, with in situ conservation being the preferred approach. A reconfiguration of the lots and roadways may be required to achieve this. ”*
2. *“Revise and amend the development proposal to ensure that no component, including the bushfire asset protection zones, encroach on to the lands currently zoned as 7a.”*

This report seeks to respond to the matters raised above and should be reviewed in conjunction with the Flora and Fauna Assessment (JWA 2007).



2 THE TRANSLOCATION OF THE MOONEE QUASSIA (*QUASSIA* SP. *MOONEE CREEK*) AND THE RUSTY PLUM (*NIEMEYERA WHITEI*)

2.1 Introduction

Coffs Harbour City Council has raised an issue with the conservation of threatened plants on the Subject site as follows:

“The translocation of the Moonee Quassia or other threatened species is not supported, with in situ conservation being the preferred approach.”

This section contains the following:

- A brief discussion of the status of the threatened species on the site (i.e. their location, population size and maturity of the plants).
- A brief discussion of the proposal and how many plants will be affected.
- A review of the potential areas for translocation.
- A review of the literature and precedents which support translocation as a valid methodology.
- A review of the statutory framework regarding the translocation of threatened plant species.
- The ecological benefits of the proposed translocation program.

2.2 Threatened Species

Fifteen (15) stems of the Endangered Quassia sp. ‘*Moonee Creek*’ occur on the Subject site (**FIGURE 3**). These plants are all juveniles with no plants exceeding one metre in height. Twenty one (21) stems of the Vulnerable (TSC Act 1995) Rusty plum (*Niemeyera whitei*) (TSC Act 1995) also occur (**FIGURE 3**). The Rusty Plums include five (5) mature stems (8-12m), one (1) intermediate stem (~2.5m) and an additional fifteen (15) saplings around one of the mature plants.

These Threatened plants occur within Community 1 (i.e. Tall mid-dense forest), dominated by *Lophostemon confertus* and *Eucalyptus siderophloia*. Rainforest species such as Cheese tree, Common lilly pilly, White bolly gum and Sandpaper fig also occur. There is a thick canopy of climbers such as Water vine and Prickly supplejack. The community is relatively small in area (0.44ha) and weed infested with dense patches of Lantana and Cockspur. The position of the threatened plants and the vegetation communities on the Subject site are shown in **FIGURE 3**.

2.3 Proposed Development and Impacts on the Threatened Species

The Proposed development consists of a community title subdivision with associated dwellings to be concentrated in the northern half of the Subject site. Road access will



be provided from Woodhouse Road. The concept plan for the proposed development is shown in **FIGURE 4**. The southern half of the site consists of the 7a Environmental Protection land which may be acquired by Coffs Harbour City Council at a later stage (**FIGURE 5**). A strip of land along the western portion of the site is to be developed as the designated Moonee Collector Road set out in the Moonee Development Control Plan (CHCC 2004).

The proposed development will result in the loss of approximately ten (10) Moonee quassia and three (3) Rusty plums. These plants all occur within the designated Moonee Collector Road Reserve which will be acquired by CHCC. The removal of other vegetation from the subject site may also indirectly impact on the retained Moonee quassias and Rusty plums. These indirect impacts may include increased edge effects, exposure to light, disturbance and weed invasion, and alteration of the microclimate. The impact of the proposed development is show in **FIGURE 6**.

2.4 Translocation Areas

Translocation and habitat compensation was suggested as mitigation for the loss and/or impact on these threatened plants (JWA 2007). A Vegetation Management Plan (VMP) will be completed outlining the strategies to rehabilitate approximately 0.2726 hectares of land. The VMP would cover such areas as weed control, enhancement planting, maintenance and monitoring. This presents an opportunity to create quality recipient habitat for the Moonee Quassia and the Rusty Plum. In addition, the rehabilitated habitat would be in an area that is designated as Environmental Protection. **FIGURE 7** shows the proposed rehabilitation areas.

Translocation of both species would occur within rehabilitation areas 1, 4 and 5 which occur within Community 2. Community 2 has a similar species composition to Community 1 and already contains two (2) stems of the Rusty Plum. Conditions such as soil type, slope, and aspect are also similar.

2.5 Translocation Program

A Translocation Plan, for both species, would be completed covering such details as: an updated census of the plants found on site and those to be impacted; the Biology and Ecology of both species; plant and recipient site preparation, the translocation method; post translocation maintenance and monitoring; and replacement planting.

The Translocation would strictly adhere to the guidelines set out in Vallee *et al* (2004). The following attributes, outlined in Valle *et al* (2004) may contribute to the success of a translocation program. Where relevant, these will be incorporated into the Translocation Plan.



1. Development of a sound and detailed translocation proposal that provides for all aspects of the translocation program including collection, implementation, ongoing management, monitoring, evaluation and documentation.
2. Commitment and collaboration of numerous individuals and organisations, ensuring the project receives the required expertise. Translocation is a complex process and requires an expert understanding of horticulture, experimental design, ecology, genetics, and rehabilitation.
3. Removal and ongoing control of threatening processes.
4. Financial commitment to ongoing monitoring and evaluation.

A trial propagation program (i.e. cuttings and/or seed germination) of both species would be initiated as soon as possible and results incorporated into the Translocation Plan.

Relevant information/requirements from the Moonee Quassia Recovery Plan (DEC 2005) and “priority actions” for both the Moonee Quassia and the Rusty plum will also be incorporated into the Translocation program.

2.6 Review of Relevant Literature

2.6.1 Introduction

This section will provide a review of the relevant literature relating to precedents for the successful translocation of the Threatened species and the statutory framework surrounding the translocation of these species.

2.6.2 Precedents for the successful translocation

The following points are provided in support of the probability of success of a translocation programme for both the Moonee Quassia and the Rusty plum.

1. The successful translocation of *Quassia bidwillii*, a closely related threatened plant species, has been completed at two sites in southern Queensland: Fraser Panorama and Doolong South Rd. This occurred with both State and Federal approval. Three groups of plants of: 20, 318 and 277, were translocated from two different properties. The success rates were 80%, 88% and 70% respectively. In addition, an extra 169 plant were grown from both cutting and seed to replace any plants lost in translocation (T. Franklin pers comm. June 2010).
2. The Moonee Quassia grows in the North Coast Regional Botanic Garden (NCRBG). Seeds from an individual have been successfully germinated (DEC 2005).
3. Translocation of the Rusty plum is not known but seed germination rates of 100%, in 9 days, can be achieved if seeds are peeled and soaked for several days prior to sowing (Floyd 2008).



2.6.3 Statutory Considerations

Quassia sp. 'Moonee Creek' is listed as *Endangered* under the Commonwealth Environment Protection and Biodiversity Conservation Act (1999) (EPBC) and the NSW Threatened Species Conservation Act (1995) (TSC). The Rusty plum (*Niemeyera whitei*) is listed as Vulnerable under the NSW TSC Act.

The translocation of adult plants should be very carefully considered and only utilised after other management options have been considered (Vallee *et al* 2004). Regardless of the current proposed development, some of the Quassias (i.e. ten) and Rusty Plums (i.e. 3) on the Subject site will be impacted by the designated Moonee Collector Road. The collector road system is set out in the Moonee Development Control Plan (CHCC 2004). Additionally, the clearing associated with the road construction may indirectly impact on the retained Quassia and rusty plums. The translocation, of both species, is considered a viable mitigation for the impacts as a result of the inevitable construction of the Moonee Collector Road.

Translocation and/or reintroduction is considered as a viable option under the NSW TSC Act as it is stated as a "priority action" for 55 threatened species, populations and communities, of these 36 are terrestrial flora species (DECC 2005). If a translocation program was included in the consent conditions for the proposed development, a licence would be required under Section 132C of the National Parks and Wildlife Act 1974 (NSW) (NP&W Act) to undertake an activity for scientific, educational or conservation purposes, that is likely to result in harm to a protected native plant, or a plant that is a threatened species or is part of an endangered population or an endangered ecological community.

2.7 Benefits of a Translocation Program

A successful translocation program will benefit both species (i.e. Moonee quassia and Rusty Plum). The plants currently occur in a disturbed and degraded vegetation community and most will be impacted by the imminent construction of the Moonee Collector Road. Ten (10) Moonee quassias and three (3) Rusty plums will be translocated. In addition, enhancement planting will be undertaken at a ratio of five additional plants for every one plant that is translocated. At the completion of the translocation program there will be at least fifty (50) Moonee quassias and fifteen (15) Rusty plums within the recipient habitat. The additional plants may result from either regeneration from cuttings or seeds. Specific details will be outlined in the Translocation Plan. Overall, a translocation program will not only increase the chances of the survival of the existing plants but increase the probability that the populations of both species will flourish in the Environmental Protection Area (i.e. 7a zone).



3 LAND ZONED 7A FOR ENVIRONMENTAL PROTECTION

3.1 Background

Coffs Harbour City Council has raised a second issue regarding the potential conflict between the prescribed Asset Protection Zone (APZ) and land zoned for Environmental Protection (7a). There concern is as follows:

“Revise and amend the development proposal to ensure that no component, including the bushfire asset protection zones, encroach on to the lands currently zoned as 7a.”

The dwelling layout for the proposed development utilises cleared land, in the northern portion of the Subject site, which is zoned for residential low density housing. A strip of land zoned for Environmental Protection (7a) runs across the southern portion of the Subject site. The cleared land extends into the 7a zone.

3.2 Potential Conflict of APZ with 7a Land

A Bushfire Risk Management report was prepared by BushfireSafe in 2007. The report stated that an APZ of 30 metres was required for the Southern aspect of the proposed dwelling layout. The APZ does encroach into the 7a zone by approximately 750 m², but 90% of this is already cleared land. There will be about 1200m² of land, within the 7a and outside the APZ, which will be revegetated, effectively representing a net gain in *quality* 7a zoned land. A further 1500m², outside the 7a boundary, will also be revegetated and effectively incorporated into the 7a land. A Vegetation Management Plan (VMP) will be completed to outline the strategies to be undertaken in these areas including: weed control; facilitation of natural regeneration; enhancement planting; maintenance and monitoring. The implementation of the VMP will result in an overall improvement in the quality of vegetation and the habitat value of the area. **FIGURE 7** illustrates rehabilitation areas and the effective increase to land that will be conserved.



4 CONCLUSION

James Warren and Associates (JWA) completed a Flora and Fauna Assessment in 2007 that was submitted as part of the development application for Lot 211 DP 1044292 Pacific Highway, Moonee (the Subject site). Two issues, arising from the Flora and Fauna Assessment, have been identified by Coffs Harbour Shire Council as requiring clarification and/or additional information.

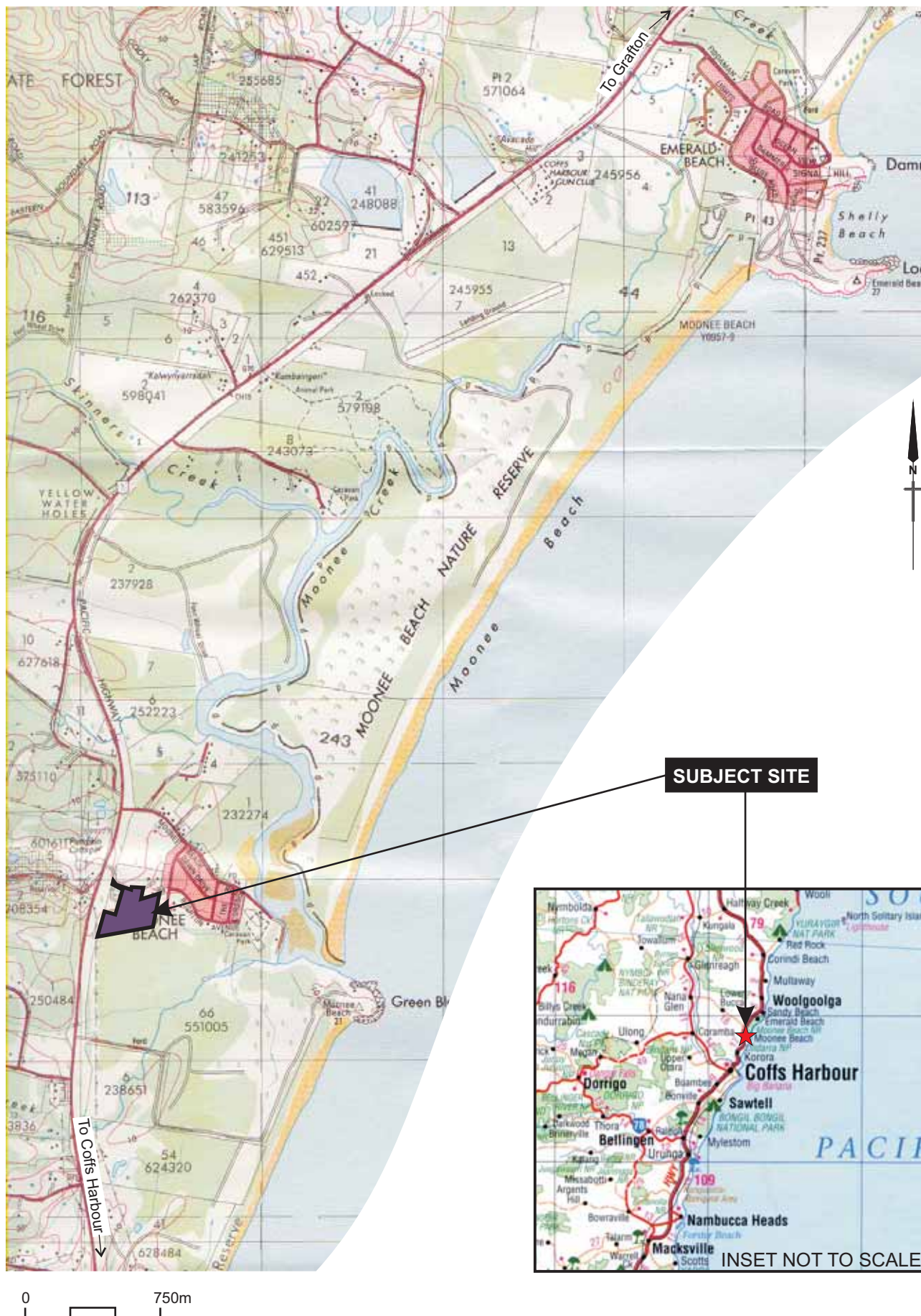
The translocation of the threatened species Moonee Quassia and the Rusty plum, in addition to habitat compensation, is proposed as mitigation for the potential impacts on these species from the proposed development. The activities that will cause the potential direct impacts will result from the inevitable construction of the dedicated Moonee Collector Road. Understorey clearing for the APZ requirements of the proposed development will not remove any of these significant plants. Indirect impacts e.g. edge effect, weed invasion etc are highly unlikely to prevent these plants from reaching maturity and reproducing successfully. Evidence has been provided in support of the translocation program, including reference to the successful translocation of another *Quassia* species in South East Queensland and a set of attributes, outlined in Valle *et al* (2004), which will increase the overall chance of the success of the program.

Although there will be a minor loss of vegetation, due to clearing for the APZ requirements, rehabilitation in both the degraded areas of the 7(a) land and land directly adjacent but outside the 7(a) boundary will effectively result in a net gain of native forested vegetation that will be designated for conservation.



5 REFERENCES

- CHCC (2004) Moonee Development Control Plan. Coffs Harbour City Council. Located at <http://www.coffsharbour.nsw.gov.au/www/html/88-development-control-plans.asp> viewed on the 16th June 2010.
- DEC (2005) Approved NSW & National Recovery Plan. *Quassia* sp. *Mooney Creek* (Moonee Quassia). July 2005 Department of Environment and Conservation (NSW), 2005.
- DECC (2005) Threatened species, population and Ecological communities of NSW. Recovery strategy: Translocation and/or reintroduction. Located at <http://www.threatenedspecies.environment.nsw.gov.au> and viewed on the 15th June 2010.
- DECCW (undated) NSW National Parks & Wildlife Service - Atlas of NSW Wildlife. Department of Environment Conservation, Climate Change and Water. Located at <http://wildlifeatlas.nationalparks.nsw.gov.au/wildlifeatlas/watlas.jsp> Accessed on 14th May 2010.
- Floyd, A.G., (2008) Rainforest Trees of Mainland South-eastern Australia, Inkata Press 2008
- JWA (2007) James Warren and Associates. Flora and Fauna Assessment Lot 211 DP 1044292 Pacific Highway, Moonee
- JWA (2010) James Warren and Associates. Assessment of Significance (7 part tests) Lot 211 DP 1044292 Pacific Highway, Moonee
- Vallee, L., Hogbin, T., Monks, L., Makinson, B., Matthes, M. and Rossetto, M. (2004) Guidelines for the Translocation of Threatened Plants in Australia. Second Edition. Australian Network for Plant Conservation, Canberra.



SOURCE: Topographic map 'Moonee Beach'

SCALE: 1 : 30 000 @ A4

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FIGURE 1

PREPARED: BW
DATE: 12 July 2010
FILE: 04004_F&F_Locality.cdr

TITLE

LOCALITY PLAN



Legend
 Subject Site



0 100m

SOURCE: Jock Palmer & Associates
 Ref: 03PHOTO.jpg (Rec'd 03.08.04)

SCALE: 1 : 3000 @ A4

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FIGURE 2

PREPARED: BW
 DATE: 12 July 2010
 FILE: 04004_F&F_Aerial.cdr

TITLE

**AERIAL
 PHOTOGRAPH**



Legend

- Community 1 - Tall mid-dense forest
(*Lophostemon confertus*, *Eucalyptus siderophloia*)
- Community 2 - Tall sparse forest
(*Lophostemon confertus*, *Eucalyptus saligna*, *Cryptocarya obovata*)
- Community 3 - Low dense shrubland
(*Lantana camara*, *Senna tendula*)
- Community 4 - Low grassland
(*Paspalum dilatatum*, *Imperata cylindrica*)
- Community 5 - Mixed plantings
(*Callistemon* spp., *Lophostemon confertus* etc)
- Approximate location of *Quassia* sp. Moonee Creek
(Endangered - TSC Act 1995) - JWA Site Investigations 2004
- Approximate location of *Quassia* sp. Moonee Creek
(Endangered - TSC Act 1995) - JWA Site Investigations 2007
- Approximate location of Rusty plum (*Niemeyera whitei*) -
JWA Site Investigations 2007
- Subject Site

0 100m



SOURCE: JWA Site Investigations 2004 & 2007;
Jock Palmer & Associates
Ref: 03PHOTO.jpg (Rec'd 03.08.04)
SCALE: 1 : 3000 @ A4

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FIGURE 3

PREPARED: BW
DATE: 12 July 2010
FILE: 04004_F&F_Vegetation.cdr

TITLE

**EXISTING
SITE
VEGETATION**



Legend
 Subject Site



0 100m

SOURCE: Ross D Colquhoun Architect
 (Ref: 06-028-01 final site setout A3 plan.pdf)

SCALE: 1 : 3000 @ A4

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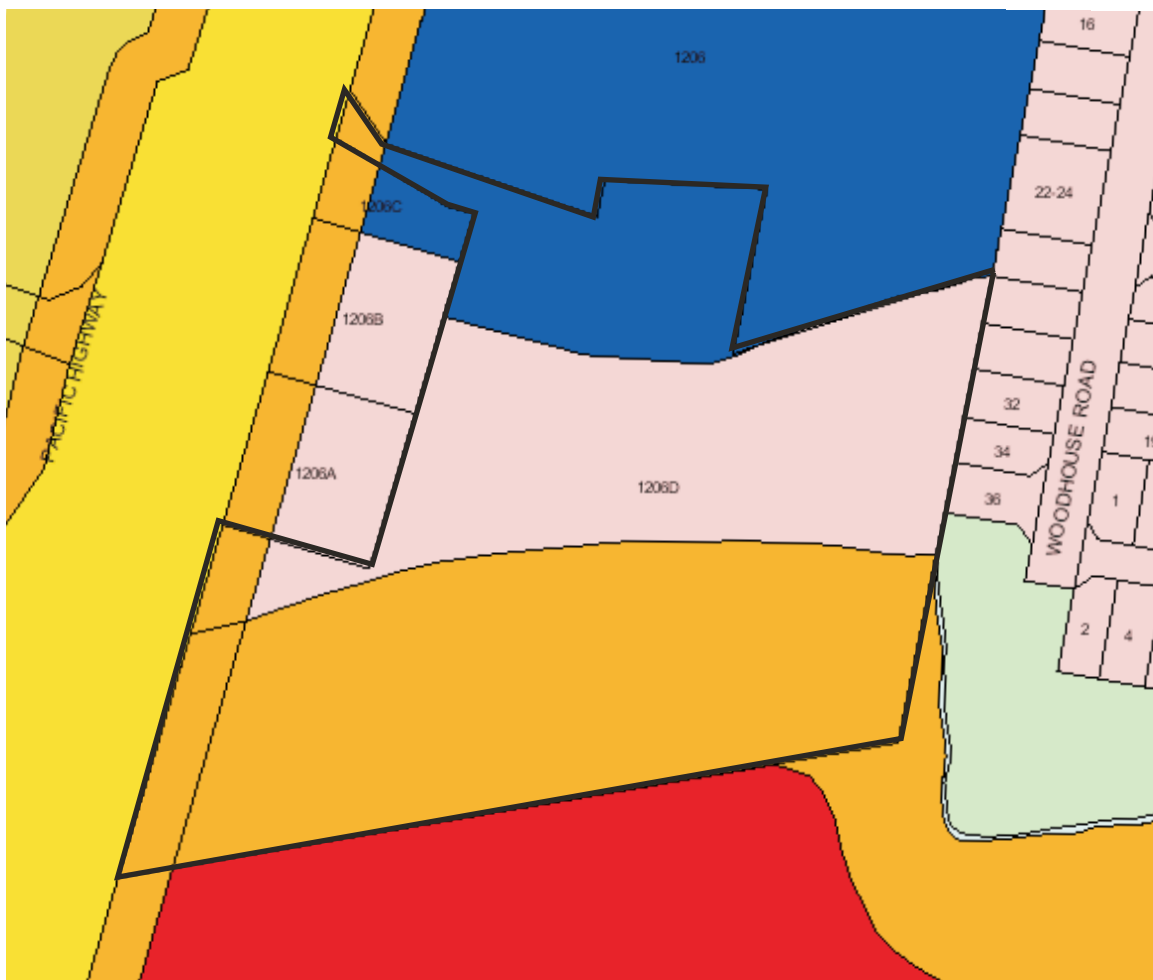
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FIGURE 4

PREPARED: BW
 DATE: 12 July 2010
 FILE: 04004_F&F_Layout.cdr

TITLE

**PROPOSED
 DEVELOPMENT
 LAYOUT**



- Legend**
- Residential Low Density
 - Business Mixed Use
 - Environmental Protection Habitat & Catchment
 - Open Space Public Recreation
 - Residential Tourist
 - Rural Agriculture
 - Classified Road
 - Subject Site



0 100m

SOURCE: Coffs Harbour City Council LEP Web
(Accessed 15.05.07)

SCALE: 1 : 3000 @ A4

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FIGURE 5

PREPARED: BW
DATE: 12 July 2010
FILE: 04004_F&F_Landuse.cdr

TITLE

LAND USE ZONES



Legend

- Community 1 - Tall mid-dense forest
(*Lophostemon confertus*, *Eucalyptus siderophloia*)
- Community 2 - Tall sparse forest
(*Lophostemon confertus*, *Eucalyptus saligna*, *Cryptocarya obovata*)
- Community 3 - Low dense shrubland
(*Lantana camara*, *Senna tendula*)
- Community 4 - Low grassland
(*Paspalum dilatatum*, *Imperata cylindrica*)
- Community 5 - Mixed plantings
(*Callistemon* spp., *Lophostemon confertus* etc)
- Approximate location of *Quassia* sp. Moonee Creek
(Endangered - TSC Act 1995) - JWA Site Investigations 2004
- Approximate location of *Quassia* sp. Moonee Creek
(Endangered - TSC Act 1995) - JWA Site Investigations 2007
- Approximate location of Rusty plum (*Niemeyera whitei*) -
JWA Site Investigations 2007
- APZ
- Subject Site

0 100m



SOURCE: JWA Site Investigations 2004 & 2007;
Ross D Colquhoun Architect
(Ref: 06-028-01 final site setout A3 plan.pdf)
SCALE: 1 : 3000 @ A4

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FIGURE 6

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FILE: 04004_F&F_Impacts.cdr

TITLE

**IMPACTS OF
PROPOSED
DEVELOPMENT**



Legend

- Rehabilitation Areas
- Approximate location of *Quassia* sp. Moonee Creek (Endangered - TSC Act 1995) - JWA Site Investigations 2004
- Approximate location of *Quassia* sp. Moonee Creek (Endangered - TSC Act 1995) - JWA Site Investigations 2007
- Approximate location of Rusty plum (*Niemeyera whitei*) - JWA Site Investigations 2007
- APZ
- Subject Site



0 100m

SOURCE: JWA Site Investigations 2004 & 2007;
Ross D Colquhoun Architect
(Ref: 06-028-01 final site setout A3 plan.pdf)
SCALE: 1 : 3000 @ A4

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FIGURE 7

PREPARED: BW
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FILE: 04004_F&F_Rehab.cdr

TITLE

**REHABILITATION
AREAS**