BioBanking
Biodiversity Banking and Offsets Scheme

Part 7A of the *Threatened Species Conservation Act 1995*

BioBanking statement	Statement ID 19
	Annexure A: maps Map 1: Site location and proposal site (9/9/2015) Map 2: Vegetation zones (9/9/2015) Map 3: Threatened species: Mitchell's Rainforest Snail, Black Bittern and Pale-vented Bush-hen (9/9/2015) Map 4: Threatened species: Common Planigale (9/9/2015) Map 5: Proposal overview Sheet 1 of 3 (9/9/2015) Map 6: Proposal overview Sheet 2 of 3 (9/92015) Map 7: Proposal overview Sheet 3 of 3 (9/9/2015) **Accredited assessor's ID** [redacted] **Accredited assessor's name** [redacted] **BioBanking credit calculator version** Version 4.0

NSW GOVERNMENT | Office of Environment & Heritage

Section 1: BioBanking statement issued to

Name	Byron Shire Council
ABN	14 472 131 473
Address	70-90 Station Street, Mullumbimby NSW
Postcode	2482

Section 2: Development site

Address	Byron Bay Bypass, Browning Street, Byron Bay NSW 2481	
Lot/s and DP/s	Road Reserve	
Local Government Area	Byron Shire	
Site reference	Easting: 559708 AMG zone: 56	Northing: 6830886 Reference system: GDA94
Maps	Map 1: Site location and proposal site (9/9/2015) Map 2: Vegetation zones (9/9/2015) Map 3: Threatened species: Mitchell's Rainforest Snail, Black Bittern and Pale-vented Bush-hen (9/9/2015) Map 4: Threatened species: Common Planigale (9/9/2015) Map 5: Proposal overview Sheet 1 of 3 (9/9/2015) Map 6: Proposal overview Sheet 2 of 3 (9/92015) Map 7: Proposal overview Sheet 3 of 3 (9/9/2015)	
Brief description of development	The proposal is the construction of a town centre road bypass to the west of the existing rail corridor in Byron Bay. It includes: • Upgrade of the existing roundabout at the junction of Shirley Street, Lawson Street and Butler Street. • Upgrade of Butler Street to the southern extent of the existing pavement (approximately 600 m), including a new roundabout at Somerset Street. • Construction of new road within the road reserve extending to the south of the existing Butler Street (approximately 600 m). • A new level rail crossing between the Butler Street extension and the Browning Street extension. • Construction of a new section of road from the new rail crossing to Jonson Street (Browning Street extension). • A new roundabout at the intersection of the new Browning Street extension, Jonson Street and the existing Browning Street.	

Section 3

I, the Chief Executive of the Office of Environment and Heritage issue this biobanking statement on the basis that the development specified above, combined with the credit retirement requirements and on-site measures set out in section 4 of this statement, will improve or maintain biodiversity values in accordance with section 127ZL of the *Threatened Species Conservation Act 1995*. This determination is made on the basis of an assessment of the impact of the development on biodiversity values in accordance with the BioBanking Assessment Methodology.

Signed by CE OEH 21 December 2015

Terry Bailey
Chief Executive
Office of Environment and Heritage
Date

Section 4

Conditions applicable to this Biobanking Statement

The conditions as set out in Schedule 1 and Schedule 2 are applicable to this Biobanking Statement.

Schedule 1

Conditions relating to on-site measures

1. The development to which this Biobanking Statement applies as described in Section 2, must be undertaken in accordance with the following on-site measures:

Construction management at the development site: construction phase

A Construction Environmental Management Plan (CEMP) would be developed for the construction phase of the project, and would be prepared prior to the commencement of construction. The CEMP would include, as a minimum, industry-standard measures for the management of soil, surface water, weeds and pollutants, as well as site-specific measures including the procedures outlined below. The CEMP would be prepared and implemented by the contractor. The proposed measures would include environmental safeguards for protection of nearby vegetation and waterways in accordance with relevant policy documentation and Government guidelines.

The CEMP for the proposal would include the following mitigation measures as a minimum.

- All equipment must be refuelled at least 20 metres away from drainage lines or wetlands and all fuel and chemical storages would be bunded.
- An erosion and sediment control plan, which would include:
  - Installation of erosion and sediment control measures prior to construction.
  - Regular inspection of erosion and sediment control measures, particularly following rainfall events, to ensure their ongoing functionality.
  - Restriction of stockpiles to identified construction compounds, in areas of cleared land and exotic grassland and management of these stockpiles to ensure no offsite impacts through dust generation or sedimentation.
  - Areas of bare ground to be stabilised as soon as practicable after construction to minimise the time bare earth is exposed to erosion and weed invasion.
- A vegetation management plan (VMP), which would include (but not be limited to) the following:
  - Delineation and protection of exclusion zones around native vegetation adjacent to the development site.
  - Communication with construction personnel of the conservation value of surrounding habitats and their responsibilities with regards to protecting these habitats during construction.
  - Hygiene procedures to prevent the introduction and spread of pathogens such as Phytophthora and Myrtle Rust in areas of native vegetation. These would include exclusion zones around retained areas of native vegetation and/or provision of machine and footwear washdown stations for all equipment and personnel working in areas of native vegetation.
- A weed management sub-plan to the VMP, including a description of:
  - Type and location of weeds of concern (including noxious weeds) within the subject site.
  - Sensitive receivers (such as native vegetation and waterways) within or adjacent to the subject site.
  - Measures to prevent the spread of weeds, including hygiene procedures for equipment, footwear and clothing.
  - Proposed weed control methods and targeted areas.
  - Weed disposal protocols.
- A fauna management plan, including (but not limited to) the following:

  - A Mitchell's Rainforest Snail management protocol, including pre-clearing surveys for snails and salvage and relocation of any snails and/or suitable shelter sites that are detected in the subject site into areas of adjoining suitable habitat.
  - A fauna management protocol, including pre-clearing surveys for nests or sheltering terrestrial fauna and rescue and salvage (where possible) of fauna entering the construction site.
  - Wildlife would not be handled wherever possible. Construction staff would only handle wildlife in an emergency situation. Uninjured wildlife would be gently encouraged to leave the site by the ecologist/ wildlife specialist. Injured wildlife would be taken to a local wildlife carer or veterinarian for treatment and care if necessary.
  - A habitat feature protocol, including pre-clearing surveys for habitat features such as hollow logs and hollow-bearing trees that can be retained or salvaged and placed in adjoining retained vegetation, and protocols for the safe clearing of hollow-bearing trees to ensure no resident fauna are injured.
  - Protocols to prevent introduction or spread of chytrid fungus would be implemented following OEH Hygiene protocol for the control of disease in frogs (DECCW, 2008c).
- A pre-clearing protocol which would include, but not be limited to:
  - Clear marking/erection of exclusion fencing around protected vegetation areas and delineation of 'no-go' areas.
  - Targeted pre-clearing surveys in accordance with the Mitchell's Land Snail protocol. Pre-clearing surveys would include targeted searches of the subject site for snails and salvage and relocation of any snails and/or suitable shelter sites that are detected. Snails and/or suitable shelter sites would be relocated to appropriate nearby Mitchell's Land Snail habitat. Snail collection and relocation would need to be conducted by appropriately experienced ecologists under a Licence obtained under Section 91 of the TSC Act.
  - Inspections of native vegetation for other resident fauna and/or nests or other signs of fauna occupancy.
  - Capture and relocation or captive rearing of less mobile fauna (such as roosting microbats, nestling birds or any injured fauna) by a trained fauna handler and with assistance from Wildlife Information Rescue and Education Service (WIRES) or similar as required.
  - Inspection and identification/marking of hollow-bearing trees adjacent to construction footprints to help ensure against accidental impacts.
  - Pre-clearing survey would be undertaken by suitably qualified ecologist/s only.

Construction management at the development site: operation phase

The proposal detailed design would include signposting and appropriate speed limits to reduce the likelihood of vehicle strikes for native fauna. Other measures to minimise proposal impacts during operation include:

- Council control of noxious weeds within the road reserve to prevent the spread of propagules into retained areas of native vegetation.
- Lighting would be designed to minimise light spill into adjacent areas of native vegetation within the Cumbebin Swamp.
- The design would consider installing fencing along the southwestern and southern boundaries of the proposal to restrict fauna movement on to the road to reduce the potential for vehicle strike.

Schedule 2

Credit retirement conditions

General

2.1 The credits set out in Table 1 and Table 2 below must be retired to ensure that the development to which this Biobanking Statement relates improves or maintains biodiversity values.

2.2 All credits required by this statement to be retired in respect of the development to which this Biobanking Statement applies must be retired at the same time.

Ecosystem credit retirement conditions

2.3 The specified number of ecosystem credits in Table 1 must be retired to offset the impacts of the development on the Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregion, (NR217) vegetation type indicated on Map 2 in Annexure A to this statement (**Map 2**). The ecosystem credits must be in respect of any one or more of the vegetation types within the IBRA subregions listed in Table 1. The credits must be retired before physical work can commence on the development site.

Table 1 Ecosystem credits required for the Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregion, (NR217) plant community type indicated on Map 2

Number of ecosystem credits	74
IBRA sub-region	Murwillumbah (Qld – Southeast Hills and Ranges) and any IBRA subregion that adjoins the IBRA subregion in which the development occurs
Plant community type(s) that can be used to offset the impacts from development	Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregion, (NR217) Swamp Mahogany swamp forest on coastal lowlands of the NSW North Coast Bioregion and northern Sydney Basin Bioregion, (NR254)

Species credit retirement conditions

2.4 The development requires 49 species credits for the Mitchell's Rainforest Snail. The 49 species credits must be retired to offset the impacts of the development on the Mitchell's Rainforest Snail species indicated on Map 3 in Annexure A to this statement (**Map 3**). The species credits must be retired before physical work can commence on the development site.

2.5 The development requires 8 species credits for the Pale-vented Bush-hen. The 8 species credits must be retired to offset the impacts of the development on the Pale-vented Bush-hen species indicated on Map 3 in Annexure A to this statement (**Map 3**). The species credits must be retired before physical work can commence on the development site.

2.6 The development requires 8 species credits for the Black Bittern. The 8 species credits must be retired to offset the impacts of the development on the Black Bittern species indicated on Map 3 in Annexure A to this statement (**Map 3**). The species credits must be retired before physical work can commence on the development site.

2.7 The development requires 37 species credits for the Common Planigale. The 37 species credits must be retired to offset the impacts of the development on the Common Planigale species indicated on Map 4 in Annexure A to this statement (**Map 4**). The species credits must be retired before physical work can commence on the development site.

ANNEXURE A – Maps

Map 1: Site location and proposal site (9/9/2015)

Map 2: Vegetation zones (9/9/2015)

Map 3: Threatened species: Mitchell's Rainforest Snail, Black Bittern and Pale-vented Bush-hen (9/9/2015)

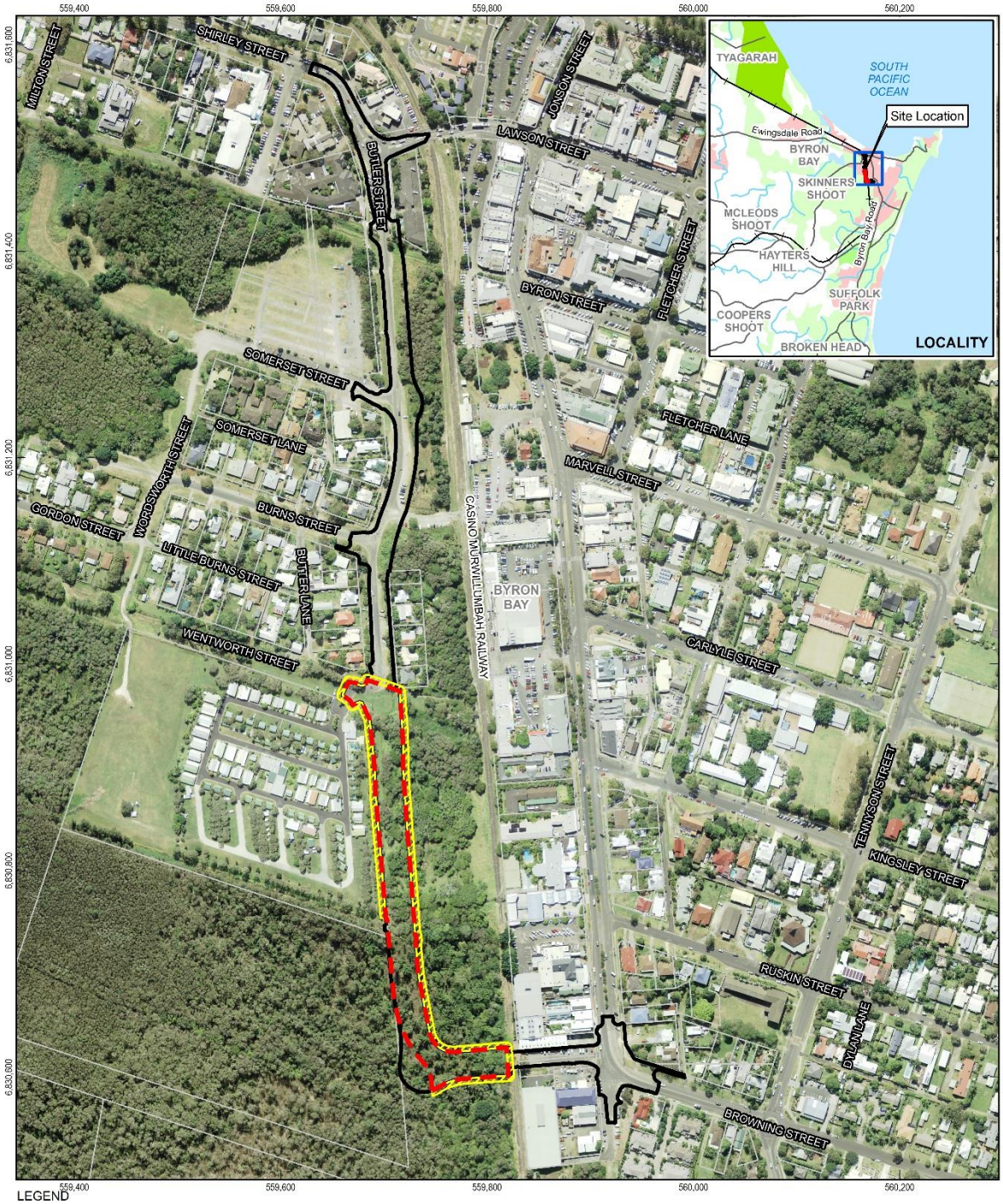
Map 4: Threatened species: Common Planigale (9/9/2015)

Map 5: Proposal overview Sheet 1 of 3 (9/9/2015)

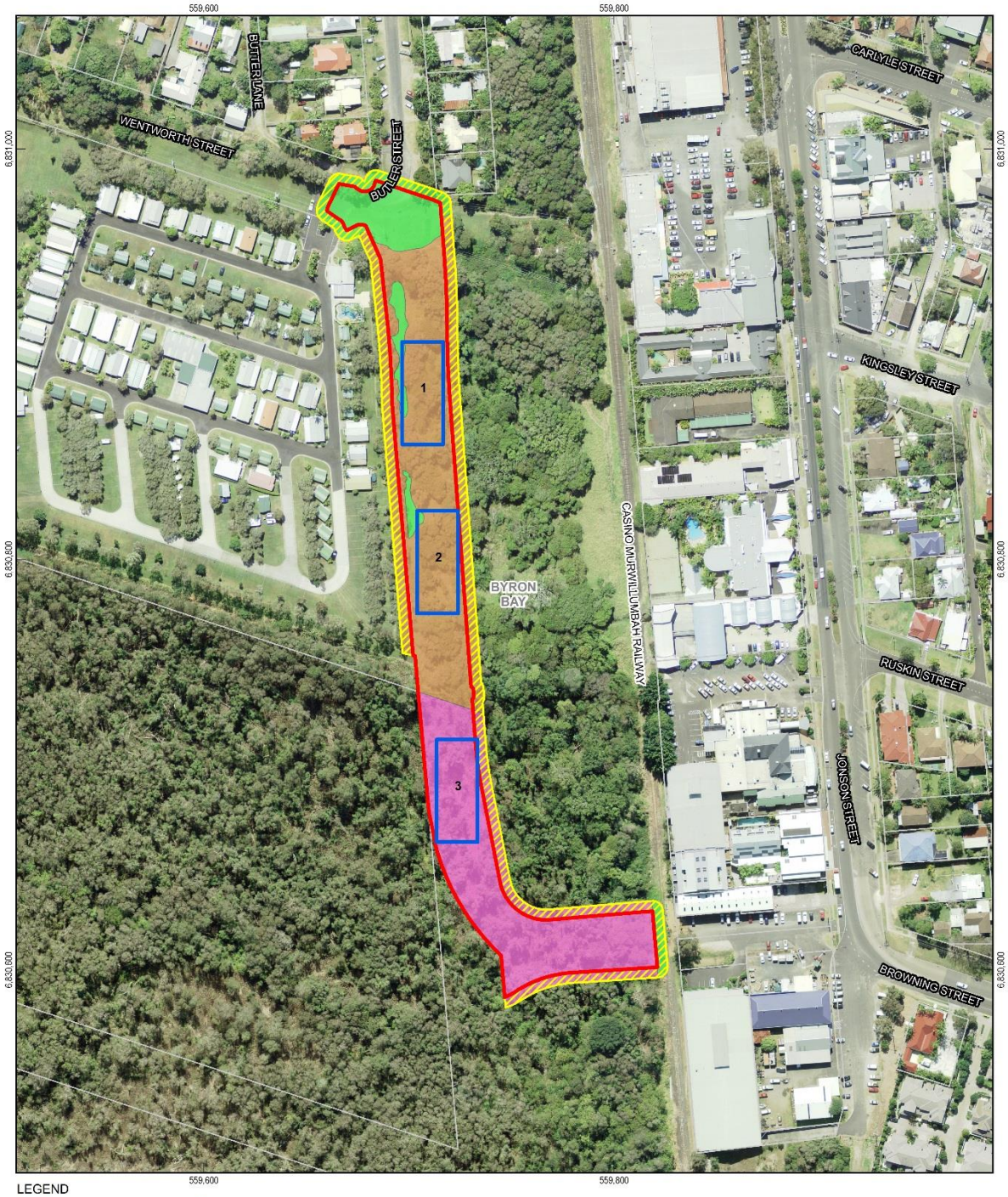
Map 6: Proposal overview Sheet 2 of 3 (9/92015)

Map 7: Proposal overview Sheet 3 of 3 (9/9/2015)

Map 1: Site location and proposal site (9/9/2015)



Map 2: Vegetation zones (9/9/2015)



LEGEND

- Biobank study area
- Indirect impact
- Cadastre
- BioBank plot
- Cleared land
- Paperbark Swamp forest of the Coastal Lowlands of the North Coast (NR 217)_ModGood_Good
- Paperbark Swamp forest of the Coastal Lowlands of the North Coast (NR 217)_ModGood_Poor

Paper Size A4

0 10 20 40 60 80

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

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GHD

Byron Shire Coucil
BioBanking Assessment

Job Number 22-17484
Revision 1
Date 09 Sep 2015

Vegetation zones

Level 3, GHD Tower, 24 Honeysuckle Drive, Newcastle NSW 2300 T 61 2 4979 9999 F 61 2 4979 9988 E ntlmail@ghd.com W www.ghd.com.au

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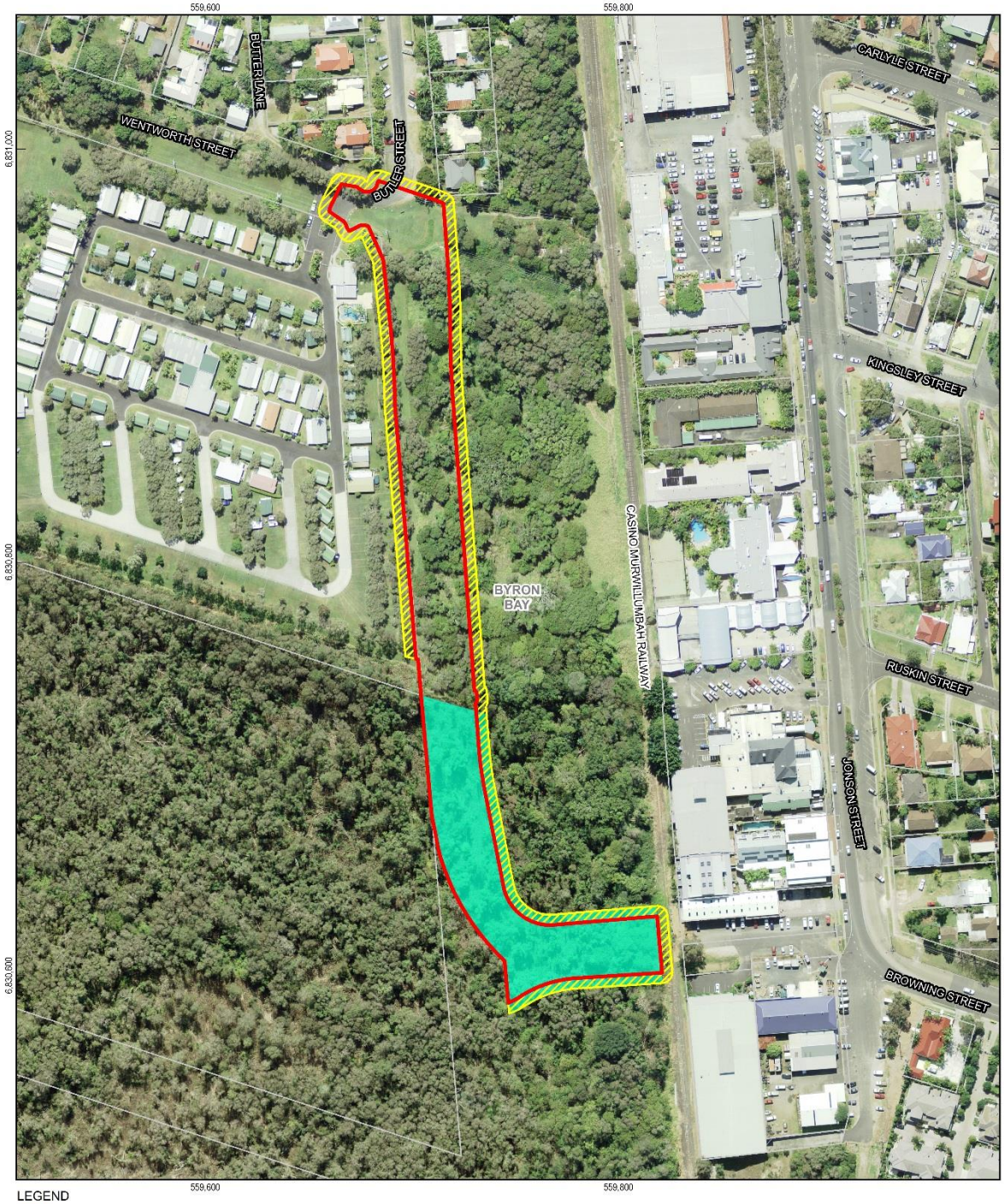
Data source: LPI: DCDB & DTDB, 2012; BSC: Aerial Imagery, 2014. Created by: fmackay

Map 3: Threatened species: Mitchell's Rainforest Snail, Black Bittern and Pale-vented Bush-hen (9/9/2015)



LEGEND

- Biobank study area
- Indirect impact
- Cadastre
- Mitchell's Rainforest Snail, *Thersites michellae*
- Black Bittern, *Ixobrychus flavicollis*
- Pale-vented Bush Hen, *Amaurornis moluccana*

Paper Size A4

0 10 20 40 60 80

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

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Byron Shire Coucil
BioBanking Assessment
Threatened species
Mitchell's Rainforest Snail, Black Bittern and Pale-vented Bush Hen

Job Number 22-17484
Revision 1
Date 09 Sep 2015

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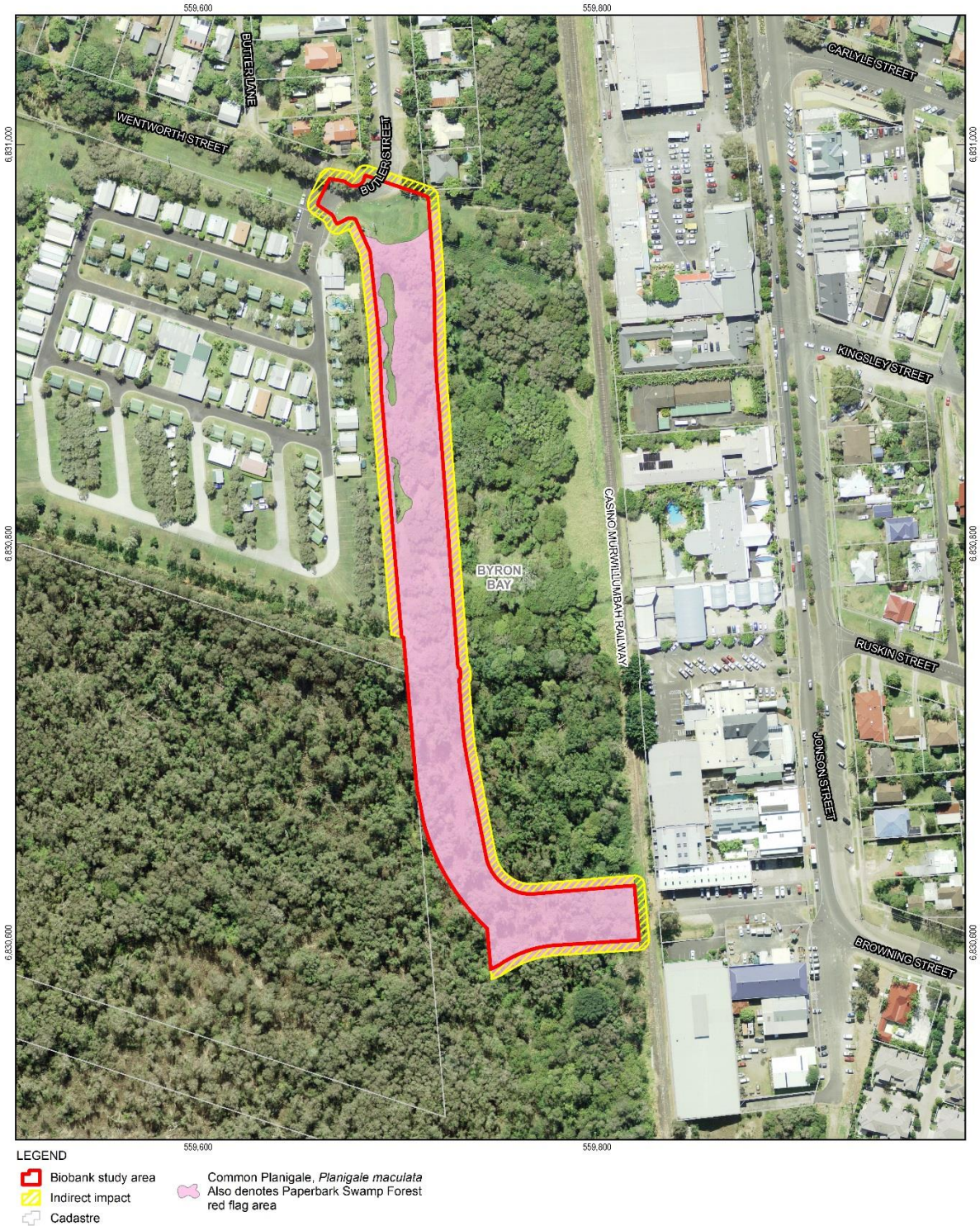
Data source: LPI: DCDB & DTDB, 2012; BSC: Aerial Imagery, 2014. Created by: fmackay

Map 4: Threatened species: Common Planigale (9/9/2015)



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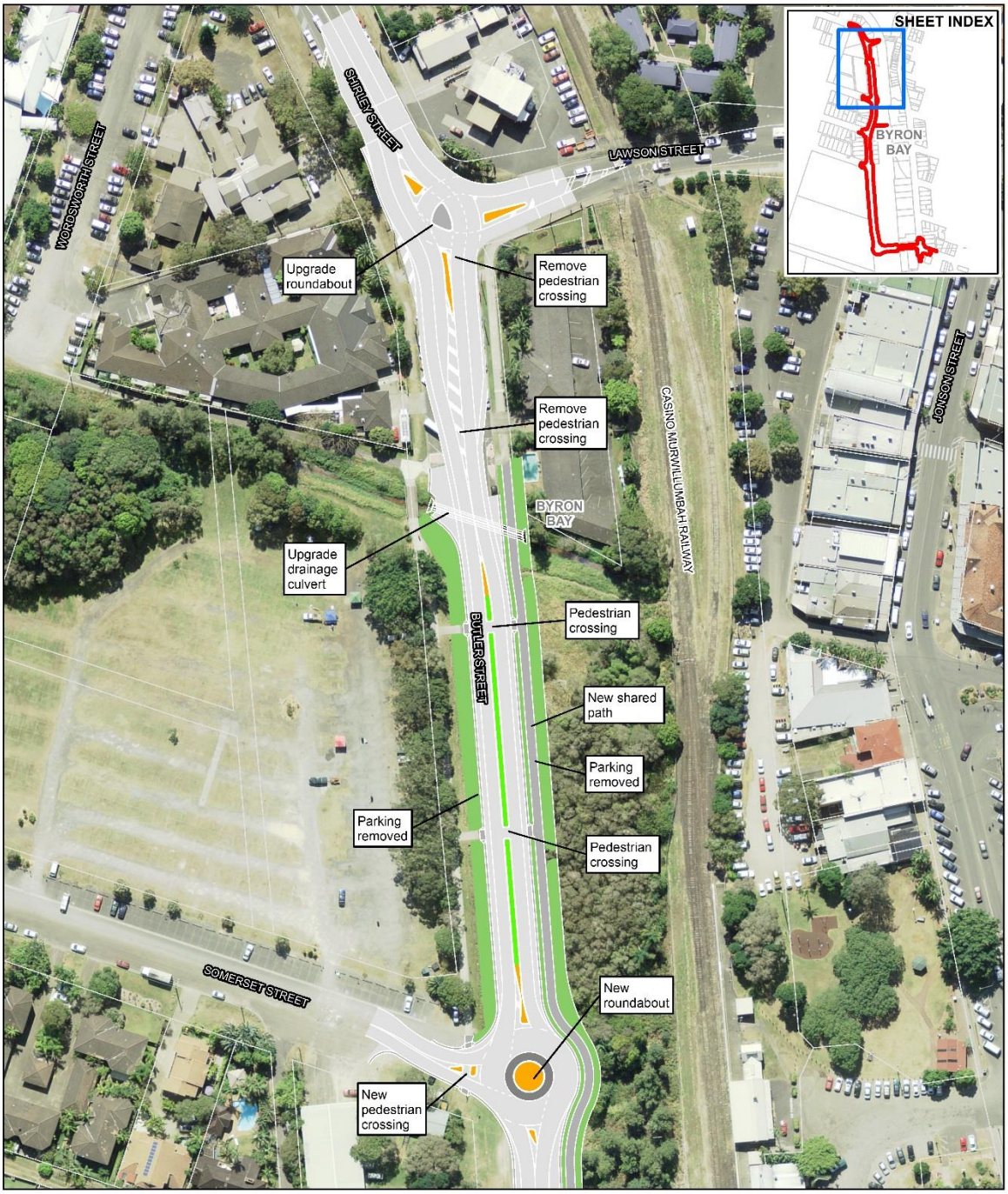
Data source: LPI: DCDB & DTDB, 2012; BSC: Aerial Imagery, 2014. Created by: fmackay

Map 5: Proposal overview Sheet 1 of 3 (9/9/2015)



LEGEND

Proposal site	Concrete	Median
Cadastre	Grassed verge	Mountable median
Preliminary design	Landscaping	Pavement

Paper Size A4
0 5 10 20 30 40
Metres
Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

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GHD

Byron Shire Council
BioBanking Assessment

Proposal overview
Sheet 1 of 3

Job Number 22-17484
Revision 1
Date 09 Sep 2015

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Data source: LPI: DCDB & DTDB 2012; BSC: Aerial Imagery, 2014. Created by: fmackay, tmorton

Map 6: Proposal overview Sheet 2 of 3 (9/92015)

LEGEND

Proposal site	Concrete	Median
Cadastre	Grassed verge	Pavement
Preliminary design	Landscaping	

Paper Size A4

0 5 10 20 30 40

Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

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GHD

Byron Shire Council
BioBanking Assessment

Proposal overview
Sheet 2 of 3

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Revision 1
Date 09 Sep 2015

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Data source: LPI: DCDB & DTDB 2012; BSC: Aerial Imagery, 2014. Created by: fmackay, tmorton

Map 7: Proposal overview Sheet 3 of 3 (9/9/2015)

LEGEND

Proposal site	Concrete	Mountable median
Cadastre	Grassed verge	Pavement
Preliminary design	Median	

Paper Size A4
0 5 10 20 30 40
Metres
Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56

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GHD

Byron Shire Council
BioBanking Assessment

Proposal overview
Sheet 3 of 3

Job Number 22-17484
Revision 1
Date 09 Sep 2015

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Data source: LPI: DCDB & DTDB 2012; BSC: Aerial Imagery, 2014. Created by: fmackay, tmorton

Information about this biobanking statement

Development to which this biobanking statement applies

This biobanking statement has been issued in respect of the proposed development as described in Section 2 of this statement. The biobanking statement has been issued on the basis of an assessment of the direct and indirect impacts on biodiversity values from the proposed development shown on map 1. A revised biobanking statement will be required from the OEH where there are changes to the proposed development or development footprint that impact on biodiversity values.

Modifying the biobanking statement

If the proposed development to which this biobanking statement applies is modified so that there is a different impact on biodiversity values, the applicant must apply to the OEH to modify the biobanking statement. An applicant is not required to apply for a modified biobanking statement if a consent authority is satisfied that any modification to the proposed development will have no impact on biodiversity values. However, the consent authority may require an updated biobanking statement that is consistent with the information provided within the development application.

Exemption from threatened species assessment

The development to which this biobanking statement applies is taken to be development that is not likely to significantly affect any threatened species, population or ecological community, or its habitat, and is therefore exempt from complying with the threatened species assessment requirements under Parts 4 and 5 of the *Environmental Planning and Assessment Act 1979*.

No additional assessment of impact on biodiversity values required

Where a biobanking statement has been issued and supplied to a consent authority, the authority is not required to take into consideration the likely impact or effect of the development on biodiversity values.

Biobanking statements and the EP&A Act

If this biobanking statement is provided to a consent authority or a determining authority prior to the determination of an application under the *Environmental Planning and Assessment Act 1979*, the authority must, if it determines to approve the application, include a condition that requires the conditions of this statement to be complied with.

Duration of biobanking statement

Unless an extension is granted by the OEH, this biobanking statement will lapse within two years of the date of issue if the proposed development to which this statement applies has not been approved under the *Environmental Planning and Assessment Act 1979*.

Retiring biodiversity credits

To retire the biodiversity credits specified in the biobanking statement, an application must be submitted to the OEH using the application forms available from the web site http://www.environment.nsw.gov.au/biobanking/forms.htm and accompanied by the prescribed fee.

If an application to retire credits is successful, the OEH will issue a credit retirement report to the applicant and the relevant consent or determining authority that summarises the class and number of credits that were retired. This information will also be available from the biobanking statement register within the BioBanking public registers. Physical works on site cannot commence until confirmation is received from the OEH that the credits have been retired.

Enforcement options for breach of a biobanking statement

If this biobanking statement is incorporated into a development consent under Part 4 of the EP&A Act or the approval of an activity to which Part 5 of the EP&A Act applies, the holder of the statement must comply with any credit retirement condition and/or condition relating to on-site measures. Failure to comply with a condition of consent or approval *may be* an offence under the EP&A Act or other legislation under which the approval is granted.

Where a person fails to comply with a credit retirement condition, the Minister may direct the person to retire biodiversity credits within a specified time. Failure to comply with a direction by the Minister without reasonable excuse is an offence, the maximum penalty for which is $1,100,000.

Other relevant provisions of the National Parks and Wildlife Act 1974

Significant penalties can be imposed by a court if a person harms, or causes or permits the harm to threatened species, or knowingly damages or causes or permits damage to threatened species habitat unless it was essential for the carrying out of development in accordance with a consent or approval within the meaning of the *Environmental Planning and Assessment Act 1979*. Interim protection orders may be issued in certain circumstances to protect threatened species and threatened species habitat.

DETERMINATION THAT THE DIRECT IMPACTS OF DEVELOPMENT ON RED FLAG AREAS IS TO BE REGARDED AS IMPROVING OR MAINTAINING BIODIVERSITY VALUES

SECTION 9.2 BIOBANKING ASSESSMENT METHODOLOGY

SITE: Byron Bay Bypass

RED FLAG AREA: Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions EEC

PROPOSED DEVELOPMENT: The proposal is the construction of a town centre road bypass to the west of the existing rail corridor in Byron Bay. It includes:

- upgrade of the existing roundabout at the junction of Shirley Street, Lawson Street and Butler Street
- upgrade of Butler Street to the southern extent of the existing pavement (approximately 600 metres), including a new roundabout at Somerset Street
- construction of a new road within the road reserve extending to the south of the existing Butler Street (approximately 600 metres)
- a new level rail crossing between the Butler Street extension and the Browning Street extension
- construction of a new section of road from the new rail crossing to Jonson Street (Browning Street extension)
- a new roundabout at the intersection of the new Browning Street extension, Jonson Street and the existing Browning Street.

DETERMINATION

I am advised that the impact of the proposed development on the red flag areas at the abovementioned site has been assessed in accordance with Section 9.2 of the BioBanking Assessment Methodology as set out in section 2 of this determination and I hereby determine that the proposal is to be regarded as improving or maintaining biodiversity values, for the reasons set out in section 3 of this determination.

Signed by CE OEH 21 December 2015

TERRY BAILEY
Chief Executive
Office of Environment and Heritage

1 INTRODUCTION

An application for a BioBanking statement (**the application**) was lodged on 24 June 2015 in respect of the proposed development of land at Byron Bay Bypass (**the site**). The site is located within the Byron Shire Council Local Government Area (LGA) and the Northern Rivers major catchment area. The site is located within a number of zones, including under Byron Local Environmental Plan (LEP) 2014, Zone R2 Low Density Residential, Zone B2 Local Centre, Zone SP2 Infrastructure (Rail Corridor) and Zone RE1 Public Recreation, with areas of deferred matter under Byron LEP 2014 reverting to the following zones under Byron LEP 1988: Zone No. 2(a) (Residential Zone), Zone No. 5(a) (Special Uses Zone) (Railway) and Zone No. 9(a) (Proposed Road Zone). The total area of the site is 1.61 hectares.

The proposed development comprises the construction of a town centre road bypass to the west of the existing rail corridor in Byron Bay (**the Development**). It includes:

- upgrade of the existing roundabout at the junction of Shirley Street, Lawson Street and Butler Street
- upgrade of Butler Street to the southern extent of the existing pavement (approximately 600 metres), including a new roundabout at Somerset Street
- construction of a new road within the road reserve extending to the south of the existing Butler Street (approximately 600 metres)
- a new level rail crossing between the Butler Street extension and the Browning Street extension
- construction of a new section of road from the new rail crossing to Jonson Street (Browning Street extension)
- a new roundabout at the intersection of the new Browning Street extension, Jonson Street and the existing Browning Street.

The overall footprint for the Development is 1.61 hectares.

The Development will directly impact on 1.09 hectares and indirectly impact on 0.35 hectares of Paperbark Swamp Forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basins Bioregions (NR217) (Paperbark Swamp Forest). The remaining 0.17 hectares is classified as ‘cleared land’ in accordance with the definition in the BioBanking Assessment Methodology and Credit Calculator Operational Manual (**the manual**).

This vegetation type is consistent with the endangered ecological community (EEC) Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions (Swamp Sclerophyll Forest) listed on Schedule 1 Part 3 of the *Threatened Species Conservation Act 1995*.

Accordingly, in total, 1.09 hectares of Swamp Sclerophyll Forest (EEC) vegetation on the site will be impacted by the Development (**the red flag area**). The total area of 1.09 hectares will be cleared for the proposed development.

The vegetation in the red flag area has been assessed to not meet the definition of “vegetation in low condition” in the BioBanking Assessment Methodology (**the methodology**).

In accordance with section 9.2 of the methodology, where a proposed development or any part of a development is on land that is, or forms part of, a red flag area, a BioBanking statement may still be issued where the Chief Executive of OEH makes a determination that it is possible for the development to be regarded as improving or maintaining biodiversity values.

The Chief Executive can only make that determination when satisfied that the criteria set out in section 9.2 of the methodology have been met.

2 DETERMINING THAT IMPACT OF DEVELOPMENT ON RED FLAG AREAS CAN BE REGARDED AS IMPROVING OR MAINTAINING BIODIVERSITY VALUES

The Development has been assessed in accordance with the relevant criteria to this red flag area set out in section 9.2 of the methodology, as now set out below.

2.1 Highly cleared vegetation types (section 9.2.3.2 of the methodology)

This criterion does not apply to this determination. As per the method, the definition of a 'highly cleared' vegetation type is a plant community type (PCT) whose distribution in the major catchment area is 10 percent or less than its estimated distribution in the major catchment area prior to 1750 (i.e. 90 percent or more cleared in the major catchment area as defined by the VIS Classification Database[1]).

For the purpose of this assessment, the Paperbark Swamp Forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregions is estimated to be 75 percent cleared in the Northern Rivers major catchment area.

This estimation is taken from the NSW Vegetation Information System Classification database, available on the OEH website (http://www.environment.nsw.gov.au/research/Vegetationinformationsystem.htm).

2.2 Options to avoid impacts on red flag areas must be considered (section 9.2.4.1 of the methodology)

The Chief Executive must be satisfied that all reasonable measures have been considered to:

(a) avoid and minimise the adverse impacts of development on the red flag area(s) consistent with the guidelines set out in Subsection 8.3.2, or

Adverse impacts on the red flag have been avoided or minimised by the Development where possible through the planning and design process by:

- investigating various alignment options
- confining the area of disturbance to native vegetation to the smallest area possible to enable the construction of the bypass
- restricting site compounds, spoil areas and laydown areas to areas of exotic vegetation or cleared land.

There is limited scope for further avoidance of ecological impacts for the proposal as the design is constrained by the location of the existing Council road reserve.

The proposed development has been subject to numerous ecological assessments since the project was first proposed. These have included:

- Parsons Brinkerhoff (2003), *Byron Bay Town Centre Mini Bypass and Bus Transit Station, Statement of Environmental Effects*
- PPK Environment and Infrastructure (2001), *Environmental Impact Statement for Byron Bay Town Centre Bypass*
- Sandpiper Ecological Surveys (2001), *Species Impact Statement for Byron Bay Town Centre Bypass*
- Mills and Associates Pty Ltd (1996), *Flora and Fauna Study – Byron Bay Town Centre Environmental Impact Statement*
- Mills and Associates Pty Ltd (1997), *Species Impact Statement – Byron Bay Town Centre (Fauna survey)*
- Landscape Assessment, Management and Rehabilitation Pty Ltd (1997), *Species Impact Statement - Byron Town Centre Bypass (Flora survey)*

[1] CMA region is still referred to in the Threatened Species Profile Database (TSPD) and the Vegetation Information System (VIS) Classification database as the basis for determining the percent cleared of vegetation types within a geographic region. Note, CMA regions are currently equivalent to the Major Catchment Areas used in the BioBanking Assessment Methodology (BBAM) 2014.

- Byron Shire Council (2015), *Byron Bay Bypass Environmental Impact Statement*, prepared by GHD, June 2015.

These assessments have identified a number of threatened species and other ecological constraints and as such the on-site measures as described in this BioBanking statement (ID number 19) have been developed and would be implemented to avoid and minimise impacts.

(b) improve the viability of the biodiversity values of the red flag area. This includes consideration of whether appropriate conservation management arrangements can be established over the red flag area given its current ownership, status under a regional plan, zoning and the likely costs of future management

The Chief Executive is satisfied that reasonable measures for ongoing management have been considered as part of the Development which includes:

- avoidance of direct impacts to the red flag area where practicable
- restriction of direct and indirect impacts to the red flag area to 1.44 hectares
- conservation of approximately 7–10 hectares of Paperbark Swamp Forest within a proposed biobank site with an appropriate management action plan to improve the biodiversity value of the biobank site.

2.3 Additional criteria for impacts on the riparian buffer of estuarine areas or important wetlands (section 9.2.5.4 of the methodology)

(a) category of wetland that is being impacted by the development, or the name of the estuarine area

The development would impact on an area mapped as SEPP 14 wetland. This wetland is known as Cumbebin Swamp. The SEPP 14 wetland extends across the proposed Butler Street and Browning Street extensions, in the southern half of the proposal area.

(b) whether the estuary or important wetland itself, and/or its riparian buffer area, is being impacted

The proposal would directly impact on a small area of SEPP 14 wetland. No estuarine areas or associated riparian buffers would be impacted by the proposal.

(c) extent of impact to the riparian buffer area of the estuary or important wetland including the total area of the riparian buffer that is impacted by the development, the extent to which the width of native vegetation in the riparian buffer will be reduced and over what length, and the size of gaps in native vegetation that would be created or expanded within the riparian buffer

The proposal would directly impact 1.05 hectares of SEPP 14 wetland.

(d) the PCT and condition of the vegetation in the riparian buffer area adversely impacted on by the development

Vegetation within the SEPP 14 wetland is Paperbark Swamp Forest of the Coastal Lowlands of the North Coast (NR217). This vegetation has been partially degraded as it occurs along an existing edge and has been impacted by weed invasion, previous clearing, and other human disturbances. Paperbark Swamp Forest at the site meets the BBAM definition of moderate/good condition but is below benchmark condition for a number of the vegetation and habitat variables measured in plots/ transects.

Vegetation within the development site contains a moderate to high level of weed infestation with species including Senna (*Senna pendula var. glabra*), Lantana (*Lantana camara*), Umbrella Tree (*Schefflera actinophylla*), Crofton Weed (A*geratina adenophora)* and Para Grass (*Urochloa mutica)*. There is also unrestricted access to the site from the caravan park to the west and from

the east along the railway which further contributes to the establishment and proliferation of exotic flora species in the area.

(e) any indirect impacts on the riparian buffer area of the estuary or important wetland, or on other wetlands or watercourses downstream of the proposed development

The development has the potential to result in a number of indirect impacts to nearby vegetation and fauna habitat within the SEPP 14 wetland. These impacts include habitat fragmentation, degradation of surface water, introduction of weeds and pathogens, and disturbance caused by noise, vibration and artificial light. A range of mitigation measures have been developed that would reduce the likelihood of adverse indirect impacts arising from the proposal. These measures are described in Schedule 1 of this BioBanking statement (ID number 19).

Although the development impacts are likely to be restricted to the proposal footprint, it has been assumed that there may be some indirect impacts associated with edge effects which are likely to influence adjoining vegetation. Indirect impacts of the proposal have therefore been included in the BBAM credit calculations for this assessment and include a 5 metre buffer around the development site. This area has been calculated as a separate management zone as it has been assumed that indirect impacts associated with the proposal would cause a partial reduction in biodiversity values rather than a total loss of this vegetation. Based on a 5 metre buffer around the development there is potential for the proposal to have indirect impacts on approximately 1.18 hectares of SEPP 14 Wetland.

(f) measures proposed to minimise the impact on the biodiversity values of the buffer area of the estuary or important wetland.

The on-site measures as described in Schedule 1 of this BioBanking statement (ID number 19) would be implemented to avoid and minimise impacts of the proposal on SEPP 14 wetland.

2.4 Viability must be low or not viable (section 9.2.6.3 of the methodology) (Swamp Sclerophyll Forest EEC)

(a) The current or future land uses of land surrounding the red flag area (other than the land use proposed in the BioBanking statement application) reduce its viability or make it unviable. Relatively small areas of native vegetation surrounded or largely surrounded by intense land uses, such as urban development, can be unviable or have low viability because of disturbances from urbanisation, including edge effects

The development site comprises land adjoining and running parallel to the Murwillumbah Branch of the North Coast Rail Line, located immediately to the west of the Byron Bay town centre. The site location and proposal site are shown in Map 1 of this BioBanking statement (ID number 19).

The proposal would be constructed within the existing developed and undeveloped Butler Street road reserve. The southern section of the proposal site forms the eastern boundary of the Cumbebin Wetland while to the east is the railway and urban development. In the northern section of the development site the vegetation to be impacted adjoins the rail and existing urban development to the east and the Glen Villa Resort and Caravan Park to the west. The land zoning for the red flag area is predominantly 9(a) proposed road reserve Under the Byron Local Environment Plan 1988.

In the north of the development site the long term viability of the red flag area is diminished as it is confined to a strip of vegetation approximately 100 metres wide that is positioned between a caravan park, the rail line and urban development. This area of vegetation is already degraded through previous clearing and the presence of a number of highly invasive weed species such as Lantana (*Lantana camara*) Senna (*Senna pendula*) and Para Grass (*Urochloa mutica*). The current condition of the vegetation in this area would likely remain as is or degrade further if development did not proceed.

In the southern portion of the site, the Paperbark Swamp Forest is adjacent to the rail line and urban development while to the south is the Cumbebin Wetland. The removal of a small amount of

Paperbark Swamp Forest along an already disturbed edge is unlikely to impact on the long term viability of this community as this vegetation has already been impacted through edge effects associated with the adjacent rail line and urban development. Further there is a large extent of similar vegetation in relatively close proximity to the site conserved within the Cumbebin Wetland Nature Reserve located approximately 400 metres to the west of the site.

There are vegetated corridors to the northwest, south and southwest. The northwest corridor extends from the site through Cumbebin Swamp and Tyagarah Nature Reserves, approximately 15 kilometres to Brunswick Heads. This corridor is predominantly vegetated although it includes two roads (Skinners Shoot Road and Ewingsdale Road). The southern corridor is about 1.2 kilometres long and between one kilometre and 300 metres wide. The south-western corridor extends about five kilometres from the site through Cumbebin Swamp Nature Reserve to Ewingsdale Road. This corridor includes numerous cleared tracks, and some minor clearing of vegetation.

Based on the vegetation condition surrounding the study area, aerial photo assessment, the results of the BioBanking Assessment and available vegetation mapping (EcoLogical, 2005), it is not considered likely that the development would affect the condition or width of the primary link.

(b) The size and connectedness of native vegetation in the red flag area to other native vegetation is insufficient to maintain its viability. Relatively small areas of isolated native vegetation can be unviable or have low viability. In considering the size and connectedness, the assessor may consider whether there is less than 30% native vegetation cover within a 0.55 km and 1.75 km radius of the red flag area, or the area to perimeter ratio of the patch size that contains the red flag area.

The development site would impact on approximately 1.44 hectares of Swamp Sclerophyll Forest EEC. The Paperbark Swamp Forest to be cleared on the site has been impacted by the presence of invasive weeds, past clearing activities and nearby urban development. The development site has connectivity to offsite vegetation to the west, south and northwest. Connectivity to the north is constrained by the presence of urban development and the rail line constrained connectivity to the east. The narrowest width of native vegetation through the site is approximately 100 metres.

The study area is continuous with large areas of remnant vegetation to the south and west that occur within the Cumbebin Wetland. To the north and east are predominantly urban areas within the Byron Bay township. The development site is part of a vegetated patch that is approximately 1,700 hectares in area, of which approximately 240 hectares is Paperbark Swamp Forest (EcoLogical 2005). The development site is located on the northeastern boundary of this area of vegetation.

Fauna movement corridors that involve the development site are largely south to west with adjoining residential lands severing the site from vegetation located to the east.

(c) The condition of native vegetation in the red flag area is substantially degraded resulting in loss of, or reduced, viability. Native vegetation in degraded condition can be unviable or have low viability. *Degraded condition* means vegetation in the vegetation zone where at least half of the site attributes are less than 50% of benchmark as listed in Table 2 of the BBAM without the vegetation being in low condition, or having a site value score of ≤34.

The red flag area has been partially degraded as it occurs along an existing edge and has been impacted by weed invasion, previous clearing, and other human disturbances. Paperbark Swamp Forest at the site meets the BBAM definition of moderate/good condition but is below benchmark condition for a number of the vegetation and habitat variables measured in plot/transects.

Vegetation within the development site contains a moderate to high level of weed infestation with species including Senna (*Senna pendula var. glabra*), Lantana (*Lantana camara),* Umbrella Tree *(Schefflera actinophylla),* Crofton Weed (*Ageratina adenophora*) and Para Grass (*Urochloa mutica*). There is also unrestricted access to the site from the caravan park to the west and from

the east along the railway which would further contribute to the establishment and proliferation of exotic flora species in the area.

2.5 Contribution to regional biodiversity values must be low (section 9.2.6.4 of the methodology) (Swamp Sclerophyll Forest EEC)

The BioBanking Assessment Methodology (BBAM) defines region as the IBRA subregion where the red flag area is located and any adjoining IBRA subregions. The IBRA sub region for this determination is Murwillumbah (Qld – Southeast Hills and Ranges) and the adjoining IBRA subregion is Richmond-Tweed (Qld – Scenic Rim). Other neighbouring IBRA subregions considered in this assessment include the Southern Coastal Lowlands and Clarence Lowlands.

According to the NSW Vegetation Information System (OEH, 2015), Paperbark Swamp Forest correlates to FE112 in the OEH (NPWS 1999) Forest Ecosystem Classification and mapping for the upper and lower north east Comprehensive Regional Assessment (CRA) regions. It also correlates to vegetation mapped as Regional Ecosystem (RE) 12.3.5 by the Queensland Herbarium Regional Ecosystem Description Database (REDD). EcoLogical (2005) revised and updated this mapping. The EcoLogical (2005) mapping and Queensland Government RE Mapping was analysed in GIS to provide the estimates of regional biodiversity provided below.

Based on the following factors considered below, the contribution to regional biodiversity values is low.

(a) Relative abundance – whether the PCT, or the EEC or CEEC in the red flag area is relatively abundant in the region (Swamp Sclerophyll Forest EEC)

According to the data sources used in this assessment approximately 43,202 hectares of Paperbark Swamp Forest is found within the Northern Rivers CMA region (EcoLogical 2005), which encompasses the Murwillumbah (Qld – Southeast Hills and Ranges) IBRA subregion. EcoLogical (2005) estimates the original distribution to be approximately 138,143 hectares, indicating approximately 32 percent remains within the Northern Rivers CMA region.

GIS analysis indicates approximately 2,006 hectares remain in the Murwillumbah (Qld – Southeast Hills and Ranges) IBRA subregion and 18,997 hectares remain collectively in the neighbouring Southern Coastal Lowlands, Clarence Lowlands, and Richmond-Tweed (Qld – Scenic Rim) IBRA subregions.

An impact to 1.44 hectares within the development site would represent a decrease of 0.0033 percent of this EEC within the Northern River CMA region, a 0.0076 percent decrease in the extant distribution in the neighbouring IBRA subregions (Southern Coastal Lowlands, Clarence Lowlands and Richmond-Tweed (Qld – Scenic Rim)) and a decrease of 0.072 percent of the extant distribution in the Murwillumbah (Qld – Southeast Hills and Ranges) IBRA subregion.

(b) Percent remaining is high – that the percent remaining of the PCT, or the EEC or CEEC, in the red flag area is relatively high for the region

Spatial data for the pre-1750 extent of Paperbark swamp forest is not available at the region scale. However, as mentioned above, EcoLogical (2005) estimate approximately 43,202 hectares of this vegetation type currently remains in the Northern River CMA region.

Paperbark Swamp Forest is estimated to be 75 percent cleared (or 25 percent remaining) in the Northern Rivers CMA region, according to the NSW Vegetation Information System (VIS) (OEH, 2015). EcoLogical (2005) has determined that this vegetation type is approximately 68 percent cleared (or 32 percent remaining, as per above). The EcoLogical data is 10 years old and further clearing may have occurred to bring the estimate closer to that estimated by the OEH VIS data. This means the vegetation type does not fit the criteria of an ‘over cleared’ landscape but the ‘red flag’ report is still required as the vegetation type is listed as an EEC and is >70 percent cleared (i.e. 75 percent cleared in the Northern Rivers major catchment area).

(c) Percent native vegetation (by area) remaining is high – that the percent remaining of all native vegetation cover in the region is relatively high

The northern NSW coast has a relatively high percentage cover of native vegetation remaining within the relatively extensive areas of land within the OEH and State Forest estate. The statewide vegetation extent layer (Keith and Simpson, 2006) was used to quantify this assessment by intersecting the native woody vegetation layer with the region surrounding the site. There are approximately 893,519 hectares of native vegetation cover remaining within the region, which equates to approximately 50.1 percent of total vegetation cover (EcoLogical 2005).

The percent remaining of native vegetation cover for the region is relatively high.

(d) Condition of the PCT – whether the PCT, or the EEC/CEEC that comprises the red flag area is generally in moderate to good condition in the region.

The vegetation mapped in the region by NPWS (2003) and DECCW (2009) varies from large, relatively intact patches in the National Parks and State Forests to vegetation influenced by agriculture and clearing for urban development. Vegetation associated with agriculture and urban development exhibit the usual 'edge effects' such as weed invasion and increased nutrient runoff. The large areas of intact forests, including National Parks and State Forests are generally in good condition, aside from edge effects.

2.6 Credits to offset the full impacts of the development must be retired

The BioBanking statement, issued in accordance with section 127ZL of the *Threatened Species Conservation Act 1995* includes a credit retirement condition to ensure that the Development improves or maintains biodiversity values. This includes the retirement of:

- 74 ecosystem credits for Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregion, (NR217) plant community type
- 49 species credits for Mitchell's Rainforest Snail
- 8 species credits for Pale-vented Bush-hen
- 8 species credits for Black Bittern
- 37 species credits for Common Planigale.

2.7 Other matters that may be considered

It was not necessary to consider other matters in relation to this Development as part of this determination.

References

Department of Environment and Climate Change (DECC) (2009), *Draft Northern Rivers Regional Biodiversity Management Plan*. DECC, Hurstville, NSW.

Eco Logical Australia (2005). *A Vegetation Map for the Northern Rivers Catchment Management Authority to support application of the Biodiversity Forecasting Toolkit*. Report prepared for: Northern Rivers CMA, Eco Logical Australia, Sutherland, NSW.

NSW National Parks and Wildlife Service (NPWS) (1999). *Forest Ecosystem Classification and mapping for the upper and lower north east CRA regions*. CRA Unit Northern Zone National Parks and Wildlife Service.

Office of Environment and Heritage (OEH) (2015). NSW Vegetation Information System. http://www.environment.nsw.gov.au/NSWVCA20PRapp/default.aspx. Date accessed 24 May 2015.

3 REASONS FOR THE CHIEF EXECUTIVE'S DETERMINATION

I have considered the criteria in accordance with Section 9.2 of the BioBanking Assessment Methodology as set out in section 2 of this determination and I hereby determine that the Development to which the application relates can be regarded as improving or maintaining biodiversity values, for the following reasons:

- The red flag area is not considered to be highly cleared vegetation.
- Avoidance of direct impacts to the red flag area have been undertaken where practicable with direct and indirect impacts restricted to 1.44 hectares of Paperbark Swamp Forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregions (Paperbark Swamp Forest).
- Vegetation within the directly impacted area of the SEPP 14 wetland (1.05 hectares) is degraded as it occurs along an existing edge and is impacted by weed invasion, previous clearing, and other human disturbances. There is also unrestricted access to the site from the caravan park to the west and from the east along the railway which further contributes to the establishment and proliferation of exotic flora species in the area.
- The red flag area is degraded and is considered to have reduced long term viability due to the small size of the patch of vegetation and its proximity to a caravan park, the rail line and urban development. Previous clearing activities and the presence of a number of highly invasive weed species in association with edge effects and human disturbance further reduce the viability of the site.
- The impact to the red flag area of 1.44 hectares within the development site would represent a decrease of 0.0076 percent in the extant distribution in the neighbouring IBRA subregions (Southern Coastal Lowlands, Clarence Lowlands and Richmond-Tweed (Qld – Scenic Rim)) and a decrease of 0.072 percent of the extant distribution in the Murwillumbah (Qld – Southeast Hills and Ranges) IBRA subregion.

Signed by CE OEH 21 December 2015

TERRY BAILEY
Chief Executive
Office of Environment and Heritage

DETERMINATION THAT THE DIRECT IMPACTS OF DEVELOPMENT ON RED FLAG AREAS IS TO BE REGARDED AS IMPROVING OR MAINTAINING BIODIVERSITY VALUES

SECTION 9.2 BIOBANKING ASSESSMENT METHODOLOGY

SITE: Byron Bay Bypass

RED FLAG AREA: Mitchell's Rainforest Snail habitat

PROPOSED DEVELOPMENT: The proposal is the construction of a town centre road bypass to the west of the existing rail corridor in Byron Bay. It includes:

- upgrade of the existing roundabout at the junction of Shirley Street, Lawson Street and Butler Street
- upgrade of Butler Street to the southern extent of the existing pavement (approximately 600 metres), including a new roundabout at Somerset Street
- construction of a new road within the road reserve extending to the south of the existing Butler Street (approximately 600 metres)
- a new level rail crossing between the Butler Street extension and the Browning Street extension
- construction of a new section of road from the new rail crossing to Jonson Street (Browning Street extension)
- a new roundabout at the intersection of the new Browning Street extension, Jonson Street and the existing Browning Street.

DETERMINATION

I am advised that the impact of the proposed development on the red flag areas at the abovementioned site has been assessed in accordance with Section 9.2 of the BioBanking Assessment Methodology as set out in section 2 of this determination and I hereby determine that the proposal is to be regarded as improving or maintaining biodiversity values, for the reasons set out in section 3 of this determination.

Signed by CE OEH 21 December 2015

TERRY BAILEY
Chief Executive
Office of Environment and Heritage

1 INTRODUCTION

An application for a Biobanking Statement (**the application**) was lodged on 24 June 2015 in respect of the proposed development of land at Byron Bay Bypass (**the site**). The site is located within the Byron Shire Council Local Government Area (LGA) and the Northern Rivers major catchment area. The site is located within a number of zones, including under Byron Local Environmental Plan (LEP) 2014, Zone R2 Low Density Residential, Zone B2 Local Centre, Zone SP2 Infrastructure (Rail Corridor) and Zone RE1 Public Recreation with areas of deferred matter under Byron LEP 2014 reverting to the following zones under Byron LEP 1988: Zone No. 2(a) (Residential Zone), Zone No. 5(a) (Special Uses Zone) (Railway) and Zone No. 9(a) (Proposed Road Zone). The total area of the site is 1.61 hectares.

The proposed development to which the application relates comprises the construction of a town centre road bypass to the west of the existing rail corridor in Byron Bay (**the Development**). It includes:

- upgrade of the existing roundabout at the junction of Shirley Street, Lawson Street and Butler Street.
- upgrade of Butler Street to the southern extent of the existing pavement (approximately 600 metres), including a new roundabout at Somerset Street.
- construction of a new road within the road reserve extending to the south of the existing Butler Street (approximately 600 metres).
- a new level rail crossing between the Butler Street extension and the Browning Street extension.
- construction of a new section of road from the new rail crossing to Jonson Street (Browning Street extension).
- a new roundabout at the intersection of the new Browning Street extension, Jonson Street and the existing Browning Street.

The overall footprint for the Development is 1.61 hectares.

The Development will directly impact on 0.63 hectares of potential habitat for Mitchell's Rainforest Snail (*Thersites mitchellae*) in the southern portion of the route. This species is listed as endangered under the *Threatened Species Conservation (TSC) Act 1995* (NSW) and critically endangered under the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* (Cth).

Accordingly, in total, 0.63 hectares of marginal habitat for Mitchell's Rainforest Snail (*Thersites mitchellae*) would be removed for construction of the Development (**the red flag area**).

In accordance with section 9.2 of the methodology, where a proposed development or any part of a development is on land that is, or forms part of, a red flag area, a Biobanking Statement may still be issued where the Chief Executive of OEH makes a determination that it is possible for the development to be regarded as improving or maintaining biodiversity values.

The Chief Executive can only make that determination when satisfied that the criteria set out in section 9.2 of the methodology have been met.

2 DETERMINING THAT IMPACT OF DEVELOPMENT ON RED FLAG AREAS CAN BE REGARDED AS IMPROVING OR MAINTAINING BIODIVERSITY VALUES

The Development has been assessed in accordance with the relevant criteria to this red flag area set out in section 9.2 of the methodology, as now set out below.

2.1 Options to avoid impacts on red flag areas must be considered (threatened species and habitat) (section 9.2.4.1 of the methodology)

The Chief Executive must be satisfied that all reasonable measures have been considered to:

(a) avoid and minimise the adverse impacts of development on the red flag area(s) consistent with the guidelines set out in Subsection 8.3.2, or

Adverse impacts on the red flag have been avoided or minimised by the Development where possible through the planning and design process by:

- investigating various alignment options
- confining the area of disturbance to threatened species habitat to the smallest area possible to enable the construction of the bypass
- restricting site compounds, spoil areas and laydown areas to areas of exotic vegetation or cleared land.

There is limited scope for further avoidance of ecological impacts for the proposal as the design is constrained by the location of the existing Council road reserve.

The proposed development has been subject to numerous ecological assessments since the project was first proposed. These have included:

- Parsons Brinkerhoff (2003), *Byron Bay Town Centre Mini Bypass and Bus Transit Station, Statement of Environmental Effects*
- PPK Environment and Infrastructure (2001), *Environmental Impact Statement for Byron Bay Town Centre Bypass*
- Sandpiper Ecological Surveys (2001), *Species Impact Statement for Byron Bay Town Centre Bypass*
- Mills and Associates Pty Ltd (1996), *Flora and Fauna Study – Byron Bay Town Centre Environmental Impact Statement*
- Mills and Associates Pty Ltd (1997), *Species Impact Statement – Byron Bay Town Centre (Fauna survey)*
- Landscape Assessment, Management and Rehabilitation Pty Ltd (1997), *Species Impact Statement - Byron Town Centre Bypass (Flora survey).*
- Byron Shire Council (2015), Byron Bay Bypass Environmental Impact Statement, prepared by GHD, June 2015.

These assessments have identified a number of threatened species and other ecological constraints and as such the on-site measures as described in Schedule 1 of this BioBanking Statement (ID number 19) have been developed and would be implemented to avoid and minimise impacts.

(b) improve the viability of the biodiversity values of the red flag area. This includes consideration of whether appropriate conservation management arrangements can be established over the red flag area given its current ownership, status under a regional plan, zoning and the likely costs of future management

The Chief Executive is satisfied that reasonable measures for ongoing management have been considered as part of the Development which includes:

- avoidance of direct impacts to the red flag area where practicable
- restriction of direct and indirect impacts to the red flag area to 0.63 hectares of marginal habitat for Mitchell's Rainforest Snail
- conservation of approximately 7–10 hectares of similar habitat for this species within a proposed biobank site which would be located in proximity to the impacted vegetation with an appropriate management action plan to improve the biodiversity value of the biobank site.

2.2 Viability must be low or not viable (threatened species and habitat) (section 9.2.7.2 of the methodology)

(a) The current or future land uses of land surrounding the red flag area (other than the land use proposed in the biobanking statement application) reduce its viability or make it unviable. Relatively small areas of native vegetation surrounded or largely surrounded by intense land uses, such as urban development, can be unviable or have low viability because of disturbances from urbanisation, including edge effects.

The development site comprises land adjoining and running parallel to the Murwillumbah Branch of the North Coast Rail Line, located immediately to the west of the Byron Bay town centre. The site location and proposal site are shown in Map 1 of this BioBanking statement (ID number 19).

The proposal would be constructed within the existing developed and undeveloped Butler Street road reserve. The southern section of the proposal site forms the eastern boundary of the Cumbebin Wetland while to the east is the railway and urban development. In the northern section of the development site the vegetation to be impacted adjoins the rail and existing urban development to the east and the Glen Villa Resort and Caravan Park to the west. The land zoning for the red flag area is predominantly 9(a) proposed road reserve Under the Byron LEP 1988.

Previous targeted survey did not record any Mitchell's Rainforest Snail individuals within the development site, nor did they find any evidence (i.e. shells or shell fragments) that this species occurs within the development site (Stanisic 2001). Vegetation within the site consists of Paperbark Swamp Forest with some rainforest elements. Although there are some elements of potential habitat for this species at the site Stanisic concluded that habitat for Mitchell's Rainforest Snail is restricted to a small area on the eastern side of the rail corridor (Stanisic 2001). This area is not within the proposed bypass corridor.

Due to the time that has elapsed since the survey completed by Stanisic, the nearby records and the lack of targeted surveys during the biobanking assessment the precautionary principle has been applied and it has been assumed that 0.63 hectares in the south of the proposed development area could be marginal habitat for this species as it contains some rainforest elements.

This area is considered to have reduced viability as it is substantially degraded and has already been impacted through weed invasion and other edge effects associated with the adjacent rail line and urban development.

(b) The size and connectedness of native vegetation in the red flag area to other native vegetation is insufficient to maintain its viability. Relatively small areas of threatened species habitat isolated from areas of native vegetation can be unviable or have low viability.

The development site would impact on approximately 0.63 hectares of marginal habitat for Mitchell's Rainforest Snail. Potential habitat for this species that is proposed to be cleared on the site has been impacted by the presence of invasive weeds, past clearing activities and nearby urban development. The development site has connectivity to offsite vegetation to the west, south and northwest. Connectivity to the north is constrained by the presence of urban development and the rail line constrained connectivity to the east. The narrowest width of native vegetation through the site is approximately 100 metres.

The study area is continuous with large areas of remnant vegetation to the south and west that occur within the Cumbebin Wetland. To the north and east are predominantly urban areas within the Byron Bay township. The development site is located on the northeastern boundary of a vegetated patch that is approximately 1,700 hectares in area, of which approximately 240 hectares is Paperbark Swamp Forest (EcoLogical 2005).

Fauna movement corridors that involve the development site are largely south to west with adjoining residential lands severing the site from vegetation located to the east.

(c) The condition of threatened species habitat in the red flag area is substantially degraded resulting in loss of, or reduced, viability.

The red flag area has been partially degraded as it occurs along an existing edge and has been impacted by weed invasion, previous clearing, and other human disturbances. Paperbark Swamp Forest at the site meets the BBAM definition of moderate/good condition but is below benchmark condition for a number of the vegetation and habitat variables measured in plot/transects.

Vegetation within the development site contains a moderate to high level of weed infestation with species including Senna (*Senna pendula var. glabra*), Lantana (*Lantana camara),* Umbrella Tree *(Schefflera actinophylla),* Crofton Weed (*Ageratina adenophora*) and Para Grass *(Urochloa mutica)*. There is also unrestricted access to the site from the caravan park to the west and from the east along the railway which would further contribute to the establishment and proliferation of exotic flora species in the area.

2.3 Contribution to regional biodiversity values must be low (threatened species and habitat) (section 9.2.7.3 of the methodology)

(a) Relative abundance – threatened species, threatened population or threatened species habitat in the red flag area is relatively abundant in the region

Mitchell's Rainforest Snail is known only from areas of lowland subtropical rainforest and swamp sclerophyll forest with rainforest understorey between the Richmond and Tweed Rivers in northeast NSW. This includes areas contained within the Murwillumbah (Qld – Southeast Hills and Ranges) IBRA subregion where the proposal is located and the adjacent Richmond-Tweed (Qld – Scenic Rim) IBRA subregion to the south.

Records of Mitchell's Rainforest Snail are distributed along the coastal plain between Banora Point in the north and Lennox Head in the south. The species has been recorded at five locations: Stotts Island, Banora Point, Byron Bay, Suffolk Park and Lennox Head (NPWS 2001). The largest known population of the species and largest remaining single area of habitat is located in Stotts Island Nature Reserve near Murwillumbah, approximately 55 kilometres north of the development site. A complex of smaller populations have also been recorded in and around the Cumbebin Wetland, which is located to the west of the development site and to the south east of the development site near Byron Bay Golf Club (NPWS 2001, OEH 2015a).

The NSW Wildlife Atlas has 210 records of Mitchell's Rainforest Snail. Of these records 128 occur within 10 kilometres of the development site and three records occur within
one kilometre of the site. No individual Mitchell's Rainforest Snails have been recorded within the development site and the Paperbark Swamp Forest vegetation that would be disturbed as a result of the proposal represents only marginal potential habitat for this species which is known to be largely restricted to areas of Subtropical Lowland Rainforest. This habitat is therefore not considered to be significant for the breeding, dispersal and genetic viability of the local population of Mitchell's Rainforest snail.

For the purpose of this assessment GIS has been analysed to determine the extent of suitable habitat present within the Murwillumbah (Qld – Southeast Hills and Ranges) IBRA subregion where the proposal is located and the adjacent Richmond-Tweed (Qld – Scenic Rim) IBRA subregion where the species has also been recorded.

According to the NSW Vegetation Information System (OEH, 2015b), Lowland Rainforest correlates to FE 168 and Paperbark Swamp Forest correlates to FE112 in the OEH (NPWS 1999) Forest Ecosystem Classification and mapping for the upper and lower north east Comprehensive Regional Assessment (CRA) regions. EcoLogical revised and updated this mapping in 2005 (EcoLogical 2005). Lowland Rainforest also correlates to vegetation mapped as Regional Ecosystems (RE) 12.3.1, 12.8.3 and 12.8 by the Queensland Herbarium Regional Ecosystem Description Database (REDD) and Paperbark Swamp Forest correlated with RE (RE) 12.3.5 (Queensland Herbarium 2015). The EcoLogical (2005) mapping and Queensland Government RE Mapping was analysed in GIS to provide the estimates of the regional occurrence of Mitchell's Rainforest habitat.

(b) Relative importance in the region – the relationship of the local population to other population/populations of the species in the region is low

Mapping completed by EcoLogical (2005) and the Queensland Herbarium (2015) indicates that there is approximately 20,358 hectares of Lowland Rainforest and 3,665 hectares of Paperbark Swamp Forest within the Murwillumbah (Qld – Southeast Hills and Ranges) and Richmond-Tweed (Qld – Scenic Rim) IBRA subregions, the removal of 0.63 hectares of Paperbark Swamp Forest would therefore represent a decrease of less than 0.003 per cent of potential habitat for this species in these two IBRA subregions.

2.4 Credits to offset the full impacts of the development must be retired

The BioBanking statement, issued in accordance with section 127ZL of the *Threatened Species Conservation Act 1995* includes a credit retirement condition to ensure that the Development improves or maintains biodiversity values. This includes the retirement of:

- 74 ecosystem credits for Paperbark swamp forest of the coastal lowlands of the NSW North Coast Bioregion and Sydney Basin Bioregion, (NR217) plant community type
- 49 species credits for Mitchell's Rainforest Snail
- 8 species credits for Pale-vented Bush-hen
- 8 species credits for Black Bittern
- 37 species credits for Common Planigale.

2.5 Other matters that may be considered

It was not necessary to consider other matters in relation to this Development as part of this determination.

References

Eco Logical Australia (2005). *A Vegetation Map for the Northern Rivers Catchment Management Authority to support application of the Biodiversity Forecasting Toolkit*. Report prepared for: Northern Rivers CMA, Eco Logical Australia, Sutherland, NSW.

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Office of Environment and Heritage (OEH) (2015a). *NSW Atlas of NSW Wildlife threatened species and communities database*. Date accessed 2 August 2015.

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Queensland Herbarium (2015). *Regional Ecosystem Description Database (REDD)*. Version 9.0 (April 2015) (Queensland Department of Science, Information Technology and Innovation: Brisbane).

Stanisic, J (2001). *Survey for the land snail Thersites mitchellae – Byron Bay Bypass Road Construction Corridor*. Unpublished report conducted for Sandpiper Ecological Surveys.

3 REASONS FOR THE CHIEF EXECUTIVE'S DETERMINATION

I have considered the criteria in accordance with Section 9.2 of the BioBanking Assessment Methodology as set out in section 2 of this determination and I hereby determine that the Development to which the application relates can be regarded as improving or maintaining biodiversity values, for the following reasons:

- Avoidance of direct impacts to the red flag area have been undertaken where practicable with direct and indirect impacts restricted to 0.63 hectares of marginal habitat for Mitchell's Rainforest Snail.
- The red flag area is degraded and is considered to have reduced viability due to previous clearing activities, influence of edge effects associated with the adjacent rail line and urban development, the presence of invasive weeds and other human disturbance.
- No individual Mitchell's Rainforest Snails have been recorded within the development site and the Paperbark Swamp Forest vegetation that would be disturbed as a result of the proposal represents only marginal potential habitat for this species which is known to be largely restricted to areas of Subtropical Lowland Rainforest.
- The red flag area being impacted is very small (0.63 hectares and represents only 0.003 per cent of similar habitat in the Murwillumbah (Qld – Southeast Hills and Ranges) and Richmond-Tweed (Qld – Scenic Rim) IBRA subregions).

Signed by CE OEH 21 December 2015

TERRY BAILEY
Chief Executive
Office of Environment and Heritage