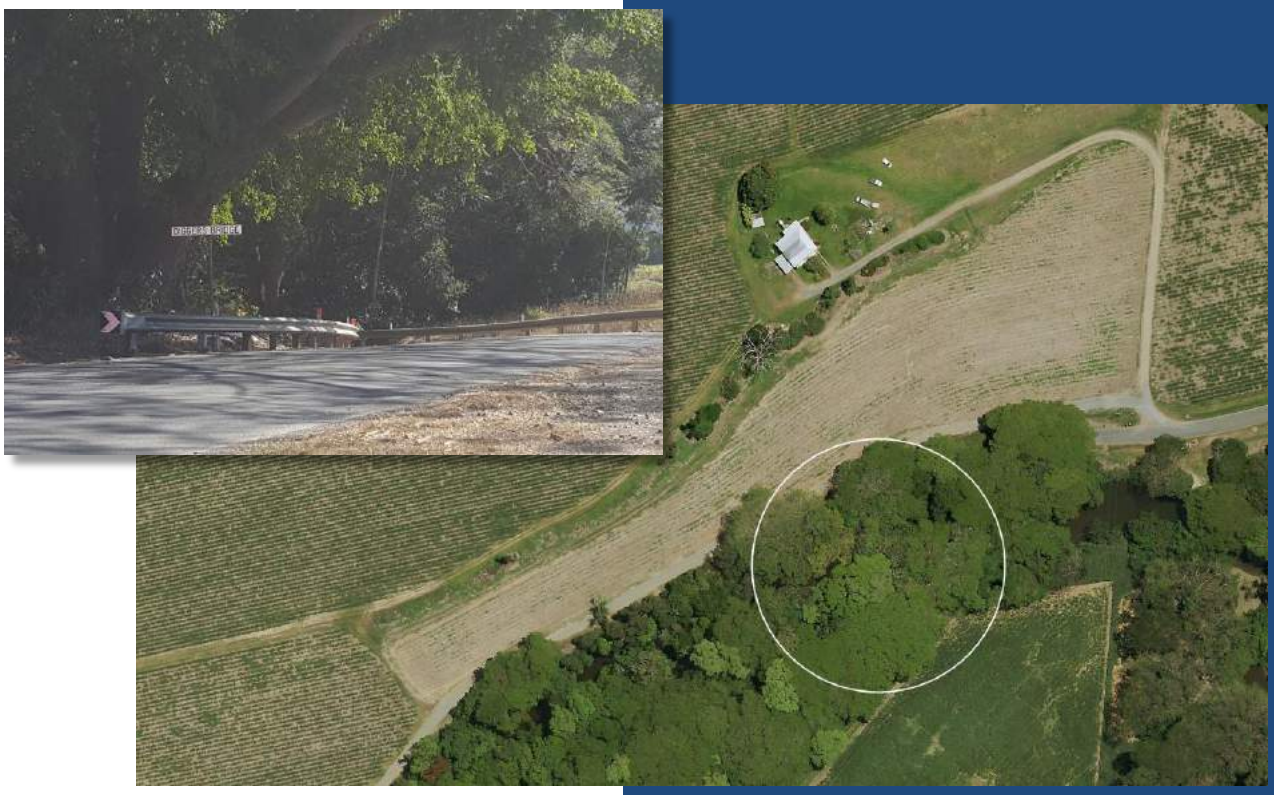
Astrebla
ECOLOGICAL SERVICES

Douglas Shire

Diggers Bridge replacement, Mowbray Valley, Queensland

Protected plant survey report



18 August, 2017

This Protected plant survey report ('the Report') has been prepared by Astrebla Ecological Services ('AES') on behalf of and for Trinity Engineering and Consulting Pty Ltd ('Trinity Engineering') in accordance with an agreement between AES and Trinity Engineering. The Report may only be used and relied on by Trinity Engineering, for the purpose of satisfying general requirements in relation to protected plants under the Nature Conservation Act 1992 *for planned works in relation to the replacement of Diggers Bridge on Mowbray Valley Rd in Douglas Shire (Purpose). The Report may not be used by, or relied on by, any person other than Trinity Engineering.*

The services undertaken by AES in connection with preparing the Report were limited to those specifically detailed in the Report. The Report is based on conditions encountered and information reviewed, including assumptions made by AES, at the time of preparing the Report.

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- *any error in, or omission in connection with assumptions, or*
- *reliance on the Report by a third party, or use of this Report other than for the Purpose.*

Cover images

Smaller image: northern approach to Diggers Bridge

Main image: The Diggers Bridge search location. Image ©Google Earth.

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1 Introduction

Douglas Shire Council propose to replace the wooden Diggers Bridge over the Mowbray River on Mowbray River Road with a new culvert and bridge structure.

This land is not mapped as a high risk area on a flora trigger map. However, protected plants may be present and under the *Nature Conservation (Wildlife Management) Regulation 2006* (the NCWMR) a person must not clear protected plants without a permit. Therefore, a protected plant survey was conducted of the proposed bridge footprint plus a 20 m buffer on 17 August, 2017. Only areas considered to be 'in the wild' as defined under the *Nature Conservation Act 1992* were surveyed. The search also targeted plants protected under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act).

No EVNT plants were found.

1.1 Site description

The survey site is located approximately eight kilometres south south west of Port Douglas, on the northern and southern banks of the Mowbray River, a fifth order watercourse (see Figure 1). The existing bridge is located immediately adjacent to the upper tidal limit on the Mowbray River (see Plate 6), and the new bridge is proposed adjacent to and just upstream of the existing bridge at seven metres above sea-level (see Plate 1, Plate 2 and Plate 3). Therefore, the river is fresh at the point at which these works are proposed.

The Mowbray River in this location is characterised by a narrow valley – the river is flanked by an alluvial floodplain approximately 200-300 m wide (on each side of the river) with metamorphic rocks of the Devonian period Hodgkison Formation (Department of Mines and Energy, 1996) forming steep ranges rising to approximately 350 m either side. Approximately 500 m downstream the river enters the coastal plain, where it broadens and becomes more estuarine in nature. The river is predominately rocky at the proposed new crossing point, with metamorphic cobble characterising the bed (see Plate 2).

Diggers Bridge is located on a gentle northerly meander of the Mowbray River. The northern 'erosional' bank, where the river is cutting into the alluvial plain, is approximately four metres high and steep. It is backed by sugar cane fields and has a narrow riparian strip of no more than 10 m comprised of closed rain tree (*Samanea samea**) forest. The southern bank is depositional – it is lower (approximately two metres), gently sloping and backed by a level to gently undulating meander plain vegetated by closed rain tree forest that is up to 30 m wide (within the survey area) (see Plate 4).

1.2 Suitably qualified person evidence

This survey was undertaken by Simon Danielsen of Astrebla Ecological Services. Mr Danielsen is an ecologist and botanist with over 15 years experience in field ecology, and is a recognised 'suitably qualified person' under the *Flora Survey Guidelines – Protected Plants* (Department of Environment and Heritage, 2016) – see Appendix A for the decision notice.

2 Survey Area and Extent of Survey

The survey area is mapped in Figure 2.

2.1 Habitats present

There are two habitat types present within the 0.4 ha survey area.

2.1.1 River bank and low bank

The river bank and low bank of the Mowbray River within the survey area is characterised by metamorphic cobble and coarse sand (see Plate 2). No macrophytes were observed in the channel, which contains freshwater that was observed to flow during August 2017. The low bank, which was exposed at the time of the survey, is generally dominated by the mangrove fern *Acrostichum speciosum*, with a seedling 'carpet' in places. Sub-canopy species present include the freshwater mangrove *Excoecaria agallocha* and the solitare palm *Ptychosperma elegans*. Large raintrees are also present, dominating the canopy overhead.

2.1.2 Rain tree closed forest

The majority of the site is characterised by a closed forest dominated by rain trees (see Plate 1, Plate 4 and Plate 5). These exotic trees, originally from Central and South America, comprise a non-remnant canopy which includes black bean (*Castanospermum australe*), candlenut (*Aleurites rockinghamensis*), river cherry (*Syzygium tierneyanum*) and damson (*Terminalia sericocarpa*). Other species present include *Ficus racemosa, F. hispidula, F. virens, Cryptocarya triplinervis, Cupaniopsis anacardioides, Polyscias australiana, Hibiscus tiliaceus, P. elegans, Brachychiton acerifolius, Pittosporum ferrugineum, Macaranga tanarius, M. involucrata* var. *mallotoides*, *Synima cordierorum, Nauclea orientalis, Archontophoenix alexandrae, Carallia brachiata, Schefflera actinophylla, Barringtonia acutangula, Cleistanthus apodus, Myristica insipida, Hypserpa laurina, Dendrocnide moroides, Chionanthus ramiflorus, Platycerium bifurcatum, Breynia cernua, Trophis scandens, Entada phaseoloides, Mallotus nesophilus* and *Flagellaria indica*.

Numerous weed species are present and include rain trees, Christmas vine (*Turbina corymbosa*), mango (*Mangifera indica*), pink bauhinia (*Bauhinia monandra*), snake vine (*Epipremnum aureum*), passionfruit (*Passiflora foetida*), Cinderella weed (*Synedrella nodiflora*) and Singapore daisy (*Sphagneticola trilobata*).

It should be noted that the predominant canopy tree in the survey area, the rain tree (see Plate 5), is an exotic weed labelled by Biosecurity Queensland as an invasive weed species (Department of Agriculture and Fisheries, 2016). This species has invaded and degraded remnant vegetation throughout the Mowbray River valley, dominating the canopy and rendering that vegetation 'non-remnant' under the *Vegetation Management Act 1999*, opening it to legal clearing. Although large rain trees have an undoubted presence in gardens and parks, they have no place in natural areas such as the riparian corridor of a river such as the Mowbray River.

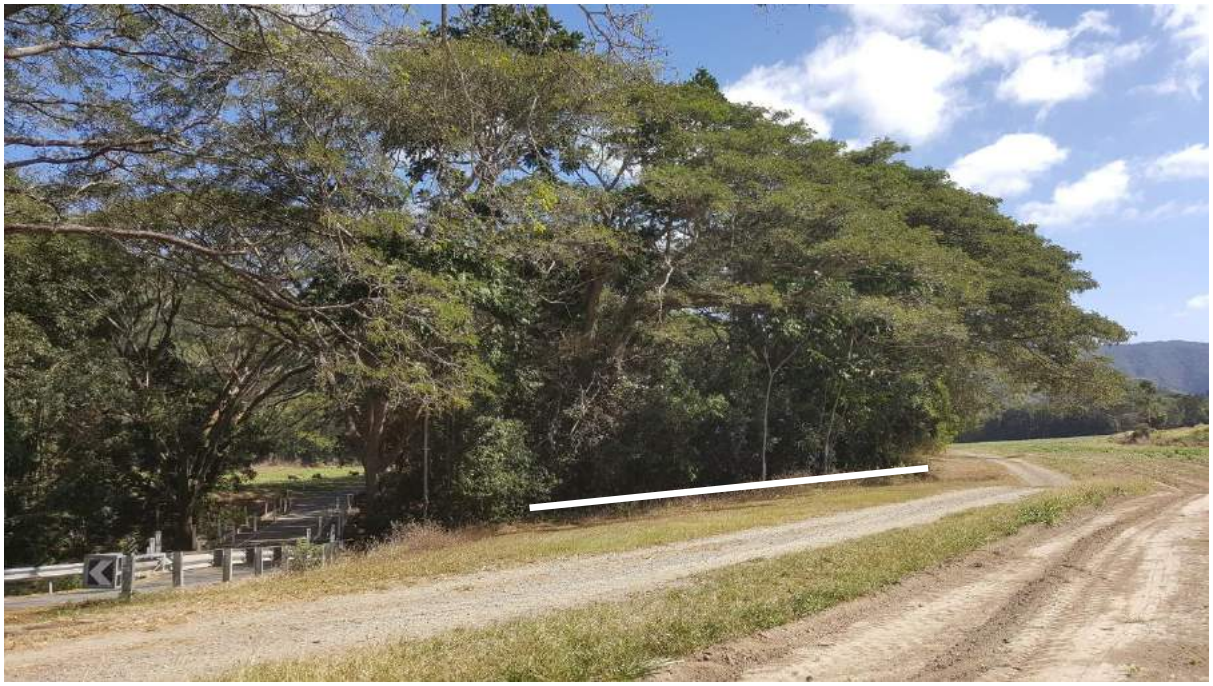

Plate 1 Diggers Bridge, northern approach

Diggers Bridge from the north – the approximate clearing footprint is indicated by the white line

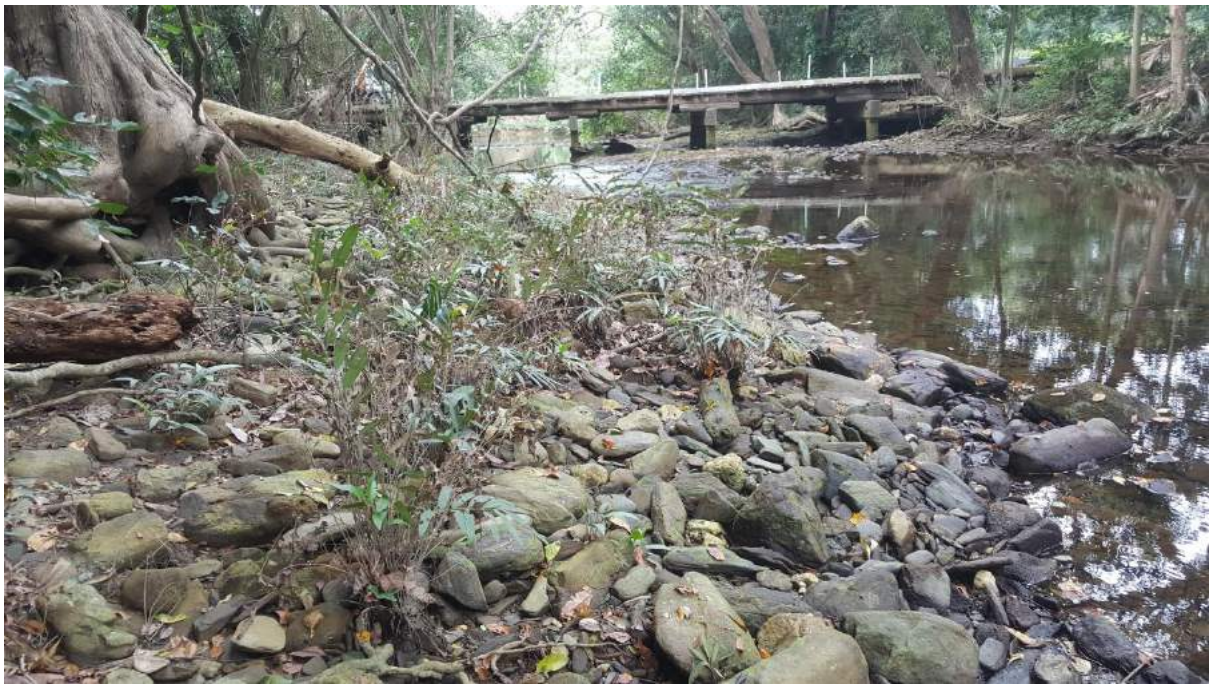

Plate 2 Diggers Bridge from upstream

The existing bridge, taken from approximately 50 m upstream, on the northern bank of the Mowbray River

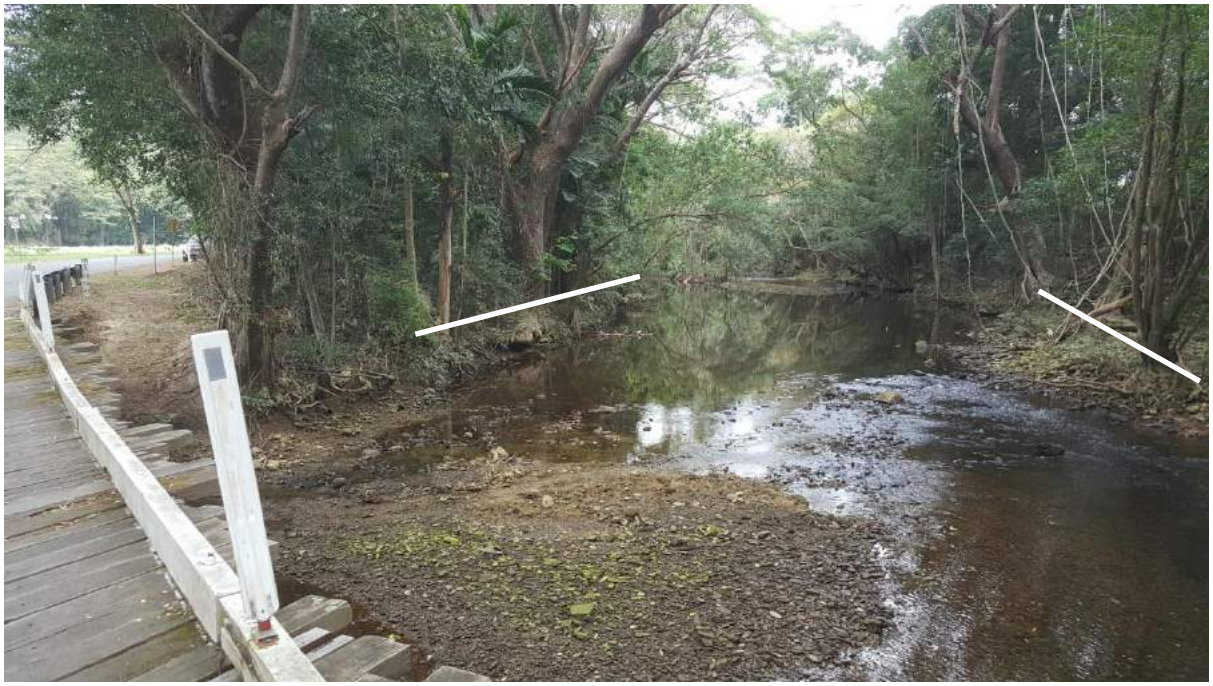

Plate 3 The proposed clearing site
Looking upstream from the existing bridge – approximate clearing footprint is indicated by white lines

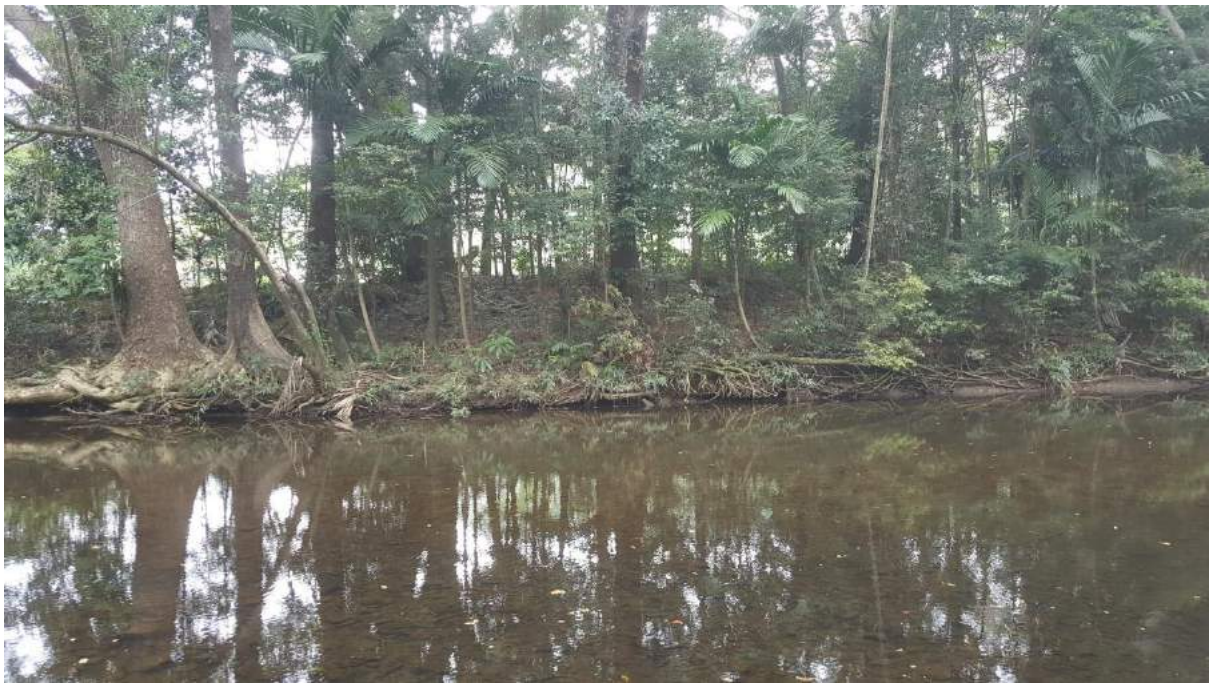

Plate 4 Riparian closed forest on the south bank
Riparian closed forest dominated by rain trees (*Samanea saman**)

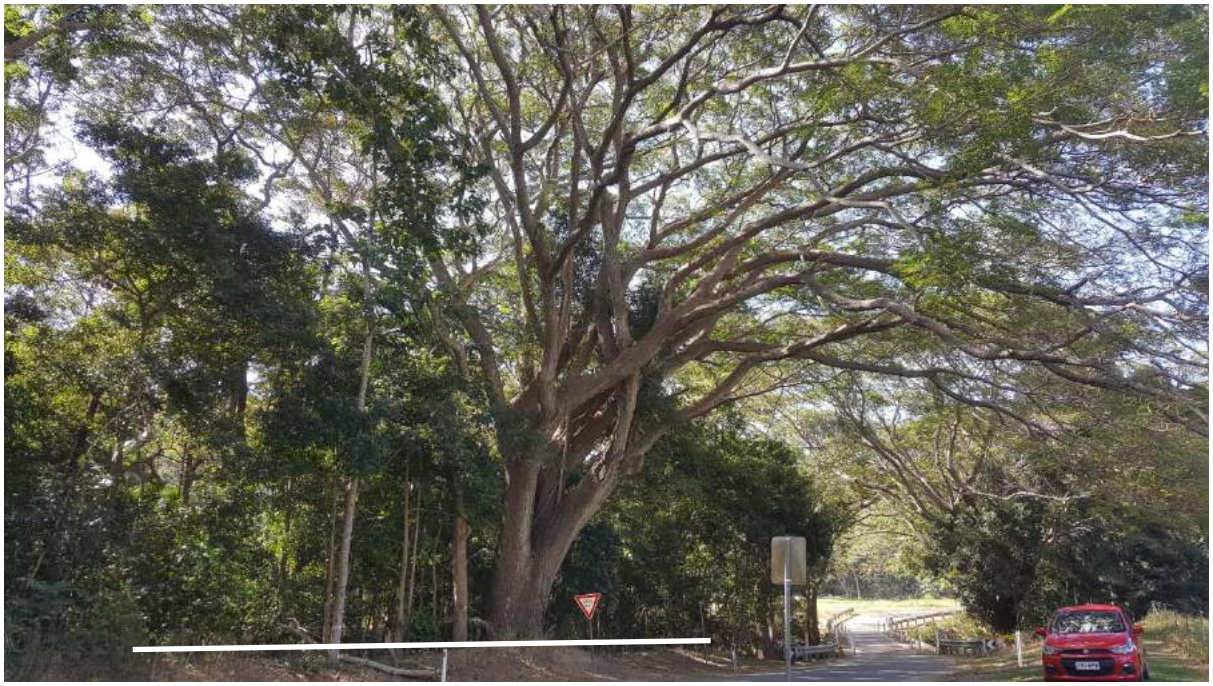

Plate 5 A large rain tree dominating the southern approach to the existing bridge
Approximate clearing footprint indicated by white line

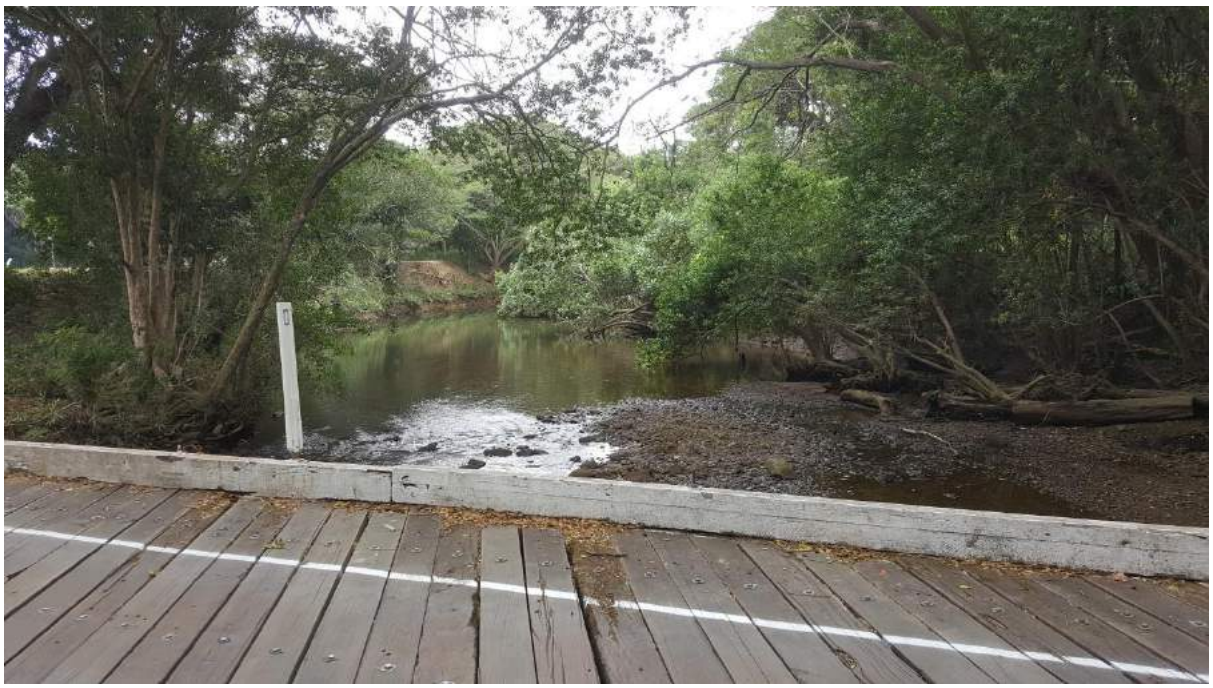

Plate 6 Tidal limit, just downstream of the existing bridge

3 Flora Survey Methods and Findings

The flora survey methods and findings are outlined below.

3.1 Desktop assessment

The Wildlife Online database was searched to a five kilometre radius of the survey area mapped in Figure 1, and 4 species records were retrieved. These are outlined in Table 1. Of the species nominated, only *Dendrobium biggibum* (Cooktown orchid) was considered 'possibly present' based on known habitat preferences and previous records. However, given the highly accessible nature of this site, directly adjacent to a major public road, and the highly prized status of Cooktown orchids, it is considered very unlikely to be present.

3.2 Survey method

The survey method adopted was the timed meander search, as outlined in section 6.2.2 of the Flora Survey Guidelines (Department of Environment and Heritage, 2016). One meander was undertaken over the approximately 0.4 ha search area (see Figure 2.

3.3 EVNT plants

No EVNT plants or potential EVNT plants were found – all species encountered were satisfactorily identified in the field. No orchids of any kind were noted.

3.4 Survey timing

The survey timing was considered appropriate.

Table 1 Desktop survey

Species	Legislation[1]	Record location[2]	Discussion	Likelihood of occurrence
Vulnerable species				
Dendrobium biggibum (Cooktown orchid)	NC Act, EPBC Act	1 record within 5 km of site	Cooktown orchids grow from near sea-level to 400 m elevation on trees and rocks in a range of vegetation types, requiring moderate light intensity and an absence of fire. It is known to rapidly recolonise disturbed sites (TSSC, 2008).	**Possible** – suitable habitat may be present. However, given the highly accessible nature of this site, and the fondness of orchid collectors for this species, it is not considered likely to be present.
Symplocos crassiramifera	NC Act	1 record within 5 km of site –to the west along the top of the Cassowary Range	Altitudinal range from 300-1000 m. Grows as an understory plant in undisturbed or only slightly disturbed upland and mountain rain forest (Hyland *et al.*, 2010).	**Unlikely** – this site is at 7 m elevation and does not contain upland or mountain rain forest.
Near threatened species				
Archidendropsis xanthoxylon	NC Act	1 record within 5 km of site –to the west along the top of the Cassowary Range	Restricted to the area between Rossville and Mt Molloy. Altitudinal range from sea level to 500 m. Grows in well developed lowland and upland rain forest (Hyland *et al.*, 2010).	**Unlikely** – suitable habitat (well-developed rainforest) is not present (the site contains disturbed gallery forest dominated by exotic rain trees).
Randia audasii	NC Act	2 records within 5 km of site – all to the west along the top of the Cassowary Range	A well formed tree with white perfumed flowers and fruit that are orange when ripe. Altitudinal range from near sea level to 600 m. Grows as an understory tree in well developed lowland and upland rain forest (Hyland *et al.*, 2010).	**Unlikely** – suitable habitat (well-developed rainforest) is not present (the site contains disturbed gallery forest dominated by exotic rain trees).

[1] EPBC Act = *Environment Protection and Biodiversity Conservation Act 1999* (Cth); NC Act = *Nature Conservation Act 1994* (Qld); (CE) = critically endangered
[2] Record locations from Wildlife Online search and AVH (2017)

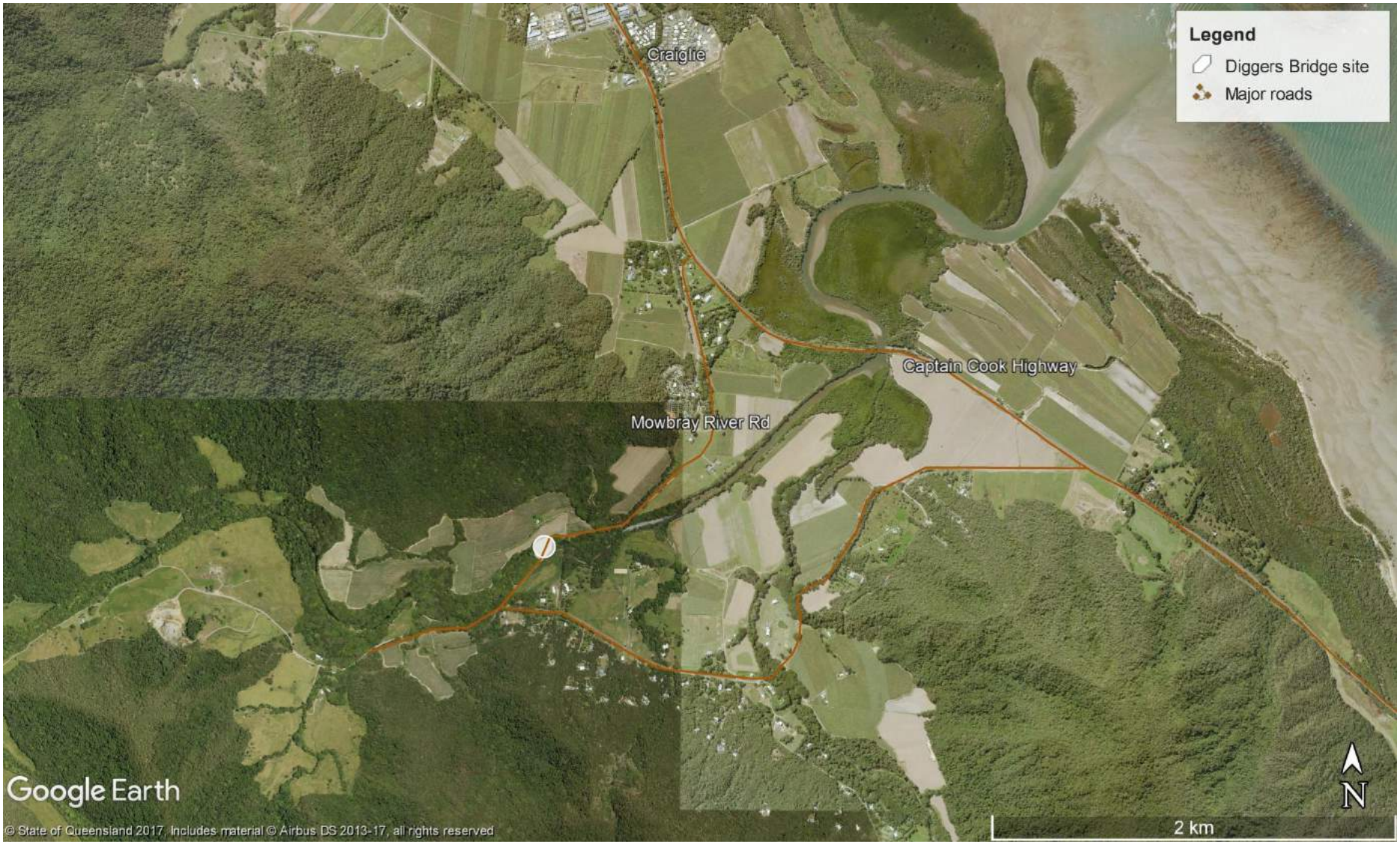

Figure 1 **Mowbray River valley**

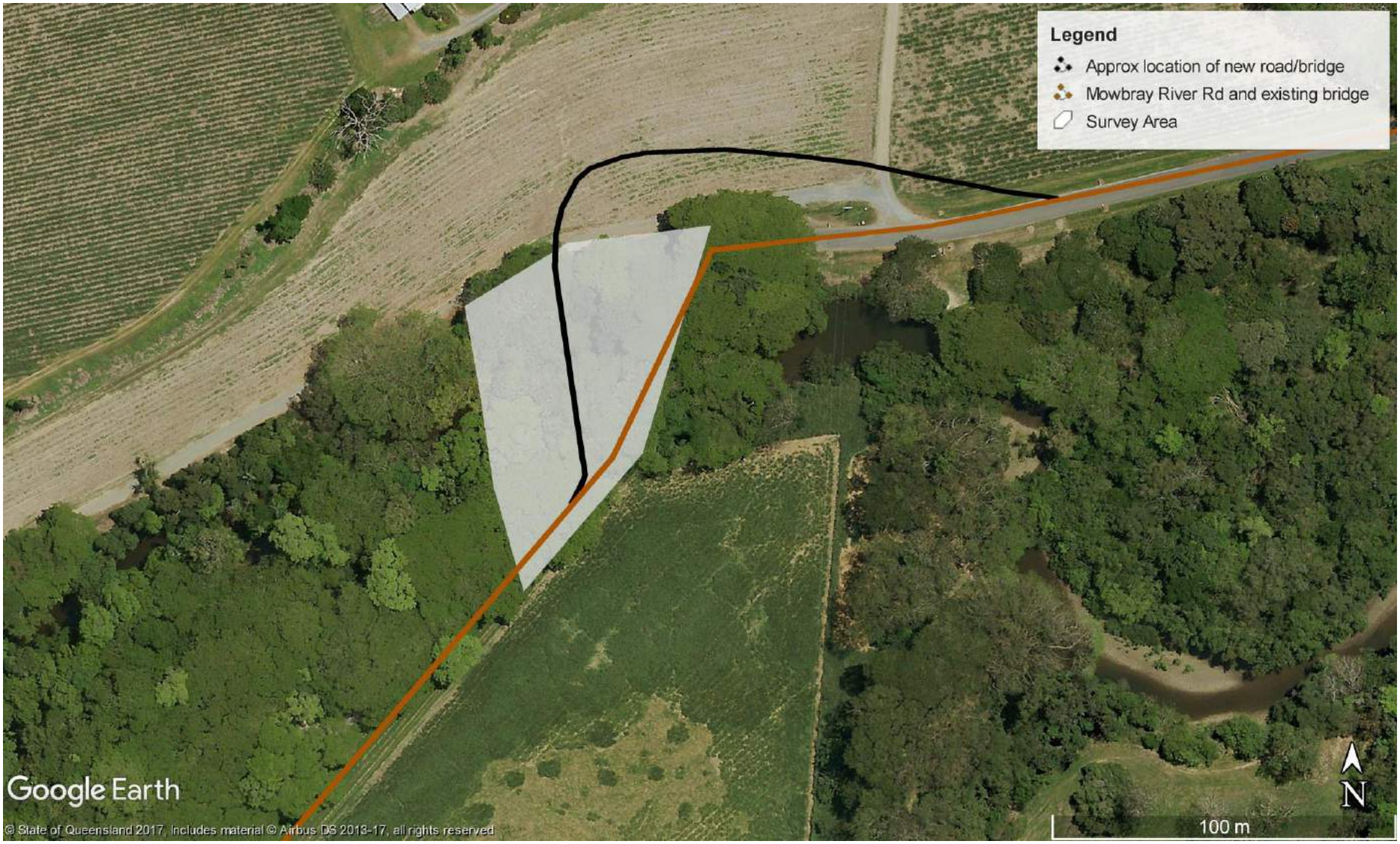

Figure 2 **Protected plants survey site**

4 References

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Department of Agriculture and Fisheries, 2016, *Rain tree* Samanea samea, Factsheet produced by Queensland government, Brisbane. Available from https://www.daf.qld.gov.au/__data/assets/pdf_file/0018/.../IPA-Rain-Tree-PP111.pdf. Accessed 16 August, 2017.

Department of Environment and Heritage, 2016, *Flora Survey Guidelines – Protected Plants,* State of Queensland.

Department of Mines and Energy, 1999, *Mossman. Sheet SE55-1.* 1:250, 000 geology mapping. Brisbane, Queensland.

Hyland, B.P.M., Whiffin, T., Zich, F.A., Duffy, S., Gray, B., Elick, R. and Venter, F., 2010, *Australian Tropical Rainforest Plants*. CSIRO, Canberra. Online ID key available from http://keys.trin.org.au/key-server/data/0e0f0504-0103-430d-8004-060d07080d04/media/Html/index.html. Accessed 16 August, 2017.

Threatened Species Scientific Committee (TSSC), 2008, Commonwealth Conservation Advice on *Dendrobium bigibbum*. Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/78705-conservation-advice.pdf. Accessed 16 August, 2017.

Appendices

Appendix A Suitably qualified person recognition

Notice of decision

Nature Conservation Act 1992

Protected plant authority[1]

This notice is issued by the administering authority to advise of a statutory decision.

Mr Simon Danielsen

Our reference: AR085640

Dear Sir/Madam

Re: Decision made in relation to your request for approval as a suitably qualified person under the *Flora Survey Guideline – Protected Plants*

Your application received on 24/03/2016 has been assessed and decided on 11/04/2016.

Following consideration of the documentation provided, I approve the request to recognise Mr Simon Danielsen as a suitably qualified person to undertake flora surveys under the Queensland Government *Flora Survey Guideline – Protected Plants*. I consider that Mr Danielsen's 10 years experience conducting plant surveys and his proficieny in plant identification are indicative that Mr Danielsen does possess adequate expertise to conduct identification and survey of protected plants in Queensland.

The decision in regard to your request is specified below:

Proposed Person's Name	Decision
Mr Simon Danielsen	APPROVED

Please note that for the approval, this Notice of Decision and the relevant attachments constitute the authority documentation. This approval is required to be kept as a legal requirement for any future approved clearing activities. Please retain this approval documentation for your records.

Should you be dissatisfied with this decision, there may be internal and external review and appeal processes available to you. The Department of Environment and Heritage Protection can advise you further regarding these processes. You are advised to seek independent advice before taking such action.

[1] Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation.

ABN 46 640 294 485

If you require more information, please contact Christian Retschlag, Wildlife Officer of the department on telephone number (07) 4688 1348.

Yours sincerely

Lindsay Delzoppo
Director, Wildlife Management
Department of Environment and Heritage Protection
Dated 11/04/2016

Enquiries:

Permit and Licence Management
Department of Environment and
Heritage Protection
GPO Box 2454
Brisbane Qld 4001
Enquiries: 1300 130 372
Facsimile: (07) 3330 5875
E-mail: palm@ehp.qld.gov.au

Appendix B Wildlife Online search results

Queensland Government

Wildlife Online Extract

Search Criteria: Species List for a Specified Point
Species: Plants (including other non-animals such as fungi and protists)
Type: All
Status: Rare and threatened species
Records: All
Date: All
Latitude: -16.5617
Longitude: 145.4659
Distance: 5
Email: astreblaecology@gmail.com
Date submitted: Wednesday 16 Aug 2017 13:12:50
Date extracted: Wednesday 16 Aug 2017 13:20:02

The number of records retrieved = 4

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	higher dicots	Mimosaceae	*Archidendropsis xanthoxylon*	yellow siris		NT		1/1
plants	higher dicots	Rubiaceae	*Randia audasii*			NT		2/2
plants	higher dicots	Symplocaceae	*Symplocos crassiramifera*			V		1/1
plants	monocots	Orchidaceae	*Dendrobium bigibbum*			V	V	1/1

CODES

I - Y indicates that the taxon is introduced to Queensland and has naturalised.

Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992.* The codes are Extinct in the Wild (PE), Endangered (E), Vulnerable (V), Near Threatened (NT), Least Concern (C) or Not Protected ( ).

A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999.* The values of EPBC are Conservation Dependent (CD), Critically Endangered (CE), Endangered (E), Extinct (EX), Extinct in the Wild (XW) and Vulnerable (V).

Records – The first number indicates the total number of records of the taxon for the record option selected (i.e. All, Confirmed or Specimens).
This number is output as 99999 if it equals or exceeds this value. The second number located after the / indicates the number of specimen records for the taxon.
This number is output as 999 if it equals or exceeds this value.

Astrebla Ecological Services|astreblaecology@gmail.com

Version: Final

Version date: 18 August, 2017

Author: Simon Danielsen