

City of Coffs Harbour Review of Environmental Factors (REF)

Review of Environmental Factors under PART 5, Division 5.1
ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979 and REGULATION 2021 (Sections 170 & 171)

Project Name: Restoring the Magic to the Magic Pools on the Orara River, Dingo Creek Road, Upper Orara

Plan number: N/A - Road reserve adjacent to Lot 292 DP599516

Project Location:

The project is located 12km west of Coffs Harbour, NSW, in the Orara catchment at Upper Orara. The project location is Dingo Creek Road, Upper Orara, within the road reserve adjacent to the Orara River. The site is bounded by Orara West State Forest on the eastern side of the Orara River, and private property on the western side of the area. The main site is at the confluence of the Orara River and Dingo Creek, at a spot locally known as the Magic Pools, at 152.982402 longitude and -30.310525 latitude (WGS84). A second site is 120m downstream of the main site at 152.983328, -30.309417. Both sites are within the road reserve of Dingo Creek Road and located on a Council-managed unsealed public road.

The Magic Pools is a popular swimming area in the upper reaches of the Orara River and within the drinking water catchment for Coffs Harbour. In recent years, impacts of tourism and increasing visitor numbers have taken their toll on the site. With illegal camping, 4WD vehicles entering and eroding the river and pools, litter left on site and the damage or removal of sensitive riparian vegetation are all examples of impacts on the site. Additionally, a large river oak (*Casuarina cunninghamiana*) fell into the main swimming hole during the 2020 floods. This log was inspected during an onsite visit and was found to present a public safety issue as well as a significant river realignment and potential flood and habitat impacts for the site.

This project aims to:

- Install steel and timber bollards in the Council Road reserve across the areas where vehicles have been entering the waterway to restrict vehicle access while retaining wheelchair and stroller access, and creating a more formal parking area away from the riverbank;
 - The bollards will be a 2.75m length of steel rail line driven 2m into the ground, with the exposed section capped by a hardwood timber bollard. This ensures the bollards cannot be easily cut or pulled out, and are easily visible to visitors.
- Conduct weed control along the riparian zone around the Magic Pools and downstream to the stockpile site using hand removal, cut and paint, or stem injection with Weedmaster Duo (frog friendly herbicide) to be undertaken by Council-contracted bush regenerators;
- Revegetate the riparian area with appropriate native species grown from locally collected seed (local provenance) for the surrounding lowland subtropical rainforest on floodplain;
- Reinforce the riverbank with rock where erosion is occurring with 8 cubic metres of rock revetment undertaken;
- Retain and realign the fallen river oak alongside the far (southern) bank of the main pool to act as bank stabilisation, retaining aquatic habitat, and relocating the root wad so as to reduce the potential flooding and habitat impacts presented by the gravel displacement within the pools. Additionally this will reduce the possibility of injury to swimmers whilst ensuring the continued gravel transport from the Orara branch downstream;
- Exclude vehicles from entering the river, provide a formalised parking area, improve and maintain the natural aesthetic appeal of this beautiful site through riparian planting and natural timber bollards
- Install interpretive signage to educate visitors of the presence of the Giant barred frog and rehabilitation works conducted in the area;
- The proposal has been developed in consultation with the immediate neighbours, the local community, Cochrans Pool Urumbilum Rivercare Inc, and North Coast Local Land Services.

The local Rivercare group – Cochrans Pool Urumbilum Rivercare Inc, successfully applied for project funding from The City’s Environmental Levy Fund for the proposed works, which will be project managed by the City’s Biodiversity Project Officer, Samantha Hessey, who has managed similar environmental projects.

Figure 1 shows the location of the Magic Pools. The works subject to this Review of Environmental Factors (REF) comprise the two sites within road reserve, with some in-stream works at Site 1 (Crown Land)

Property Details:

Dingo Creek Road Upper Orara – Council road reserve - unsealed public road

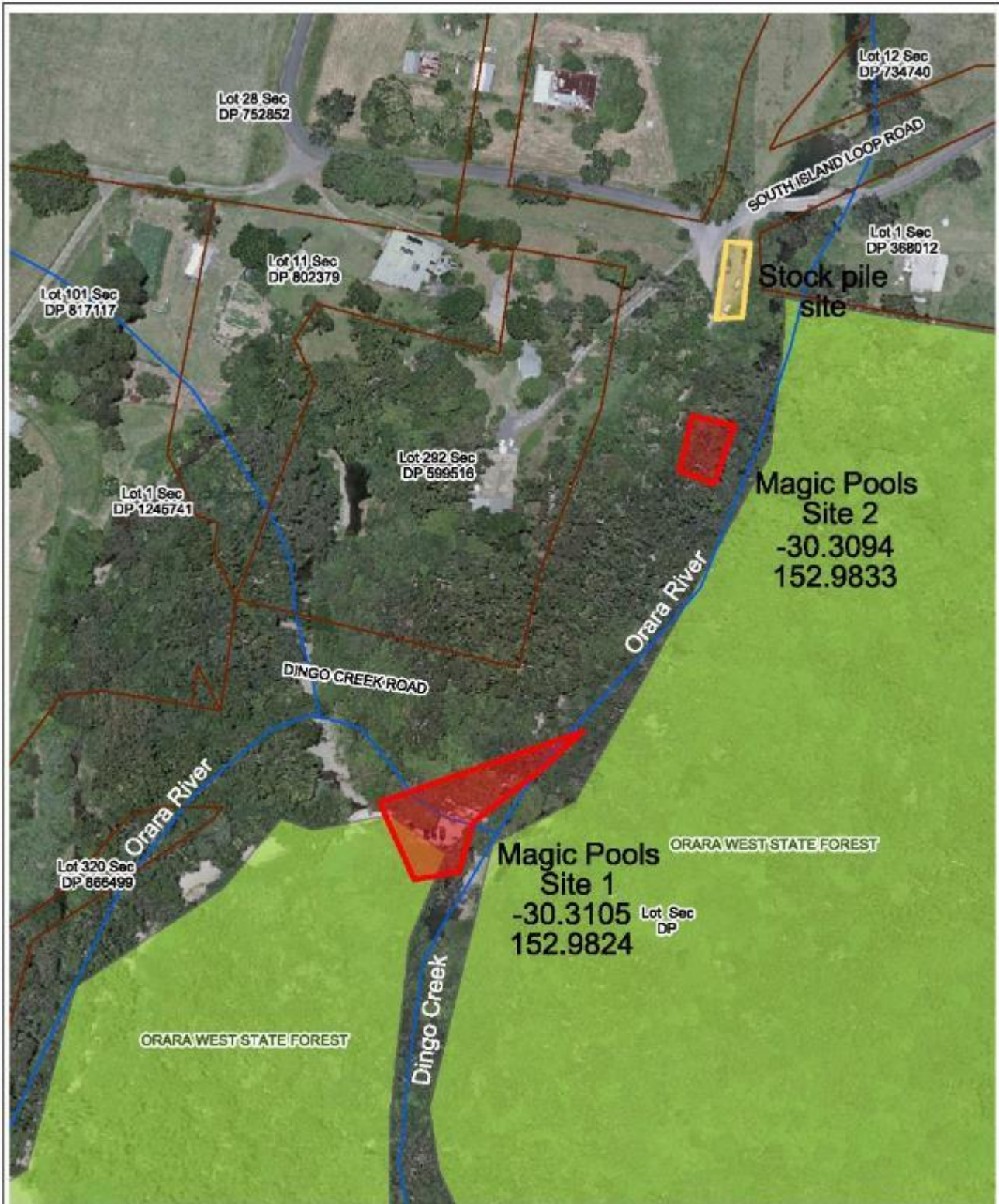
Adjacent waterway Orara River at 152.982402 longitude and -30.310525 latitude (WGS84).

Land Ownership: Dingo Creek Road is a Council Road Reserve and the Orara River is a Crown owned waterway

Area: 0.8 Ha

Coffs Harbour Local Environmental Plan (CHLEP) 2013 Zone: W1 – Natural waterways (Orara River) and C2 Environmental Conservation (Road Reserve)

Figure 1: Site Location





<p>Magic Pools Project Dingo Creek Road Upper Orara</p>	<p>Scale: 1:2257 Projection: # GDA94 / MGA zone 56 Date: 03/05/2024, 12:25 PM Copyright © 2024, Coffs Harbour City Council. Printed by Samantha Hessey.</p>	
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Image 1: Site 1 aerial photo showing cars parked at the Magic Pool.



Image 2: Vehicle track marks entering the Magic Pools. This is not a road crossing so vehicles have to be towed out. The large River Oak shown in green with rope swing fell into the pool during the 2020 floods.

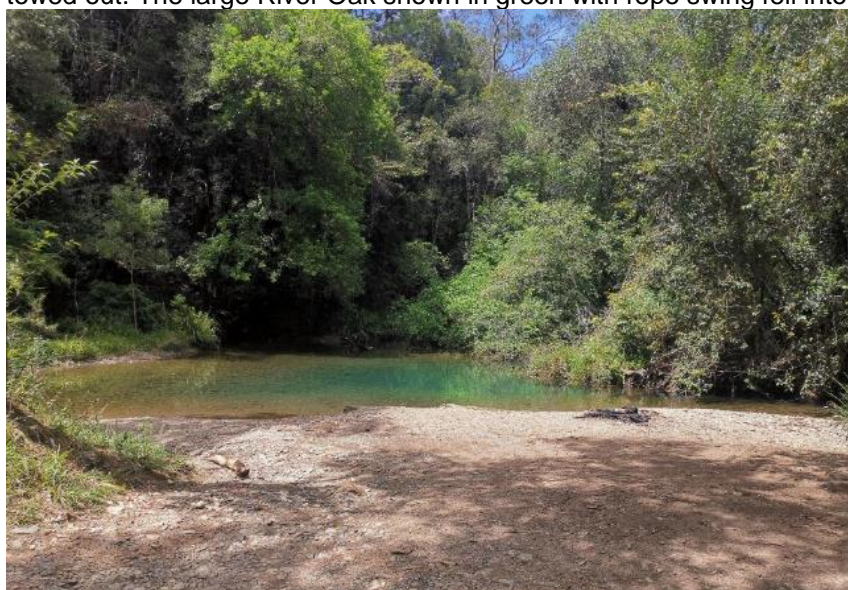


Image 3: Site 1 - The Magic Pool showing compaction of sediment as a result of vehicle asses and visitor use.



Image 4: Vehicles parked adjacent to the pool.



Image 5: Proposed bollard location with weed control and planting between the bollard line and the creek.



Image 6: Site 1 with the fallen river oak in the pool and covered in weeds – circled in green.



Image 7: Site 1 looking upstream on the Orara River branch to the road bridge.



Image 8: Site 1 from the riverbed viewing the small erosion site caused by car access.



Image 9: Site 1 small erosion site looking downstream.



Image 10: Site 2 showing unauthorised vehicle access to the river and removal of native vegetation.

Site Description: *(Including adjacent environmental constraints)*

The project sites are within the road reserve for Dingo Creek Road, Upper Orara, and in the Orara River at the confluence of Dingo Creek and the Orara River at 152.982402 longitude and -30.310525 latitude (WGS84). The sites are bordered by Orara East State Forest on the eastern side of the waterway, and by private property on the western side of the sites. The Orara River is a Crown waterway. Dingo Creek Road is an unsealed Council Road leading into the Orara East State Forest from the Island Loop Roads. The nearest house is 60m from site 2, with two other houses within 200m of both project sites. The sites are within the drinking water catchment for Coffs Harbour town water supply and have a known breeding population of the endangered species, the Giant Barred Frog (*Mixophyes iteratus*). See **Appendix H** for survey details.

The area of works subject to this REF is restricted to the two locations and the stockpile site on the site map, with weed control and revegetation occurring along the riparian zone, totalling 0.8 hectares in area.

The sites are currently Road Reserve on an unsealed road under Council management, with site 1 extending into the Orara River. Site 1 has an informal car park area where visitors park but also drive into the river. This is also occurring at site 2. Driving in waterways is not permitted in this area except at designated waterway crossing points. There is adjacent riparian vegetation which consists of a mosaic of native and exotic species along the Road Reserve except where it has been impacted by vehicles. There are various pest plant species at the sites including Lantana camara, narrow and broad-leaf privet (*Ligustrum sinense* and *Ligustrum lucidum*), palm grass (*Setaria palmifolia*), Wandering Trad (*Tradescantia fluminensis*), Crofton weed (*Ageratina adenophora*) and cats claw creeper (*Dolichandra unguis-cati*). The majority of listed weeds are considered under the *Biosecurity Act 2015* and are considered under a general biosecurity duty. Lantana camara and cats claw creeper hold an additional consideration and are prohibitions on certain dealings. This is detailed further in **Appendix F**.

The sites have been degrading due to the impacts of vehicles parking and accessing the river, causing localised erosion, visible oil, destruction of riparian vegetation, and littering. Illegal camping is also frequently observed at the sites. Local community members have been documenting the impacts and put together the application for funding through the Environmental Levy Community Grants.

The site itself is gently sloping, with the riverbed at 146m elevation, and the car park area and road at 148m. The area is part of the Dairyville alluvial soil landscape.

The 1:100,000 Coffs Harbour Quaternary Geological Map indicates the site is Quaternary alluvial and colluvial fan: fluvial sand, silt, gravel, and clay with sections of Quaternary floodplain: silt clay, fluvial sand, clay. The 1:250,000 Dorrigo – Coffs Harbour Geology Map indicates that the alluvial materials are underlain by the Brooklana Formation which comprises siliceous argillite, slate and rare siliceous greywacke.

The site is:

- Not within the coastal zone
- Tertiary koala habitat
- Not identified as contaminated land nor is it mapped as former banana cultivation area
- No acid sulfate soils are present in this freshwater location

- It is riparian land within the 40m buffer
- Dingo Creek road is mapped as a Council road reserve and the Orara River is mapped as Crown Waterway
- Is mapped as bushfire prone land – vegetation category 1
- Vegetation mapping classifies the site as North Coast Wet Sclerophyll Forest // Eastern Riverine Forests - Coast and Hinterland Riparian Flooded Gum Bangalow Wet Forest/ River Oak Riparian Forest of the Orara River Valley subtypes – likely EEC – Dominant species *Eucalyptus grandis* - *Archontophoenix cunninghamiana* - *Syncarpia glomulifera* - *Eucalyptus pilularis* - *Eucalyptus micocorys* - *Allocasuarina torulosa* - *Synoum glandulosum* - *Pseuderanthemum varibile* - *Cordyline stricta*
- Mapped as biodiverse riparian land on the DPIE Biodiversity Values map
- Not mapped as habitat for Eastern freshwater cod or purple spotted gudgeon (note Eastern freshwater cod move from the Orara River into the Urumbilum River so are not present in the uppermost reaches of the Orara)
- The site is a known breeding area for the giant barred frog *Mixophyes iteratus*
- The site is freshwater and is flood prone
- The sites are within the drinking water catchment for Coffs Harbour water supply
- A road bridge marks the western most point of site 1, and another road bridge is 210m downstream at the South Island Loop Road where it crosses the Orara River
- Power lines are present at the entrance to Dingo Creek Road from the Island Loop Roads
- No fibreoptic cables are known to be located near the sites but the contractor will conduct a dial before you dig enquiry
- No cultural heritage sites are identified in the vicinity from the AHIMS database search
- The road is used by forestry and any road closures will be managed in consultation with Forestry Corp and the local residents
- Forestry Corporation has a traffic counter installed on Dingo Creek Road near the work sites. This will be removed by their liaison person prior to the commencement of works.

Description of project: *(including justification for works)*

The proposal is to; install a series of bollards within the Road Reserve at sites 1 and 2 in Figures 1, 2a and 2b to restrict vehicle access to the waterway; repair a small erosion site on the western bank of the Orara River at site 1 caused by vehicle entry to the waterway; realign a fallen tree within the Orara River at site 1 to improve swimmers safety while ensuring continued gravel transport from the Orara River branch downstream, and to reduce potential erosion in high flows; and conduct bush regeneration including weed reduction and native revegetation at both sites with local provenance rainforest species as per the vegetation type.

The Orara River at this site is deteriorating due to ongoing visitor impacts from vehicles accessing the river at both sites and parking inappropriately causing bank erosion. This damage is being exacerbated by flooding. The fallen river oak root wad is partially blocking gravel transport from further upstream, with the Orara branch filling in as the bed level has risen. The sites fall within the drinking water catchment for the Coffs Harbour township, and there is a known occurrence of the threatened Giant Barred Frog (*Mixophyes iteratus*) in the vicinity that have been recorded calling from the main site during mating season (see **Appendix H**).

The project proposal will create a designated parking area within the road reserve, restrict vehicle entry to the waterway, repair the small erosion site on the bank of the river and realign the root wad of the fallen River Oak, with post works revegetation and weed control. These works will prevent further deterioration of the riverbank, reduce sediment loads, allow the ongoing transport of gravel from upstream, provide bank stability during floods, and provide a cleaner, safer swimming hole for visitors.

Construction is planned for July 2024 weather permitting.

The works will include:

- Partial road closure to Dingo Creek Road during works, with neighbours directly notified and signage and social media promotion to the community;
- Appropriate measures for sediment and erosion control consistent with Best Management Practice (Landcom 2004), Managing Urban Stormwater: Soils and Construction are to be in place before and during construction and until the site has been rehabilitated. Measures may need to be modified to

suit changing weather conditions experienced during the construction phase and should be checked and cleaned frequently.

- Spill kit on site during earthworks;
- A temporary stockpile location for materials will be established in the Road Reserve at the corner of Dingo Creek Road and the Island Loop Roads – see Figure 1;
- The hours of construction will be in accordance with standard EPA construction hours of between 7am and 6pm, Monday through to Friday;
- Works are anticipated to take a maximum of 5 days; and
- All unused materials and any waste will be removed and the silt curtain removed at the end of works once the water is clear.
- Total area under rehabilitation = 0.8 hectares, 320 metres of Orara River
- Weed control along the riparian zone using hand removal, cut and paint, stem injection, wick wiping or spot spraying, and splatter gun for dense lantana with Weedmaster Duo (frog friendly herbicide). Works will be undertaken by Council-contracted bush regenerators, with all weed waste being removed from site and disposed of appropriately.
- A spray down and inspection procedure to reduce the impacts on the present Giant Barred Frog population.

Site 1

- Installation of up to 60 bollards at 1.5m spacing along the edge of the road reserve at sites 1 and 2 consisting of 2.75m rail line lengths drilled vertically 2m into the ground and capped with a hardwood timber bollard;
- Rock revetment of an 8m length of riverbank to a depth of 1m using large rock 300-400mm, resulting in 8 cubic metres of fill;
- Realignment of a fallen native tree (*Casuarina cunninghamiana*) to place it along the eastern bank of the Magic Pools to improve swimmer safety and reduce potential erosion at its current site (subject to Fisheries approval).;
- Four medium broad leaf privet (*Ligustrum lucidum*) trees will be cut down and stumps injected (size 10-20cm trunk diameter)Revegetate the riparian zone with suitable species of local provenance suitable for the vegetation community of Lowland Subtropical Rainforest on floodplain EEC;
- Install interpretive signage at the site; and
- No native vegetation will be impacted.

Site 2

- Installation of up to 15 bollards within the road reserve at 1.5m spacing at site 2 consisting of 2.75m rail line lengths drilled vertically 2m into the ground and capped with a hardwood timber bollard; and
- Weed control as per site 1, and riparian revegetation with species of local provenance suitable for the vegetation community of Lowland Subtropical Rainforest on floodplain EEC

See **Appendix A** for plans and design detail, and **Appendix B** for vegetation information.

Figure 2a: Design overview



Figure 2b: Site 1 proposed works



Statutory Planning Framework

Environmental Planning and Assessment Act 1979

The Activity does not require development consent, however it requires environmental assessment and approval pursuant to Part 5, Division 5.1 and Section 5.5 of the EP&A Act whereby determining authorities, when assessing activities under Part 5, Division 5.1, must examine and take into account, to the fullest extent possible, all matters affecting or likely to affect the environment by reason of that activity. This REF fulfills this function.

The activity of riverbank restoration, revegetation, and realignment of the fallen tree within the riparian zone is considered to be environmental management works and in accordance with Division 25 Section 2.165 (1) and (3) (d), meaning the above listed activities are permissible without consent in accordance with Division 25 Section 2.165 (1) and (3) (d) and as such require assessment under part 5 Division 5.1 of the Environmental Planning and Assessment Act (1979) (EP&A Act).

State environmental planning policies

State Environmental Planning Policy (Transport and Infrastructure) 2021

Division 17 of State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP) outlines the specific development controls for works on roads and road corridors under a public authority.

Division 25 of State Environment Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP) outlines the specific development controls for works within a waterway.

The activity of installing bollards within the Dingo Creek Road reserve, which is a council road under the management of the City of Coffs Harbour (a public authority), is considered to be a roadside facility and thus the provisions listed in Division 17 Subdivision 1 Section 2.113 1) a) (ix) would be applicable to the proposed works.

The installation of bollards within the road reserve is exempt development in accordance with Division 17 Subdivision 1 Section 2.113 1) a) (ix) of the T&I SEPP provided it complies with section 2.20 General Requirements of SEPP (Transport and Infrastructure) 2021.

The activity of riverbank restoration, revegetation and realignment of the fallen tree within the riparian zone and the Orara River waterway is considered to be environmental management works in accordance with Division 25 Section 2.165 (1) and (3) (d).

The riverbank rehabilitation, revegetation and realignment of the fallen tree within the riparian zone and Orara River waterway is permissible without consent in accordance with Division 25 Section 2.165 (1) and (3) (d).

State Environmental Planning Policy (Biodiversity and Conservation) 2021

State Environmental Planning Policy (SEPP) (Biodiversity and Conservation) 2021 came into force on 1 March 2022 and incorporated the repealed provisions of SEPP (Koala Habitat Protection) 2020 and SEPP (Koala Habitat Protection) 2021, amongst others.

The principles of the Koala Habitat Protection chapters of the SEPP are to:

- Help reverse the decline of Koala populations by ensuring Koala habitat is properly considered during the development assessment process.
- Provide a process for councils to strategically manage Koala habitat through the development of Koala plans of management.

Chapter 3 of SEPP (Biodiversity & Conservation) 2021 only applies to Part 4 development applications under the EP&A Act. As the proposal is an Activity under Part 5 of the EP&A Act, the Policy does not technically apply. It is Council's responsibility however, to consider environmental issues relating to their works to the

fullest extent possible, including impacts on Koalas. An assessment of the impacts of the Activity on biodiversity (including Koalas) is provided in the Environmental Assessment.

As there is no removal of native vegetation required for the proposed works, there will be no impact on Koala populations. Weed control will be conducted by qualified, Council-contracted bush regenerators using hand removal, cut and paint, stem injection, spot spraying or splatter gun (for lantana only) with Weedmaster Duo (frog friendly herbicide). All waste will be removed from site and disposed of appropriately in accordance with their relevant biosecurity duty.

The Coffs Harbour Local Government Area has an approved Koala Management plan as such this should be referred to during development as directed by Part 4.2 Development control of koala habitats section 4.8 Development assessment process—approved koala plan of management for land.

State Environmental Planning Policy (Resilience and Hazards) 2021 (RHSEPP)

State Environmental Planning Policy (Resilience and Hazards) 2021 (RHSEPP) came into force on 1 March 2022 and incorporated the repealed provisions of State Environmental Planning Policy (Coastal Management) 2018.

As the site is not within Coastal Wetlands or Littoral Rainforest areas, this SEPP is not relevant.

Local Environmental Plans

Coffs Harbour Local Environmental Plan 2013

The Coffs Harbour Local Environmental Plan 2013 is the local government planning instrument that regulates permissible development at the proposed site. Under the Coffs Harbour LEP all of the land that is subject to the proposal is zoned C2 Environmental Conservation or W1 Natural Waterways.

Environmental protection works are permitted in land zoned C2 and W1 if undertaken by a public authority. As the City of Coffs Harbour is the proponent for the works, the proposed activities are consistent with the permissible activities within the LEP for the land zoning.

Other relevant NSW legislation

Fisheries Management Act 1994

The *Fisheries Management Act 1994* (FM Act) aims to conserve fish and their habitat in NSW waters. Part 7 Division 1 of the FMA provides for protection of aquatic habitats and Division 3 of that section regulates dredging and reclamation works. Section 200 of the FM Act requires Local government authorities to have a permit when carrying out dredging and reclamation work on water land.

The proposed activities of reclamation of the riverbank and damage of aquatic habitat within the river will require approval under Section 200 of the *Fisheries Management Act 1994*

Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act 2016* (BC Act) aims to conserve biological diversity among NSW flora and fauna. Section 7.3 of the BC Act requires an assessment of significance of the potential impacts of the proposal on threatened species, populations and ecological communities and their habitats. An assessment of significance has been prepared as part of this REF and is presented in **Appendix E**.

Impacts on terrestrial and aquatic threatened species, populations, ecological communities and their habitats are expected to be negligible provided works comply with the mitigation measures outlined within this REF.

National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NPW Act) includes under its objects the conservation of objects, places or features of cultural value including places objects and features of significance to Aboriginal people. The NPW Act allows for the listing of Aboriginal objects and Aboriginal places and contains provisions for the prosecution of individuals or organisations harming or desecrating Aboriginal objects or places. Subject to these provisions it is a requirement that organisations proposing an activity must undertake due diligence to assess whether the activity could potentially harm or desecrate an Aboriginal object or place.

AHIMS searches are included in **Appendix C** and found no cultural artefacts or sites within 1km of the project sites. The Coffs Harbour Local Aboriginal Land Council has been contracted to inspect the site to identify any areas of concern regarding cultural artefacts and sites.

Water Management Act 2000

The proposed activities meet the description of a controlled activity under the *Water Management Act 2000* (WM Act). However, as a public authority, the City does not require a controlled activity approval under Section 91E of the WM Act.

Crown Land Management Act 2016

The works are located on a Council Road Reserve which the City is the managing authority and a Crown waterway. However Local Councils are authorised to perform public works on Crown Lands under division 3.4 of the *Crown Land Management Act 2016* to manage the Crown Land as if it were public land within the meaning of the *Local Government Act (LGAct) 1993*. As the activity taking place within the Crown waterway is the realignment of the fallen tree and root wad. Section 36m of Division 2, Part 2 covers the core objectives for management of public (community) land categorised as a watercourse. The proposed activity addresses all of the listed objectives below and as such complies with division 3.4 of the *Crown Land Management Act 2016*. Earlier correspondence with the crown has ensured they are aware and endorse the proposed works (**Appendix I**).

- a) to manage watercourses so as to protect the biodiversity and ecological values of the instream environment, particularly in relation to water quality and water flows, and
- b) to manage watercourses so as to protect the riparian environment, particularly in relation to riparian vegetation and habitats and bank stability, and
- c) to restore degraded watercourses, and
- d) to promote community education, and community access to and use of the watercourse, without compromising the other core objectives of the category.

Commonwealth legislation

Environment Protection and Biodiversity Conservation Act 1999

Under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) a referral is required to the Australian Government for proposed 'actions that have the potential to significantly impact on matters of national environmental significance or the environment of Commonwealth land'. These are considered in Table 5 of this REF.

The assessment of the proposal's impact on matters of national environmental significance and the environment of Commonwealth land found that there is unlikely to be a significant impact on relevant matters of national environmental significance or on Commonwealth land. Accordingly, the proposal has not been referred to the Australian Government Department of the Environment under the EPBC Act.

Confirmation of statutory position

Guidance:

In accordance with the T&I SEPP (2021), the installation of the bollards within the road reserve are exempt development whilst the activities within the waterway, namely the riverbank restoration, revegetation and realignment of the fallen tree are permissible without consent. For simplicity, all of the activities are considered in this environmental assessment under Part 5 of the EP&A Act.

In accordance with Section 200 of the FM Act it will be necessary to obtain a Section 200 approval with DPI Fisheries for reclamation and damaging of aquatic habitat.

Under the *Biodiversity Conservation Act 2016* it is necessary to assess the impacts of the proposed activities upon listed threatened species and communities. An assessment of impact is presented in Appendix E of this REF. The proposed activities would not constitute a significant impact upon listed threatened species and communities.

The assessment of the proposal's impact on matters of national environmental significance and the environment of Commonwealth land found that there is unlikely to be a significant impact on relevant matters of national environmental significance or on Commonwealth land. Accordingly, the proposal will not be referred to the Australian Government Department of the Environment under the EPBC Act.

Consultation

Consultation has been undertaken with the following:

- The Cochranes Pool Urumbilum Rivercare Group Inc who proposed the works and applied for funding through the City of Coffs Harbour's Environmental Levy Community Grants program to carry out the proposed works;
- The City of Coffs Harbour Transport team;
- North Coast Local Land Services for technical advice and works design;
- The immediate neighbours;
- The local community who has raised concerns over the impacts of vehicles at the Magic Pools and have documented these impacts;
- The Orara Valley Rivercare Groups Management Committee Inc who oversee environmental works on waterways throughout the Orara catchment within the Coffs Harbour Local Government Area;
- OzFish who have supported applications for funding for this site;
- Forestry Corp NSW – Partnerships Leader Ryan Ellis who has advised on techniques for vehicle exclusion ;
- The Coffs Harbour Local Aboriginal Land Service has been contacted for a site assessment for cultural heritage. An AHIMS database search has not revealed any records in the area;
- DPIE Fisheries and NSW Crown Lands regarding relevant approvals; and
- There has not been a written consultation strategy, however written notifications of the works and road closure will be provided to neighbours and Forestry Corporation, and through the normal notification process by the City for road closures to inform the wider community.

Relevant warning signage would be displayed to inform public/vehicles/pedestrians of the works and any changed conditions or access, as required.

The City would partially close the road during works, however access will be maintained for users.

The following table list other NSW legislation relevant to the assessment of the Activity and comments on their implications for the Activity.

Table 2. NSW Legislation

Legislation	Section(s)	Comment
<i>Environmental Planning and Assessment Act 1979 (as amended)</i>	Section 1.7	Section 1.7 of the EP&A Act relates to the application of Part 7 of the <i>Biodiversity Conservation Act 2016</i> (BC Act) and Part 7A of the <i>Fisheries Management Act 1994</i> (FM Act). The Activity is unlikely to have a significant impact on biodiversity, threatened species or ecological communities. Provided listed management practices are enforced.
	Section 5.5	The determining authority in its consideration of an activity shall examine and take into account, to the fullest extent possible, all matters affecting or likely to affect the environment by reason of that activity. This REF fulfils this duty.
<i>Environmental Planning and Assessment Regulation 2021</i>	Section 171	Environmental factors as per the <i>Guideline for Division 5.1 Assessments</i> issued by DPE have been considered as required by Section 171(1). It is not expected that the Activity would result in a significant impact.
<i>Fisheries Management Act 1994</i>	Section 200	Local government authorities require a permit when carrying out dredging and reclamation work on water land and when damaging aquatic habitat. The proposed Activity is within the riparian zone and partly in the riverbed and involves a small amount of reclamation and damage of aquatic habitat. Therefore, a permit under Section 200 of the <i>Fisheries Management Act</i> is required.

Legislation	Section(s)	Comment
	Sections 219-220	The proposed activity does not involve creating a barrier to fish movement. Therefore, the City does not need a permit under the <i>Fisheries Management Act</i> .
	Section 205	A permit is required to harm marine vegetation. The Activity does not involve harming marine vegetation.
	Schedules 4, 4A, 5 and 6	The work does not occur in areas that are likely to be supporting threatened aquatic habitat for flora or fauna. Thus, the Activity is considered unlikely to impact on any threatened aquatic species and communities.
<i>Protection of the Environment Operations Act 1997</i>		No Protection of the Environment Policies (PEPs) are relevant to the Activity. No licenses would be required pursuant to the <i>Protection of the Environment Operations Act 1997</i> . Council and/ or contractors working on behalf of Council are required to notify EPA when a 'pollution incident' occurs that is likely to impact upon the environment.
	Section 115	It is an offence to negligently dispose of waste in a manner that harms the environment. Waste would be managed in accordance with the <i>Waste Avoidance and Resource Recovery Act 2001</i> . Any waste or excess materials will be removed from site.
	Section 120	It is an offence to pollute any waters of the State. This REF includes safeguard and mitigation measures to ensure that the Activity does not result in pollution of waters.
	Section 143	Any stockpiling of material within private property requires a section 143 notice under the POEO Act. It is not proposed to stockpile material on private property.
<i>National Parks and Wildlife Act 1974</i>	Sections 87(1), 90	The proposed project site is disturbed and mostly within a road reserve. The provisions of the Act are unlikely to be triggered by the Activity. Works would cease if an artefact or place of significance is disturbed or encountered during the Activity. NSW Heritage and the relevant Coffs Harbour Local Aboriginal Land Council would be notified immediately. Aboriginal Cultural Heritage has been assessed and no adverse impacts are expected – Appendix C.
<i>Biodiversity Conservation Act 2016</i>	Schedules 1, 2 and 3	Threatened species and threatened ecological communities (TECs) have been assessed in accordance with the BC Act. The Activity does not involve the removal of any native vegetation and machinery will only be accessing areas through already cleared access. Therefore, the project would not result in any significant impact to threatened species or their habitat with the adoption of the safeguards prescribed – Appendices D and E.
<i>Biosecurity Act 2015</i>		In NSW, the administration of noxious weed control is the responsibility of the Minister for Primary Industries under the <i>Biosecurity Act 2015</i> . The Act is implemented and enforced by the Local Control Authority for the area, usually local government, or NSW Agencies. Biosecurity risk weeds would be managed in accordance with the Act. The weeds identified at the site are of General Biosecurity Duty, with two – Lantana camara and Cats Claw Creeper having and additional biosecurity duty prohibitions the dealings of these species in NSW. See

Legislation	Section(s)	Comment
		<p>Appendix F for a weeds listing. All works will be conducted in accordance with the relevant Biosecurity duties by qualified Council-engaged bush regenerators with frog-friendly aquatic approved Weedmaster Duo used. All efforts to reduce the spread of these weeds are to be taken. Recommended measures include covering loads, reduced load size, no material overhanging truck bodies, machinery cleaned of all vegetation at the end of each work day and no material containing the identified Lantana and/or Cats Claw Creeper is to be sold in any way including contained within mulch or spread to areas outside of the construction footprint.</p>
<i>Heritage Act 1977</i>		<p>Under Section 139 a person must not disturb or excavate any land knowing or having reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed unless the disturbance or excavation is carried out in accordance with an excavation permit.</p> <p>The discovery of a relic needs to be notified under s146 of the Heritage Act.</p> <p>There are no heritage sites in the vicinity of the proposed activity as it is in a road reserve and waterway.</p> <p>No adverse impacts to heritage are expected.</p>
<i>Roads Act 1993</i>	Section 138	<p>Section 138 of the <i>Roads Act 1993</i> requires approval from the relevant road's authority for the erection of a structure, or the carrying out of work in, on or over a public road, or the digging up or disturbance of the surface of a road.</p> <p>Works are proposed in, on or over a public road. However, as City of Coffs Harbour is the responsible authority there is no requirement for approval from the relevant road's authority under the <i>Roads Act 1993</i>.</p>
<i>Crown Land Management Act 2016 and Local Government Act 1993.</i>	-	<p>The Activity is primarily located on land owned by Council administered under the <i>Local Government Act 1993</i>. The riverbed is designated as Crown Land. However Local Councils are authorised to perform public works under division 3.4 of the <i>Crown Land Management Act 2016</i> provided the works are treated as works conducted on public land (within the meaning of the <i>Local Government Act 1993</i>. This activity has been considered public (Community) land under section 36m of Division 2, Part 2 of the <i>Local Government Act 1993</i> and complies with all relevant provisions. Therefore, a section 34A licence is not required</p> <p>Additionally, earlier correspondence with the crown has ensured they are aware and fully endorse the proposed works (Appendix G).</p>
Native Title (NSW) Act 1994	Section 103	<p>Based on mapping (source: MinView) and a search of the National Native Title Tribunal Registry the subject land does not appear to be subject to an active or registered Native Title claim or positive determination of Native Title.</p>
<i>Water Management Act 2000</i>	Section 91 (2) & 91 (E). Section 41 of the Water Management (General) Regulation 2018.	<p>Works within water lands or those comprising of extraction or management of water may be subject to approval if they constitute a 'controlled activity'. However, public authorities are exempt from a controlled activity approval. As such Council does not require a Controlled Activity approval for the works.</p>

Environmental Assessment

This review takes into account the environmental factors specified in the Guidelines for Division 5.1 Assessments (DPE 2022) in accordance with Sections 170 and 171 of the <i>Environmental Planning and Assessment Regulation 2021</i> .		Yes	No
1. Is the proposed work permissible under the LEP or SEPP (Transport & Infrastructure) 2021?	<i>If No reject proposal</i>	✓	<input type="checkbox"/>
2. Is development consent required?	<i>If Yes lodge D/A</i>	<input type="checkbox"/>	✓
3. Does the development comply with exempt requirements under SEPP (Transport and Infrastructure) 2021?	<i>If Yes and a Part 5 is not required for any other reason, complete Environmental Checklist</i> The works are permitted as development without consent and are the subject of this REF.	<input type="checkbox"/>	✓
4. Are any approvals, permits, licences required under other legislation?	<i>If yes obtain before commencing works and attach to part 5.</i> A section 200 is required under the Fisheries Management Act 1994	✓	<input type="checkbox"/>
5. Do the works constitute an “activity” under Part 5, Division 5.1 of the EP&A Act 1979?	<i>If Yes complete REF/Part 5</i>	✓	<input type="checkbox"/>
6. Is the Activity likely to impact on any threatened species or Threatened Ecological Communities (TEC’s) present?	<i>If YES complete 5 Part Test (Biodiversity Conservation (BC) Act 2016) and SIS.</i>	<input type="checkbox"/>	✓
7. Describe the likely impacts of the activity as follows:			

a)	Any environmental impact on a community (e.g. social, economic and cultural impacts).	<input type="checkbox"/>	✓
<p>The proposed works are environmental protection works and will improve the current condition and state of the Orara River and riparian zone at the Magic Pools The works will ensure the continued use and enjoyment of the Magic Pools by the public without further degradation due to vehicle impacts. Works will also assist with maintaining the water quality of the Orara River in the drinking water catchment.</p> <p>The formalisation of the parking area will ensure riverbank integrity and also provide a safer environment for users of the Magic Pools with separation of the swimming hole form the vehicle area.</p> <p>Assessment by the Local Aboriginal Land Council will ensure no cultural impacts, and the community involvement in the project development ensures a positive community outcome.</p>			
b)	Any transformation of a locality (e.g. viability of current AND future land uses - human and non-human environment).	✓	<input type="checkbox"/>
<p>The locality will have minimal transformation as the structural works are limited to a defined area less than 0.1 hectares primarily within an existing road reserve. The weed control and revegetation proposed once the earthworks are complete will provide a positive transformation for the locality, users and aquatic habitat.</p>			
c)	Any environmental impact on the ecosystems of the locality (e.g. Marine or terrestrial habitats, flora, fauna, ecological integrity, biological diversity, connectivity/fragmentation, air, water including hydrology and soil).	✓	<input type="checkbox"/>
<p>The works as proposed would have a minor impact on the ecosystems of the locality and are unlikely to result in significant impacts. Applicable safeguards and mitigation measures have been recommended in this REF to ensure any potential impact is avoided or minimised. As the works are for environmental protection, the outcome will improve the condition of the local ecosystems through exclusion of vehicles from the river and swimming area, weed control, and revegetation using suitable species of local provenance. The site is a known breeding site for the Giant Barred Frog (<i>Mixophyes iteratus</i>), confirmed by a recent survey conducted in January 2024 by a local ecologist (Appendix H). Mitigation measures recommended are as follows and will prevent habitat disturbance and chytrid fungus contamination:</p> <ul style="list-style-type: none"> • Works are being undertaken outside of the breeding season to minimise disturbance. • All machinery to arrive on site clean and free of mud and debris. • Siltation control to be managed by the contractor, who must have experience in river works 			

- Works not to commence during functional breeding season (ends 31 March)
- End of season to be confirmed by survey 2 to 3 days before works
- All bank edges, banks, overhangs and slopes down to water within the work footprint to be searched by a qualified individual, and any eggs or frogs encountered removed to a safe location
- Frogs and eggs only to be handled by qualified individuals wearing clean surgical type gloves
- A new pair of gloves to be used for each frog handled
- Work not to commence until an ecologist confirms no frogs or eggs will be impacted by works
- Bush regeneration to be as chemical free as is possible given constraints of plant structure and physiology, and of resources allocated for works.
- To prevent Chytrid fungus contamination, a spray disinfectant solution is to be used before and after entering the site. This can be fungicide such as Path-X or simply a 70% dilution mix of methylated spirits applied via spray pack to tyres boots and tools prior to entering and exiting the works area. Spray procedures should be confined to a designated area set back from the waterway at the designated entry and exit points.
- See Appendix F “Survey effort and results for *Mixophyes iteratus* and other potentially occurring threatened frog species at the Magic Pools site on the Upper Orara River prior to restorative works” (T. Rothsey, 2024)

Additionally monitoring for Pale Vented Hen (*Amauornis moluccana*) will occur prior to construction due to the present dense cover of flora and the proximity to the riparian area presenting the perfect habitat for this threatened species. Monitoring can be carried out by the contracted Ecologist and will include a period of playback (aka call back) monitoring. Although the hen has not been identified in searches of the NSW Bionet Atlas (see **Appendix D**), the habitat is suitable and distribution mapping indicates they may be likely to occur in the vicinity.

One dead tree with one moderately sized stag on it may need removal as it may become unstable once broad-leaf privet is removed. If so, then an ecological inspection will be arranged as the dead tree is potentially suitable habitat for microbat roosting.

d)	Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality (e.g. Visual, recreational, scientific and other)	<input type="checkbox"/>	✓
<p>The activities will improve the long-term aesthetic, recreational and environmental quality of the locality through the reduced environmental damage caused by vehicles.</p> <p>The works involve earthworks machinery carrying out environmental works which will result in temporary noise during work hours, a materials stockpile site, closure of the existing Magic Pools site during works, and some localised disturbance. The machinery work will take place as much as possible from the bank, with only one action requiring access to the riverbed. Disturbance will only occur during works (maximum 5 days) and are mitigated through use of silt curtains, removal of all waste after works, and weed control and planting after earthworks to create improved aesthetic, recreational, scientific, and environmental value to the site.</p> <p>No reduction in the quality of environmental values associated with noise, water, soil and air quality or significant decreases in biodiversity are likely to occur due to the Activity and the mitigation measures provided as part of this REF.</p>			
e)	Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations (e.g. Aboriginal heritage including intangible cultural significance), architectural heritage, social/community values and identity, scenic values and other).	<input type="checkbox"/>	✓
<p>The sites are within a forested area and the proposed works are for environmental protection, therefore there are no anticipated negative effects on the locality or place values, and no future anthropological, archaeological, cultural, historical or scientific values are expected to change or be impacted upon.</p> <p>A search of the Aboriginal Heritage Information Management System (AHIMS) database was conducted on the 27 March 2024 (Client Service ID: 8773437). There are no registered sites identified within or in proximity to the works area (see Appendix C).</p> <p>The <i>Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW</i> provides an assessment process to determine if the proposed activity may harm Aboriginal objects and to determine whether an</p>			

Aboriginal Heritage Impact Permit (AHIP) is required. **Table 3** below provides the due diligence assessment undertaken for the works.

The NPW Regulation applies a broad definition of disturbed land – prescribing, in clause 80B (4), that “land is disturbed if it has been the subject of a human activity that has changed the land’s surface, being changes that remain clear and observable”. Examples given in the NPW Regulation of activities that may have disturbed land include:

- Soil ploughing;
- The construction of rural infrastructure (such as dams and fences);
- The construction of roads, trails and tracks (including fire trails and tracks and walking tracks);
- Vegetation clearing;
- The construction of buildings and the erection of other structures;
- The construction or installation of utilities and other similar services (such as above or below ground electrical infrastructure, water or sewerage pipelines, stormwater drainage and other similar infrastructure);
- Substantial grazing activities, involving the construction of rural infrastructure and;
- Earthworks associated with any of the above activities.

Table 3. Due Diligence Assessment

Generic Due Diligence Process	Proposed Activity
Will the activity disturb the ground surface or any culturally modified trees?	The works involve minor earthworks primarily in a disturbed area of road reserve. Some works will take place in the waterway. No culturally modified trees will be disturbed.
Are there any: 1. Relevant confirmed site records or other associated landscape features information on AHIMS? and/or 2. Any other sources of information of which a person is already aware? and/or 3. Landscape features that are likely to indicate presence of Aboriginal objects?	<ol style="list-style-type: none"> 1. A search of the AHIMS database revealed that there are no registered sites within or immediately adjacent to the proposed works. 2. There are no sources of information of which the author is aware. The Coffs Harbour Local Aboriginal Land Council has been requested to do a site assessment prior to works commencing to confirm that no that Aboriginal objects are likely to exist within the works footprint. 3. The site is in a floodplain and waterway with works restricted to a small area of 0.1 hectare, so it is unlikely to contain Aboriginal objects. The site assessment by our local LALC will confirm this prior to works commencing.

The generic due diligence process indicates the proposed activity is not anticipated to impact upon Aboriginal heritage and can proceed without further assessment or applying for an Aboriginal Heritage Impact Permit (AHIP).

Although low in risk, as a precautionary measure however, if any material suspected to be of possible Aboriginal origin is located, all works must cease immediately in the vicinity of the find and the ‘Procedure for unexpected discovery of an Aboriginal object’ is to be followed. That is – STOP WORK, notify all on site crew, isolate and protect the find area and inform City of Coffs Harbour Environmental Project Officer.

The proposed works will make a positive impact to the site overall.

f)	Any impact on the habitat of any protected fauna (within the meaning of the <i>BC Act 2016</i> , e.g. listed species and habitat requirements/critical habitat).	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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The site was inspected by City of Coffs Harbour Biodiversity Project Officer on numerous occasions, the City’s Maintenance Coordinator Rural Transport Services and the Environmental Project Officer, North Coast Local Land Services Senior Land Services Officer, Tony Broderick of Northern Rivers Catchment Services, OzFish and an ecologist who lives next to the site.

- The proposed works will take place primarily within the road reserve (placing of bollards) and all machinery access and stockpile sites are in cleared areas, so works will not impact any terrestrial native vegetation or habitat. The erosion site repair will take place primarily from the riverbank.
- No native vegetation will be removed
- The in-stream works – realignment of the fallen River Oak root wad and placement of rock in

the 8m erosion site on the riverbank – will disturb the stream bed in a small area of site 1 – approximately 0.015 ha or 150 square metres. Short-term negative impacts upon aquatic flora and fauna associated with increased turbidity and suspended sediment concentrations will occur in the immediate area. However, these will be mitigated by: use of a sediment curtain immediately downstream of the site; ensuring the works are undertaken during low river flow to minimise disturbance; restricting machinery access to a single point; and undertaking works outside the breeding seasons for known species at the location. The works are deemed to be no more disturbing than the disturbance resulting from vehicles accessing the site regularly in recent years.

- The site is classified as key fish habitat under the *Fisheries Management Act 1994*. It is not mapped as having eastern freshwater cod as they move up the Urumbilum River from the Orara River downstream of this site. Purple spotted gudgeon is identified as potentially being 250m downstream of the site. Fisheries surveys in 2013 (DPI 2013) did not find Purple spotted gudgeon in any of their site samples, so it is unlikely they are present at the site. However, mitigation of works impacts with sediment curtains and only working outside of breeding season and at low flows should ensure minimal impacts to all aquatic species.
- The site is not classified as an Area of Outstanding Biodiversity Value under the NSW *Biodiversity Conservation Act 2016*
- The site is known to have a breeding population of Giant Barred Frog (*Mixophyes iteratus*). A recent survey conducted at the site in January 2024 confirmed the breeding populations present at the site To mitigate any impacts on the species, works will be undertaken in winter to avoid breeding season; frog calls will be checked for two nights prior to works commencing; and strict wash down procedures will be in place for personnel, machinery and vehicles each day to prevent chytrid fungus contamination. All vehicles and footwear will be clean on arrival at the site. Frog-friendly herbicide will be used (Weedmaster Duo) for weed control by certified council-contracted bush regenerators, with minimal spraying. See Part C of this section for details of mitigation.
- Weeds identified in the immediate vicinity include
 - Blue billy goat weed (*Ageratum houstonianum*)
 - Paddy's lucerne (*Sida rhombifolia*)
 - tall nightshade
 - Cobblers pegs
 - Thick head (*Crassocephalum crepidioides*)
 - Crofton weed (*Ageratina adenophora*)
 - Broad leaf paspalum (*Paspalum mandiocanum*)
 - Palm grass (*Setaria palmifolia*)
 - Balloon vine (*Cardiospermum grandiflorum*)
 - Winter senna (*Senna septemtrionalis*)
 - Privet - broad-leaf (*Ligustrum lucidum*)
 - Privet - narrow-leaf (*Ligustrum sinense*)
 - Lantana (*Lantana camara*)
 - Cats Claw Creeper (*Dolichandra unguis-cati*)

These will be controlled post-works by qualified Council-contracted bush regenerators prior to revegetation with native species of local provenance suitable for the vegetation community. Only aquatic-friendly Weedmaster Duo will be used with control techniques restricted to hand removal, cut and paint, stem injection, spot spray when required, and splatter gun for lantana camara. Details of the biosecurity status of these weeds is in Appendix F.

Therefore, there is no threat to terrestrial habitat from the proposed works, and minimal threat to aquatic habitats with the mitigation measures. The works will improve both terrestrial and aquatic habitat at the site.

Vegetation mapping is provided at **Appendix B** and photos are provided in the Project Location section.

g)	Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air (refer to 5 part test under <i>BC Act 2016, FM Act, 1999</i> and Protected Matters under the <i>EPBC Act 1999</i> , e.g. listed species, non-listed species and key threatening processes).	<input type="checkbox"/>	✓
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BioNet Atlas Search and EPBC Protected Matters Report

A search of the BioNet Atlas was completed on 08 May 2024 to identify records of threatened species recorded within a 10 km x 10 km search area centred on the site (refer to **Appendix D**). Results indicate 9 threatened flora species and 29 threatened fauna species have been recorded within the search area and 4 endangered ecological communities. No endangered populations were identified.

The sole threatened aquatic species potentially found in the vicinity is Purple spotted gudgeon (*Mogurnda adspersa*) is identified as potentially being 250m downstream of the site.

The Protected Matters Search Tool (PMST) identified 56 threatened species and 3 threatened ecological communities which may have habitat within a 5 km radius of the site (refer to **Appendix D**).

13 migratory bird species listed under the EPBC Act were identified as having potential habitat or have flight paths within the search area by the PMST. The site does not comprise important habitat for these migratory bird species as defined in the Matters of National Environmental Significance, Significant impact guidelines 1.1, EPBC Act 1999 (Australian Government – Department of the Environment, 2013). EPBC Act listed migratory species are thus not considered a constraint for the Activity.

Threatened Flora

Nine threatened flora species were identified within a 10km radius of the site. Looking within 1km of the site, the nearest threatened flora are:

- Scrub turpentine
- Native guava
- Rusty plum

As there will be no removal or works affecting native vegetation, there is minimal threat to endangered flora in the vicinity of the works.

Threatened Ecological Communities

- Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions
- Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions
- Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion
- White Gum Moist Forest in the NSW North Coast Bioregion

As there will be no removal or works affecting native vegetation, and the weed control methods are restricted to targeted control, there is minimal threat to threatened ecological communities in the vicinity of the works. For the Lantana area, the understorey will be checked prior to control, and presence of pale vented bush hen checked for as described in part c of this section. Revegetation of the site will enhance these communities as species will be selected from these vegetation communities.

Threatened Fauna

Twenty-nine threatened fauna species were identified within a 10km radius of the site. Looking within 1km of the site, the nearest threatened fauna are:

- Koala
- Spotted tailed quoll
- Purple spotted gudgeon

As there will be no removal or works affecting native vegetation, there is minimal threat to threatened fauna in the vicinity of the works. Presence of giant barred frogs and pale vented bush hen will be checked for as described in part C of this section. There will be minor noise for up to 5 days from machinery, and aquatic impacts will be mitigated through use of a sediment curtain and working from the bank as much as possible. Revegetation of the site will enhance habitat.

Tests of Significance in accordance with Section 7.3 of the BC Act were completed for the above species (refer to **Appendix E**) which determined that the Activity would be unlikely to have a significant impact on the local population of any of the subject species.

Conclusion

The proposal will have minor impacts biodiversity due to temporary noise, disturbance at the site with machinery, and minor aquatic disturbance. However, no native vegetation will be removed, the site is small (less than 0.1 ha), mitigation will reduce the aquatic disturbance, and the works will take a maximum of 5 days. Therefore, the proposed works are unlikely to have a significant impact on any threatened species, their habitats or TECs listed under the BC, EPBC or FM Act. The site does not comprise Australian Government DCCEEW defined important habitat for any threatened or migratory species and therefore EPBC Act listed threatened or migratory species are not considered a constraint for the project.

Under the EPBC Act, a referral is required to the Australian Government for proposed 'actions that have the potential to significantly impact on matters of national environmental significance or the environment of Commonwealth land'. The EPBC Act protects/regulates matters of national environmental significance (MNES). A database search was completed on 09 May 2024. Search results are considered in **Table 5** below.

Table 5. EPBC Act Considerations

Matter	Impact
Any impact on a World Heritage property?	
No World Heritage properties occur at or proximal to the site.	Nil
Any impact on a National Heritage place?	
No places of Natural Heritage occur at or proximal to the site.	Nil
Any impact on a wetland of international importance?	
No wetlands of international importance (Ramsar Sites) occur at or near the site.	Nil
Any impact on nationally threatened species and ecological communities?	
Habitat for 3 threatened ecological communities, 56 threatened species and 13 migratory species were listed as possible occurrences within the search area. The only known listed species to occur at the site are grey headed flying foxes, koala, and giant barred frog, which has been surveyed and mitigation put in place. Given the compliance of the measures discussed within this document any impact will be minor and hold no long term implications for any Commonwealth listed threatened flora, fauna or ecological communities. The Activities and safeguards have been provided to minimise any potential impacts. Accordingly, no listed threatened species or communities are likely to be significantly affected by the Activities.	Minor
Any impact on a Nationally Important Wetland?	
No nationally important wetlands occur at or near the site. Nationally Important Wetlands are not likely to be affected by the Activity.	Nil
Any impact on Migratory species?	
Based on the minor nature of the works, no listed migratory species are likely to be significantly affected by the Activity. The 13 species are listed as overfly species so are unlikely to be impacted by the proposed works.	Nil to Negligible
Any impact on a Commonwealth marine area?	
No Commonwealth marine areas occur at or near the site.	Nil
Any impact on the Great Barrier Reef Marine Park?	
The Great Barrier Reef Marine Park is distant from the site.	Nil
Does the Proposal involve a nuclear action (including uranium mining)?	
The Activity does not involve a nuclear action.	Nil

Any impact on a water resource, in relation to coal seam gas development and large coal mining development?			
The Activity does not involve any impact on a water resource, in relation to coal seam gas development and large mining development.		Nil	
Additionally, any impact (direct or indirect) on Commonwealth land?			
The Activity is not expected to impact upon such land.		Nil	
Conclusion			
<p>The assessment of the impact of the proposed Activity on MNES and the environment of Commonwealth land has found that there is unlikely to be significant impact on relevant MNES. Accordingly, the Activity does not require referral to the Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW).</p> <p>Considering the proposed works are brief, will be contained within the works area, do not harm any native vegetation and mitigation is in place, no significant impacts on local biodiversity are likely.</p> <p>With effective implementation of the safeguards provided in this REF, the Activity is not considered likely to significantly endanger any species of animal, plant, or other form of life.</p>			
h)	Any long-term effects on the environment (e.g. ecological, social and economic).	<input type="checkbox"/>	✓
<p>The works are environmental protection works so will lead to an improvement in the immediate environment through exclusion of vehicles from the waterways, weed control, and revegetation with species suitable to the vegetation community.</p> <p>Safeguards and mitigation measures will be in place to minimise any impact on the receiving environment.</p>			
i)	Any degradation of the quality of the environment (e.g. Ecological, social and economic, aesthetics, noise, climate).	<input type="checkbox"/>	✓
<p>As above, the works will improve the environmental condition at the site.</p> <p>Noise or vibration from the works will be limited to the temporary construction phase and not endure long term. The noise and vibration expected will be typical of that associated with construction works and result from the work personnel and the use of machinery, equipment, and vehicles. This will result in noise and possible vibration emissions within the immediate area and has potential to affect nearby sensitive receivers, including local residences. All neighbours will be informed of the works directly, and works would be undertaken during standard day time construction hours.</p> <p>Given the safeguards in this REF, any impacts to the quality of the environment are considered unlikely.</p>			
j)	Any risk to the safety of the environment (e.g. Public health, contamination, bushfire, sea level rise, flood, storm surge, wind speeds, extreme heat, urban heat and climate change adaptation).	<input type="checkbox"/>	✓
Not expected. Works will be timed for periods of low river flows and in cooler months to prevent disruption to visitors to the pools and minimise in-stream disturbance.			
k)	Any reduction of the range of beneficial uses of the environment (e.g. Natural resources, community resources and existing uses)	<input type="checkbox"/>	✓
The works will necessitate closing part of Dingo Creek Road during construction. Given the relatively short duration of the closure and the long term improvement of the highly valued site to the community, this is considered acceptable. There will be no reduction in the beneficial uses of the environment as works will enhance the use of the environment in the long term.			
l)	Any pollution of the environment (e.g. Air, (including odours and greenhouse gases); water (including runoff patterns, flooding/tidal regimes, water quality health); soil (including contamination, erosion, instability risks); noise and vibration (including consideration of sensitive receptors) or light pollution)	<input type="checkbox"/>	✓
Waste materials, fuel spills and particulate matter have the potential to cause pollution to the environment. However, given the proposed safeguards detailed in this REF and all waste being disposed within an appropriate/approved waste disposal facility, pollution to the environment would not occur and such risks can			

be effectively managed. Water quality testing will be conducted before and after the works to confirm no pollution has taken place.			
m)	Any environmental problems associated with the disposal of waste (e.g. Solid or liquid wastes, effluent, ASS/PASS) including transportation, disposal and contamination).	<input type="checkbox"/>	✓
The site is freshwater and has no acid sulfate soils. The machinery will have spill kits on site, and there will be no removal of any materials from the site other than excess rock and bollards. Any unused materials will be removed from site and the site tidied. Weeds of significance will be removed from site, as will any surplus or waste materials from revegetation works. Measures have been recommended to reduce the spread of any plant matter removed from site.			
n)	Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply (e.g. Land, soil, air, minerals and energy)	<input type="checkbox"/>	✓
Any work involving the use of plant and equipment will involve consumption of fuel, oil, water, vehicle and plant depreciation, etc. However, as an individual project, it is not anticipated that the works will lead to any increased demands on natural resources that are likely to become in short supply. The rock to be used in the works has been donated to the project and only comprises 5 cubic metres. The rail line for the bollards was donated by ARTC, and the timber covers for the bollards are being made from timber sourced from clearing for the Coffs Harbour Pacific Highway Bypass. Therefore all materials to be used in the project have been sustainably sourced.			
o)	Any cumulative environmental effect with other existing or likely future activities (e.g. existing and future activities)	<input type="checkbox"/>	✓
The Activity would have very minor cumulative impacts during construction (e.g., resource consumption; greenhouse gas emissions, water turbidity) but is unlikely to significantly contribute to any cumulative impacts. The works will enhance the local environment at the site in the long term.			
p)	Any impact on coastal processes and coastal hazards, including those under climate change conditions (e.g. Coastal processes and hazards (impacts arising from the proposed activity on coastal processes and hazards and impacts on the proposed activity from coastal processes and hazards), climate scenarios. Coastal Management Act 2016 mapping and proximity to project area.	<input type="checkbox"/>	✓
The site is outside the Coastal Zone so there will be no impacts on coastal processes and hazards.			
q)	Any applicable local strategic planning statement, regional strategic plan or district strategic plan made under Division 3.1 of the Act (e.g. Issues, objectives, policies and actions identified in local, district and regional plans).	<input type="checkbox"/>	✓
The Activity is not inconsistent with any local or regional strategic plans made under Division 3.1 of the Act. The Activity aligns with the objectives set out in the City's MyCoffs Community Strategic Plan " We protect the diversity of our natural environment" and "We use resources responsibly to support a safe and stable climate".			
r)	Any other relevant environmental factors (e.g. Any other factors relevant in assessing impacts on the environment to the fullest extent, include any consultation details).	<input type="checkbox"/>	✓
Additional matters have been addressed under the Statutory Planning Framework of this REF.			

9.	Determination	Ye s	No
	That the proposed activity is unlikely to have a significant effect on the environment and that the proposed activity proceed without modifications	✓	<input type="checkbox"/>
	That the proposed activity is unlikely to have a significant effect on the environment and that the activity proceed with the following conditions	✓	<input type="checkbox"/>
	Is further assessment needed to determine the activity	<input type="checkbox"/>	✓
	Is an Environmental Impact Statement (EIS) required	<input type="checkbox"/>	✓
	Is a Species Impact Statement (SIS) required	<input type="checkbox"/>	✓
	Is a Biodiversity Assessment Report (BDAR) required	<input type="checkbox"/>	✓
	Is referral to Commonwealth Environment Minister required?	<input type="checkbox"/>	✓
	That the activity not proceed	<input type="checkbox"/>	✓
10.	Conditions of this determination – Permit / Approval / Licence attached	<input type="checkbox"/>	✓

This Part 5 Assessment is valid for 18 months from the approval date below – if works have not commenced by this date this assessment is invalid. Contact the Environmental Project Officer for reassessment.

Safeguards and Management Measures

Plans:

The works are to be carried out in accordance with the design specification developed by Shaun Morris, North Coast Local Land Services, Paul Vandenberg of Van Den Berg Earthmoving, and Samantha Hessey and Dan Ingram, City of Coffs Harbour. Project management will be by Samantha Hessey, City of Coffs Harbour.

General:

- The Project Manager is to conduct a pre-start construction meeting and/or induction PRIOR to the commencement of works on site. All staff and contractors are to be made aware of the conditions in this Part 5 during the induction.
- All visitors to the site during works are to be inducted by a suitably trained person and made aware of the conditions of this Part 5.
- A copy of the conditions of this Part 5 is to remain on site at all times and with the primary contractor as well as other associated approvals (Fisheries and Crown Lands).
- Generate a Before You Dig Australia (BYDA) document to locate underground services within the vicinity of the works; for example power, telecommunications and existing water mains.
- If works are to be conducted within less than 1m from an electrical power pole, the pole will require holding in place during excavation works until site is backfilled and rendered safe.
- Notification is to be issued to the relevant residential homes and/or businesses that may be affected by the works.
- In the event any animal is injured during the project the Environmental Project Officer or WIRES are to be contacted (1300 094 737).

Safety:

- The site is to be defined using Barriers/Bunting /Webbing.
- Signage delineating the works site is to be utilised incorporating clearly visible no go areas and public exclusion whilst works are undertaken.

- The work site needs to be adequately secured to minimise conflict with the local road users during works.

Traffic Control:

- The works will not require full closure of the road, so traffic control will not be required. Road closed signage will be placed to deter non-essential traffic, and local residents and Forestry Corporation will be informed of works timing and duration.
- Regard to public safety would be maintained at all times.
- Provide appropriate advanced notification and signage advising of the road/ access changes to inform the community/ road users.

Vegetation and Biodiversity:

- A single point of access to the Magic Pool for realignment of the root wad will be used
- No native vegetation will be impacted by the works as only cleared areas will be used for stockpiling materials, access to sites and weed removal will be performed by a qualified bush regeneration team.
- All exotic invasive weed species will be dealt with in accordance with the relevant biosecurity duty and correct removal and transport of material will be implemented.
- If unexpected, threatened fauna or flora species are discovered, stop works immediately and notify the Environmental Project Officer.
- Ensure all plant, equipment and personnel are free of soil and potential weed propagules prior to entry to or exit from the site.
- Designation of a wash down area for application of path-x or methylated spirit mixture to reduce impacting the threatened Giant Barred Frog population with the Key Threatening Process posed by the introduction of the chytrid fungus on site.
- All chemicals on site will be frog friendly and where possible designated to select areas.

Water Quality and Soil including Sediment and erosion controls:

- Access for heavy machinery is to be restricted to existing roadways and tracks or a single entry and exit point path to reduce impact to the riparian vegetation and bank stability
- Works will be undertaken during dry weather and low river flows
- Any temporary stockpiles of potentially dispersible material that are not required for imminent use will be dampened as required or stabilised with spray grass or appropriate geo-fabric.
- Works would only commence once all erosion and sediment controls have been established. The controls would be maintained in place until the works are complete and all exposed erodible materials are stabilised.
- Erosion and sedimentation controls would be checked and maintained (including clearing of sediment from behind barriers) on a regular basis (including after any precipitation events) and records kept and provided on request.
- Imported materials would be sourced as clean material from an approved site/provider.
- Disturbance of natural sediments and groundcover vegetation would be minimised as far as possible.
- A spill containment kit would be available at all times. All personnel would be made aware of the location of the kit and trained in its effective deployment.
- Any required fuels and other liquids will be stored in self-safe chemical storage containers and within bunded areas and as far as practical away from watercourse or drainage lines.
- Refuelling of machinery, vehicles or equipment is to be undertaken in areas away from drainage lines or watercourses (as far as practical) and managed in order to prevent any potential spills leaving the refuelling area (e.g. use of bunded areas).
- Only clean equipment and vehicles would be used, with equipment being cleaned down before being brought to the site.
- No waste and/or wastewater will be discharged directly or indirectly into drains or waterways.
- The Council and EPA will be notified immediately in response to incidents causing or threatening actual or potential harm to the environment in accordance with section 148 of the POEO Act (via EPA Environment Line on 131 555).
- All equipment would be maintained in good working order and operated according to manufacturer's specifications.
- Appropriate measures for sediment and erosion control consistent with Best Management Practice (Landcom 2004), Managing Urban Stormwater: Soils and Construction are to be in place before and during construction and until the site has been rehabilitated. Measures may need to be modified to suit changing weather conditions experienced during the construction phase and should be checked and cleaned frequently.

- Water testing before and after works will be conducted and if levels fluctuate outside of a healthy range rehabilitation processes will be implemented.

Noise and Vibration

Construction activities will be undertaken in accordance with EPA recommended standard construction hours:

- Monday to Friday 7:00 am to 6:00 pm.
- No work on Saturday.
- No work on Sundays or public holidays.
- All employees, contractors and subcontractors are to receive an environmental induction. This will include, but not limited to, an overview of noise and vibration management measures as well as a summary of threatened fauna in the area and relevant controls i.e. spray stations.
- Extensive periods of continuous operation of noisy machinery would be avoided where possible.
- Noise complaints would be recorded, including suitable identification/ description of the noise source (e.g., continual/impulsive) and general location of the complaint. Any noise complaints would be investigated and actioned as required.
- All works shall be in accordance and best practices of the EPA guidelines: Interim Construction Noise Guideline.

Air Quality

- Where practical, minimise the area of disturbance by using progressive work practices.
- Construction works will not be carried out during strong winds or in weather conditions where high levels of dust or air borne particulates are likely.
- Dust suppression techniques such as water spraying/water carts would be utilised to minimise the potential for dust generation/dispersal during works, as required.
- Vehicles transporting waste or other materials that may produce dust would be covered during transportation.
- Debris and waste would be immediately collected into appropriate covered storage facilities and removed from the site as soon as practical to ensure light-weight material is not dispersed by wind gusts.

Cultural heritage:

If any suspected archaeological items are uncovered during works associated with the Activity, all works will cease in the vicinity of the material/ find. Contact with Council and Heritage NSW will be made immediately. Works would not recommence until all clear is given.

It is concluded that the likelihood of there being Aboriginal objects at the site is considered to be of low probability. As a precautionary measure however, if any material suspected to be of possible Aboriginal origin is located, all works must cease immediately in the vicinity of the find and the 'Procedure for unexpected discovery of an Aboriginal object' is to be followed. That is – STOP WORK, notify all on site crew, isolate and protect the find area and inform City of Coffs Harbour project manager who should seek advice of a suitably qualified heritage consultant/archaeologist.

Waste Management:

- Any unused materials will be removed from the site and the stockpile site returned to its previous condition
- Waste material generated by the project will be managed following the principles of waste avoidance by re-use, re-cycling and removal.
- The site is to be kept clear of rubbish through daily housekeeping and consistent with Councils' three bin system. Plastic bottles, cans and zip lock ties in particular need to be picked up and binned appropriately.
- All plant material transported from site will be managed via the following controls in an effort to reduce the spread of weeds within the Coffs Harbour area. Controls will include covering loads, reduced load size, no material overhanging truck bodies, machinery cleaned of all vegetation at the end of each work day and no material containing the identified Lantana and/or Cats Claw Creeper is to be sold in any way including contained within mulch or spread to areas outside of the construction footprint.




Site remediation:

- Remove all excess material from the site, including sediment and erosion controls when no longer required.

- Weed control and revegetation work will take place once all earthworks are complete and the site tidied

NB. These conditions will be subject to auditing by Council's Environmental Project Officers

I certify that I have reviewed and endorsed the contents of this REF document and, to the best of my knowledge, it is in accordance with the EP&A Act, the EP&A regulation, and the Guidelines approved under clause 170 of the EP&A Regulation and the information it contains is neither false nor misleading.

Prepared by:	Samantha Hessey Biodiversity Project Officer		Date:	12/06/2024
Name		Signature		
Section Leader:	Daniel Stewart		Date:	13/06/2024
Name		Signature		
Director:	Andrew Beswick		Date:	17/06/2024
Name		Signature		
City of Coffs Harbour having Delegated Authority to determine this assessment under Part 5, Division 5.1 of the EP&A Act 1979				

NB: To be valid this environmental assessment needs three signatures above.

You must notify the Officer who prepared this Part 5 Assessment of any changes in the proposed activity, during works or planned as this may alter the assessment, rendering it invalid and leaving Council exposed to risks under environmental and associated legislation.

Appendix A

Plans

The proposed works include:

1. Installation of bollards at 1.5m intervals to exclude vehicles from entering the Orara River at sites 1 and 2
 - a. The bollards are rail line 2.75m long set at 2m depth capped with hardwood timber bollards
 - b. The rail line set deep will preserve the bollards as they cannot be easily cut or pulled out of the ground and will withstand flooding
 - c. Advice on the design was provided by Ryan Ellis of Forestry Corporation who has worked on similar sites in the Bellingen LGA
2. Realignment of a root wad from a fallen river oak (*Tristaniopsis laurina*) to function as batter to the far bank and remove it from causing build up of gravel from upstream in the Orara river channel where downstream gravel movement needs to be maintained for river health. It will also provide a safer swimming environment in the Magic Pool
3. Rock revetment of a small erosion site caused by vehicles parking and entering the river. Rock placement will be supervised by Shaun Morris of North Coast Local Lands Services who advised on the proposed works
4. Weed control along the project area's entire riparian zone
5. Revegetation of the riparian zone with species appropriate to the surrounding vegetation community as per the Class 5 fine-scale vegetation mapping using local provenance stock
6. Materials have been donated to the local Rivercare group by ARTC (rail) and Jungs Quarry (rock)



Bollards are 2.75m lengths of rail line placed 2m into the ground and capped with hardwood case. The rail line cannot be easily cut or pulled out of the ground. They will also withstand flooding



Site 1 – Realignment of the fallen river oak root wad to batter the far bank and allow gravel transport from upstream in the Orara River branch which is being restricted



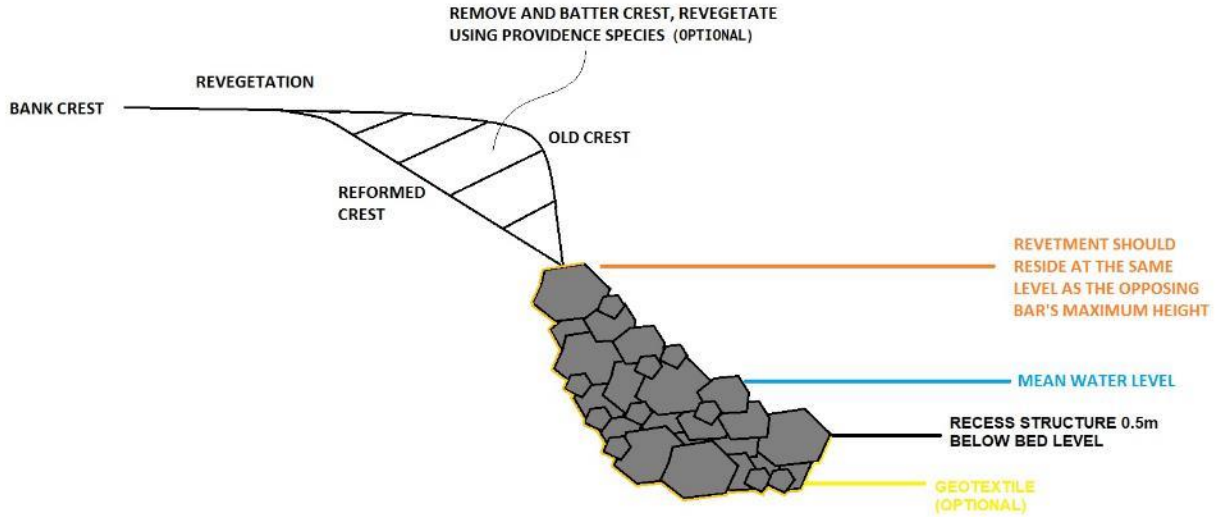
Site 1 – Rock revetment along 8m of eroded riverbank as per design by Shaun Morris of North Coast Local Land Services using 400-500mm rock



Rock revetment design for site 1



STANDARD ROCK REVETMENT DESIGN



CROSS SECTION OF STANDARD REVETMENT DESIGN

<p>DESIGN NOTES: GEOTEXTILE IS NOT REQUIRED IF AN ADEQUATE MIX OF ROCK SIZES ARE UTILISED TO FILL VOIDS AND PREVENT SUCTION OF FINES FROM BEHIND THE REVETMENT</p>	<p>DRAWN BY: Shaun Morris Senior Land Services Officer</p> <p>DATE: JUNE 2024</p>	<p>PROJECT: Orara River Rehabilitation Project</p>
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Site 2 – Bollards to exclude vehicles from accessing the Orara River from Dingo Creek Rd

Bollards are 2.75m lengths of rail line placed 2m into the ground and capped with hardwood case



Rail line



Example of hardwood casing for the rail line

Bollards placed at 1.5m intervals

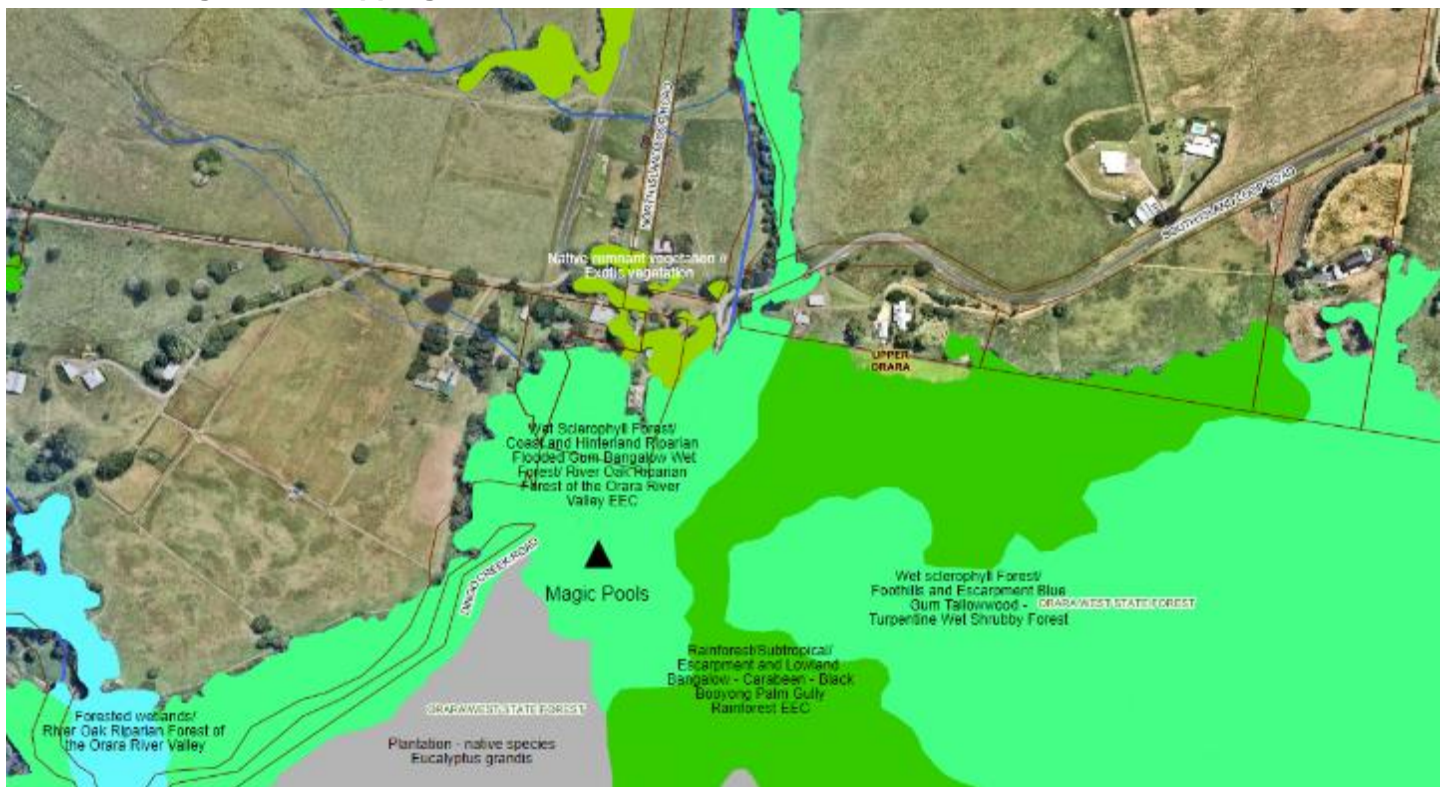
Appendix B

Vegetation Mapping

Koala Habitat Mapping



Fine Scale Vegetation Mapping



Appendix C

AHIMS



**AHIMS Web Services (AWS)
Search Result**

Your Ref/PO Number : Dingo Creek Road
Client Service ID : 877343

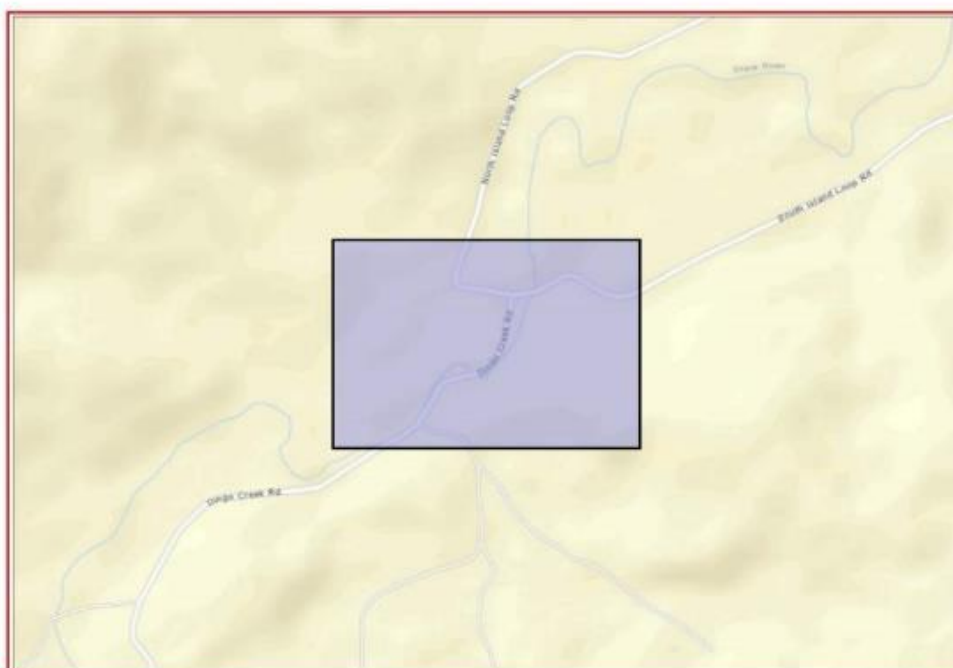
City of Coffs Harbour
Yarrila Place 27 Gordon Street
Coffs Harbour New South Wales 2450
Attention: Samantha Hessey
Email: samantha.hessey@chcc.nsw.gov.au

Date: 27 March 2024

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat. Long From : -30.3121, 152.9787 - Lat. Long To : -30.3074, 152.9865, conducted by Samantha Hessey on 27 March 2024.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the [NSW Government Gazette](https://www.legislation.nsw.gov.au/gazette) (<https://www.legislation.nsw.gov.au/gazette>) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request.

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not to be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Appendix D

Biodiversity Searches Results

NSW Bionet search results 10 May 2024

Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°C; ^^ rounded to 0.01°C. Copyright the State of NSW through the Department of Planning, Industry and Environment. Search criteria : Public Report of all Valid Records of Threatened (listed on BC Act 2016) or Commonwealth listed Entities in selected area [North: -30.26 West: 152.93 East: 153.03 South: -30.36] returned a total of 1,445 records of 38 species.

Report generated on 10/05/2024 8:52 AM

Class	Family	Scientific Name	Common Name	NSW status	Comm. status
Animalia					
Amphibia	Myobatrachidae	<i>Assa darlingtoni</i>	Pouched Frog	V,P	V
Amphibia	Myobatrachidae	^ <i>Mixophyes balbus</i>	Stuttering Frog	E1,P,2	V
Amphibia	Myobatrachidae	^ <i>Mixophyes iteratus</i>	Giant Barred Frog	V,P,2	V
Amphibia	Limnodynastidae	<i>Philoria sphagnicolus</i>	Sphagnum Frog	V,P	V
Amphibia	Hylidae	<i>Litoria brevipalmata</i>	Green-thighed Frog	V,P	
Reptilia	Elapidae	<i>Hoplocephalus stephensii</i>	Stephens' Banded Snake	V,P	
Aves	Columbidae	<i>Ptilinopus magnificus</i>	Wompoo Fruit-Dove	V,P	
Aves	Columbidae	<i>Ptilinopus regina</i>	Rose-crowned Fruit-Dove	V,P	
Aves	Apodidae	<i>Hirundapus caudacutus</i>	White-throated Needletail	V,P	V,C,J,K
Aves	Accipitridae	^ <i>Erythrotriorchis radiatus</i>	Red Goshawk	E1,P,2	E
Aves	Accipitridae	<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	V,P	
Aves	Accipitridae	<i>Hieraaetus morphnoides</i>	Little Eagle	V,P	
Aves	Cacatuidae	^ <i>Calyptrorhynchus lathami lathami</i>	South-eastern Glossy Black-Cockatoo	V,P,2	V
Aves	Psittacidae	<i>Glossopsitta pusilla</i>	Little Lorikeet	V,P	
Aves	Strigidae	^^ <i>Ninox strenua</i>	Powerful Owl	V,P,3	
Aves	Tytonidae	^^ <i>Tyto novaehollandiae</i>	Masked Owl	V,P,3	
Aves	Tytonidae	^^ <i>Tyto tenebricosa</i>	Sooty Owl	V,P,3	
Mammalia	Dasyuridae	<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	V,P	E
Mammalia	Phascolarctidae	<i>Phascolarctos cinereus</i>	Koala	E1,P	E
Mammalia	Burramyidae	<i>Cercartetus nanus</i>	Eastern Pygmy-possum	V,P	
Mammalia	Petauridae	<i>Petaurus australis</i>	Yellow-bellied Glider	V,P	V
Mammalia	Pteropodidae	<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	V,P	V
Mammalia	Vespertilionidae	<i>Myotis macropus</i>	Southern Myotis	V,P	
Mammalia	Vespertilionidae	<i>Nyctophilus bifax</i>	Eastern Long-eared Bat	V,P	
Mammalia	Vespertilionidae	<i>Phoniscus papuensis</i>	Golden-tipped Bat	V,P	
Mammalia	Vespertilionidae	<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V,P	
Mammalia	Miniopteridae	<i>Miniopterus australis</i>	Little Bent-winged Bat	V,P	

Class	Family	Scientific Name	Common Name	NSW status	Comm. status
Mammalia	Miniopteridae	<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	V,P	
Insecta	Noctuidae	<i>Phyllodes imperialis southern subspecies</i>	Southern Pink Underwing Moth	E1	E
Plantae					
Flora	Apocynaceae	<i>Marsdenia longiloba</i>	Slender Marsdenia	E1	V
Flora	Apocynaceae	<i>Parsonsia dorrigoensis</i>	Milky Silkpod	V	E
Flora	Apocynaceae	<i>Tylophora woollsii</i>	Cryptic Forest Twiner	E1	E
Flora	Myrtaceae	<i>Rhodamnia rubescens</i>	Scrub Turpentine	E4A	CE
Flora	Myrtaceae	<i>Rhodomyrtus psidioides</i>	Native Guava	E4A	CE
Flora	Orchidaceae	<i>^Oberonia complanata</i>	Yellow-flowered King of the Fairies	E1,P,2	
Flora	Orchidaceae	<i>^Oberonia titania</i>	Red-flowered King of the Fairies	V,P,2	
Flora	Orchidaceae	<i>^Sarcochilus fitzgeraldii</i>	Ravine Orchid	V,P,2	V
Flora	Sapotaceae	<i>Niemeyera whitei</i>	Rusty Plum, Plum Boxwood	V	

NSW Status

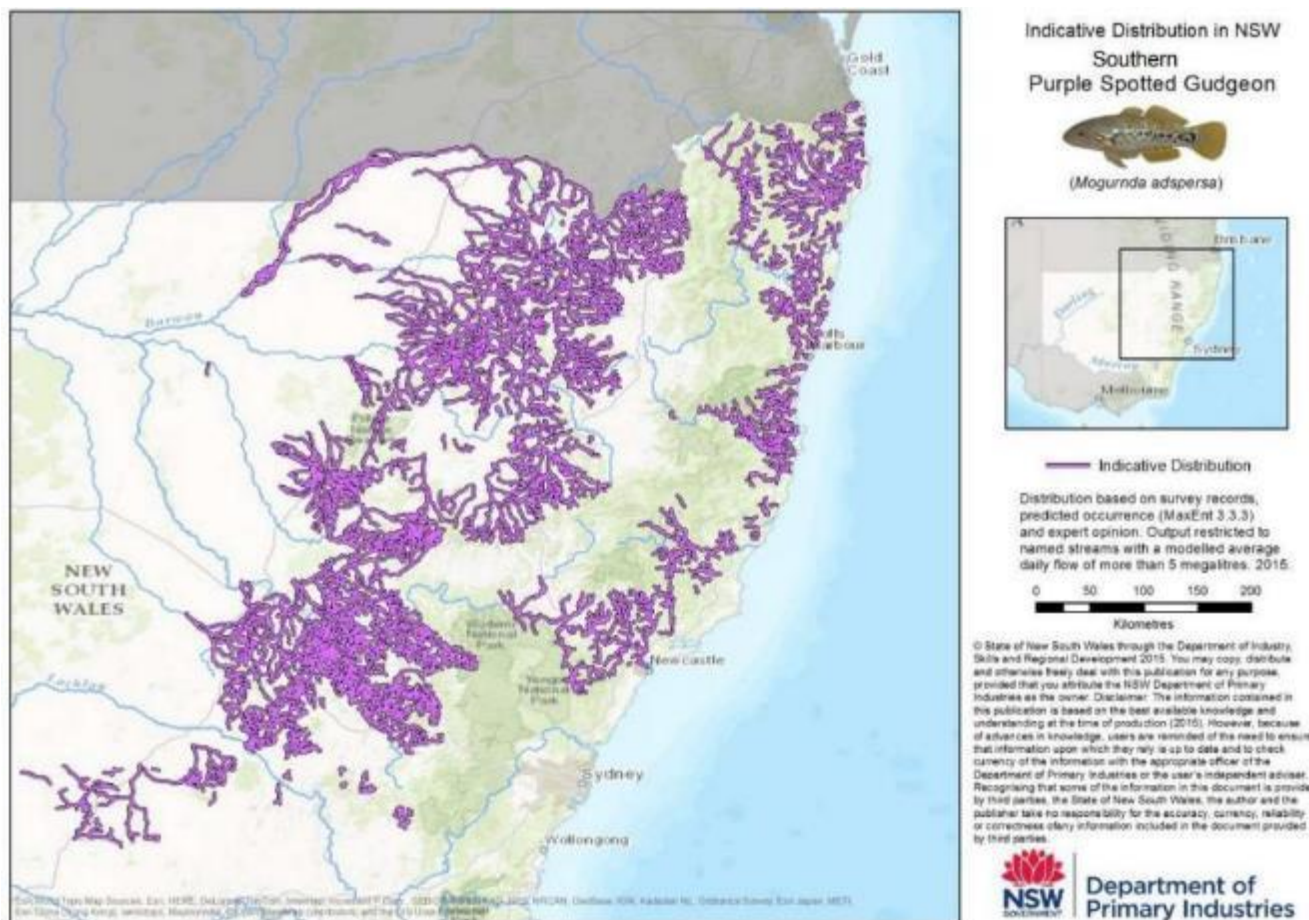
1	Sensitivity Class 1 (Sensitive Species Data Policy)
2	Sensitivity Class 2 (Sensitive Species Data Policy)
3	Sensitivity Class 3 (Sensitive Species Data Policy)
CC	Collapsed Ecological Community (Biodiversity Conservation Act 2016)
CH	Critical Habitat (Biodiversity Conservation Act 2016)
E1	Endangered (Biodiversity Conservation Act 2016)
E2	Endangered Population (Biodiversity Conservation Act 2016)
E3	Endangered Ecological Community (Biodiversity Conservation Act 2016)
E4	Extinct (Biodiversity Conservation Act 2016)
E4A	Critically Endangered (Biodiversity Conservation Act 2016)
E4B	Critically Endangered Ecological Community (Biodiversity Conservation Act 2016)
EW	Extinct in the Wild (Biodiversity Conservation Act 2016)
KTP	Key Threatening Process (Biodiversity Conservation Act 2016)
P	Protected (National Parks & Wildlife Act 1974)

Commonwealth status

C	Listed on China Australia Migratory Bird Agreement
CD	Conservation Dependent (Commonwealth EPBC Act 1999)
CE	Critically Endangered (Commonwealth EPBC Act 1999)
E	Endangered (Commonwealth EPBC Act 1999)
J	Listed on Japan Australia Migratory Bird Agreement
K	Listed on Republic of Korea Australia Migratory Bird Agreement
KTP	Key Threatening Process (Commonwealth EPBC Act 1999)
V	Vulnerable (Commonwealth EPBC Act 1999)
X	Extinct (Commonwealth EPBC Act 1999)
XW	Extinct in the Wild (Commonwealth EPBC Act 1999)

Threatened aquatic species in the locality DPI Fisheries Threatened Species Maps (Riches *et al.* 2015)

A single threatened aquatic species has its distribution near the proposed project site. Purple spotted gudgeon distribution starts on the Orara River 250m downstream of the project site.



Note that Eastern Freshwater Cod do not travel this far up the Orara River. They move into the Urumbilum River from the Orara River approximately 8km downstream from the project site.

Protected Matters Search Tool Department of Climate Change, Energy, the Environment and Water

Listed Threatened Ecological Communities	3
Listed Threatened Species	56
Listed Migratory Species	13
Listed Marine Species	20

Listed Threatened Ecological Communities			Presence	
Community ID	Community Name	Threatened Category	Rank	Text
101	Lowland Rainforest of Subtropical Australia	Critically Endangered	Likely	Community likely to occur within area
179	Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions	Endangered	May	Community may occur within area
178	Dunn's white gum (<i>Eucalyptus dunnii</i>) moist forest in north-east New South Wales and south-east Queensland	Endangered	May	Community may occur within area

Scientific Name	Common Name	Class	Simple Presence	Threatened Category	Migratory Status	Migratory Category	Marine Status
<i>Calidris ferruginea</i>	Curlew Sandpiper	Bird	May	Critically Endangered	Migratory	Migratory Wetlands Species	Listed - overfly marine area
<i>Lathamus discolor</i>	Swift Parrot	Bird	May	Critically Endangered			Listed - overfly marine area
<i>Rhodomyrtus psidioides</i>	Native Guava	Plant	Known	Critically Endangered			
<i>Rhodamnia rubescens</i>	Scrub Turpentine, Brown Malletwood	Plant	Known	Critically Endangered			
<i>Anthochaera phrygia</i>	Regent Honeyeater	Bird	May	Critically Endangered			
<i>Argynnis hyperbius inconstans</i>	Australian Fritillary	Insect	May	Critically Endangered			
<i>Numenius madagascariensis</i>	Eastern Curlew, Far Eastern Curlew	Bird	May	Critically Endangered	Migratory	Migratory Wetlands Species	Listed
<i>Bertya sp. Clouds Creek (M.Fatemi 4)</i>	null	Plant	May	Endangered			
<i>Botaurus poiciloptilus</i>	Australasian Bittern	Bird	May	Endangered			
<i>Parsonia dorrigoensis</i>	Milky Silkpod	Plant	Likely	Endangered			
<i>Dasyurus maculatus maculatus (SE mainland population)</i>	Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population)	Mammal	Likely	Endangered			
<i>Melanodryas cucullata cucullata</i>	South-eastern Hooded Robin, Hooded Robin (south-eastern)	Bird	May	Endangered			
<i>Atrichornis rufescens</i>	Rufous Scrub-bird	Bird	May	Endangered			
<i>Erythrotriorchis radiatus</i>	Red Goshawk	Bird	May	Endangered			
<i>Rostratula australis</i>	Australian Painted Snipe	Bird	Likely	Endangered			Listed - overfly marine area (as <i>Rostratula benghalensis</i> (sensu lato))
<i>Phyllodes imperialis smithersi</i>	Pink Underwing Moth	Insect	Known	Endangered			
<i>Petauroides volans</i>	Greater Glider (southern and central)	Mammal	Likely	Endangered			

Scientific Name	Common Name	Class	Simple Presence	Threatened Category	Migratory Status	Migratory Category	Marine Status
<i>Phascolarctos cinereus</i> (combined populations of Qld, NSW and the ACT)	Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)	Mammal	Known	Endangered			
<i>Phaius australis</i>	Lesser Swamp-orchid	Plant	May	Endangered			
<i>Pseudomys oralis</i>	Hastings River Mouse, Koontoo	Mammal	May	Endangered			
<i>Cynanchum elegans</i>	White-flowered Wax Plant	Plant	Likely	Endangered			
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat, Large Pied Bat	Mammal	Likely	Endangered			
<i>Coleus nitidus</i>	Nightcap Plectranthus, Silver Plectranthus	Plant	Likely	Endangered (listed as Plectranthus nitidus)			
<i>Vincetoxicum woollsii</i>	null	Plant	Likely	Endangered (listed as Tylophora woollsii)			
<i>Macadamia tetraphylla</i>	Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut	Plant	Likely	Vulnerable			
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Mammal	Known	Vulnerable			
<i>Cryptostylis hunteriana</i>	Leafless Tongue-orchid	Plant	May	Vulnerable			
<i>Endiandra hayesii</i>	Rusty Rose Walnut, Velvet Laurel	Plant	May	Vulnerable			
<i>Notamacropus parma</i>	Parma Wallaby	Mammal	Likely	Vulnerable			
<i>Potorous tridactylus tridactylus</i>	Long-nosed Potoroo (northern)	Mammal	Likely	Vulnerable			
<i>Turnix melanogaster</i>	Black-breasted Button-quail	Bird	May	Vulnerable			
<i>Hirundapus caudacutus</i>	White-throated Needle-tail	Bird	Likely	Vulnerable	Migratory	Migratory Terrestrial Species	Listed - overfly marine area

Scientific Name	Common Name	Class	Simple Presence	Threatened Category	Migratory Status	Migratory Category	Marine Status
<i>Mixophyes balbus</i>	Stuttering Frog, Southern Barred Frog (in Victoria)	Frog	Likely	Vulnerable			
<i>Assa darlingtoni</i>	Pouched Frog	Frog	May	Vulnerable			
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	Bird	May	Vulnerable	Migratory	Migratory Wetlands Species	Listed
<i>Mixophyes iteratus</i>	Giant Barred Frog, Southern Barred Frog	Frog	Known	Vulnerable			
<i>Sarcochilus fitzgeraldii</i>	Ravine Orchid	Plant	Likely	Vulnerable			
<i>Coeranoscincus reticulatus</i>	Three-toed Snake-tooth Skink	Reptile	May	Vulnerable			
<i>Philoria sphagnicola</i>	Sphagnum Frog	Frog	Likely	Vulnerable			
<i>Syzygium hodgkinsoniae</i>	Smooth-bark Rose Apple, Red Lilly Pilly	Plant	May	Vulnerable			
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (south-eastern)	Bird	May	Vulnerable			
<i>Thesium australe</i>	Austral Toadflax, Toadflax	Plant	May	Vulnerable			
<i>Gallinago hardwickii</i>	Latham's Snipe, Japanese Snipe	Bird	Likely	Vulnerable	Migratory	Migratory Wetlands Species	Listed - overfly marine area
<i>Calyptorhynchus lathami lathami</i>	South-eastern Glossy Black-Cockatoo	Bird	Likely	Vulnerable			
<i>Macadamia integrifolia</i>	Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak	Plant	May	Vulnerable			
<i>Hicksbeachia pinnatifolia</i>	Monkey Nut, Bopple Nut, Red Bopple, Red Bopple Nut, Red Nut, Beef Nut, Red Apple Nut, Red Boppel Nut, Ivory Silky Oak	Plant	May	Vulnerable			
<i>Neophema chrysostoma</i>	Blue-winged Parrot	Bird	May	Vulnerable			Listed - overfly marine area

Scientific Name	Common Name	Class	Simple Presence	Threatened Category	Migratory Status	Migratory Category	Marine Status
<i>Petaurus australis australis</i>	Yellow-bellied Glider (south-eastern)	Mammal	Likely	Vulnerable			
<i>Grantiella picta</i>	Painted Honeyeater	Bird	May	Vulnerable			
<i>Falco hypoleucos</i>	Grey Falcon	Bird	May	Vulnerable			
<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby	Mammal	May	Vulnerable			
<i>Stagonopleura guttata</i>	Diamond Firetail	Bird	May	Vulnerable			
<i>Arthraxon hispidus</i>	Hairy-joint Grass	Plant	Likely	Vulnerable			
<i>Haloragis exalata subsp. velutina</i>	Tall Velvet Sea-berry	Plant	May	Vulnerable			
<i>Pseudomys novaehollandiae</i>	New Holland Mouse, Pookila	Mammal	May	Vulnerable			
<i>Leichhardtia longiloba</i>	Clear Milkvine	Plant	Likely	Vulnerable (listed as <i>Marsdenia longiloba</i>)			

Appendix E

Tests of Significance (BC Act)

Under the Biodiversity Conservation Act 2016 the factors to be considered when deciding whether and action, development, or activity is likely to be a significant effect on threatened species, populations or ecological communities, or their habitats must be considered. Guidelines supplied by State of NSW and Office of Environment and Heritage (2018) have been followed for the purpose of this assessment:

Presence of threatened species determined from the Bionet Atlas – a NSW Government online collection search engine accessing fauna collections and records of the NSW Department of Planning, Industry and Environment (DPIE).

<http://www.bionet.nsw.gov.au/> (accessed 10/05/2024)

The Protected Matters Search Tool Department of Climate Change, Energy, the Environment and Water, (accessed 10/05/2024) <https://pmst.awe.gov.au/>

and the NSW DPI Freshwater threatened species distribution maps,

<http://www.dpi.nsw.gov.au/fishing/species-protection/threatened-species-distributions-in-nsw/freshwater-threatened-species-distribution-maps> (accessed 11/01/2023) –

Searches and landholder information indicate:

- Eastern Freshwater Cod do not occur in this upper-most reach of the Orara River. They are not found past the confluence of the Urumbilum River as they go up the Urumbilum River as preferred habitat.
- There are no records of Purple spotted gudgeon within the Clarence River System. This includes records associated with NSW Fisheries research surveys within this catchment (see Butler et al 2014). However their distribution commences approximately 250m downstream of the project site.
- River Oak subtype of the Lowland Rainforest on Floodplain EEC occurs adjacent to the site. As there is no removal or disturbance to native vegetation within the project, no threat to this community is anticipated.
- Giant barred frog (*Mixophyes iteratus*) has been known to breed at the site in previous years, however have not been seen recently. An ecological survey undertaken around the site revealed the frogs have moved upstream of the site and recommends works be undertaken outside breeding season.

Database searches from Appendix D revealed the following records within 1 km of the site:

- Giant barred frog (*Mixophyes iteratus*)
- Stuttering frog (*Mixophyes balbus*),
- Spotted tailed quoll (*Dasyurus maculatus*)
- Koala (*Phascolarctos cinereus*)
- Grey headed flying fox (*Pteropus poliocephalus*)
- Eastern long-eared bat (*Nyctophilus bifax*)
- Wompoo fruit dove (*Ptilinopus magnificus*)
- Rusty Plum (*Niemeyera whitei*)
- Scrub turpentine (*Rhodamnia rubescens*)
- Native guava (*Rhodomyrtus psidioides*)
- Lowland Rainforest of Subtropical Australia Threatened ecological community
- Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions Endangered Ecological Community (EEC)

- Lowland Rainforest on Floodplain in the New South Wales North Coast Bioregion Endangered Ecological Community (EEC)
- Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions Threatened ecological community

Assessment of Significance

No known threatened population or ecological community will be negatively impacted by the proposal.

a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

No – the proposed works are unlikely to have a negative impact on species that may occur in the area. There will be no disturbance or removal of any native vegetation; works will be undertaken outside of frog breeding season; works will be conducted over 5 days maximum; sediment curtains will be in place to mitigate temporary disturbance of the river bed; the majority of works will take place on land; machinery will be clean before coming on site; and spill kits will be on hand. The project is aimed at the long-term enhancement of aquatic habitat in the project reach. Environmental mitigation measures have been detailed for the purpose of minimising risks to the environment to short-term, minor impacts (e.g. water turbidity). Thus, the scope of the proposed works is not expected to significantly disrupt the life cycle, the viability, or risk to extinction of local aquatic or terrestrial fauna or flora.

b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction

No - Construction of the described structures will not have an adverse effect or adversely modify the extent or composition of any ecological community, and will instead provide improved aquatic habitat, bed and bank stability. Erosion and sedimentation will be kept to a minimum during the project as previously outlined in order to reduce any adverse effects upon aquatic species in downstream reaches.

The River Oak subtype of the Lowland Rainforest on Floodplain EEC occurs adjacent to the site, not within the work site, so will be unimpacted by the works. Post-works revegetation will enhance this EEC type with local provenance species from the vegetation community will be planted and weed control conducted across the sites.

c) in relation to the habitat of a threatened species or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality

No – Construction of the described structures will not remove, modify, fragment or isolate habitat of a threatened species or ecological community, but will instead maintain and or improve the ecological value of aquatic habitat while restoring riparian vegetation. Erosion and sedimentation will be kept to a minimum during the project in order to reduce any adverse effects upon aquatic species in downstream reaches. Terrestrial impacts are nil as no vegetation is being disturbed or removed, and machinery will access the sites using existing cleared road reserve.

d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).

No - Construction of the described structures will not have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly) but will instead maintain and or improve the ecological value of aquatic habitat within the area of works in the immediate area while restoring the river bank and revegetating the sites. Erosion and sedimentation will be kept to a minimum during the project in order to reduce any adverse effects upon aquatic species in downstream reaches. Terrestrial impacts are nil as no vegetation is being disturbed or removed, and machinery will access the sites using existing cleared road reserve.

e) Whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process

No – The proposed development and activity is not a threatening process, nor is it part of a key threatening process, and nor is likely to increase the impact of a key threatening process. Works instead are consistent with the objectives or actions of a range of recovery plans or threat abatement plans for aquatic and riparian species:

Conclusion

It is considered unlikely that the local population of any of the subject species will be placed at significant risk of extinction as a result of the Activity.

Reference

Butler, G.L., Gilligan, D., Mackay, B., St Vincent Welsh, J, & Broderick, T., 2014 Relative condition of the freshwater fish community in the Clarence Basin: North Coast NSW Department of Industry Fisheries, Grafton.

Appendix F

Field survey and biosecurity information

Field Assessment

Magic Pools Restoration

1. **Location:** Magic Pools
2. **Property No:** NA
3. **Land Owner and/or Reserve Manager:** The Coffs Harbour City Council
4. **The aim of the project being;** the rehabilitation and protection of the Magic Pools Located west of Coffs Harbour CBD
5. **Local Environmental Plans (LEP) 2013 Zoning:** C2 and W1
6. **Is the activity Exempt / Complying / Permissible without consent / Permissible with consent?**

The activity of riverbank restoration, revegetation, and realignment of the fallen tree within the riparian zone is considered to be environmental management works and in accordance with Division 25 Section 2.165 (1) and (3) (d).

Meaning the above listed activities are permissible without consent in accordance with Division 25 Section 2.165 (1) and (3) (d) and as such require assessment under part 5 Division 5.1 of the Environmental Planning and Assessment Act (1979) (EP&A Act).

7. Habitat within footprint

The project area is a mix of native and exotic species blanketing the undisturbed ground and mid story. The canopy comprising of Casuarina, tallowwood, brush box and in some locations broad leaf privet. The mid story is predominantly narrow and broad leaf privet with the western extent covered in Lantana and Tabaco bush. Some native pioneer species are present and include various fern species with a handful of sandpaper figs and patches of small supple jack. Ground cover is predominantly covered in a variety of Grass and moss species. The most abundant ground cover species is Palm Grass and Crofton Weed with dense patches of Wandering trad.

It is likely one moderately sized stag will need to be removed once broad leaf privet is removed from site. As this action is likely to destabilise this dead tree and could cause a risk to the public. EPO (Environmental Project Officer) assessed for habitat on tree and found it potentially suitable habitat for microbat roosting. If this stag is due to be removed further investigation and approval from an arborist and either an ecologist or EPO will be required.

8. Potential or confirmed threatened spp.

A targeted Giant Bared frog (GBF) survey conducted during January (2024) discovered ~20 individuals calling from the magic pools site to the roads entrance. The following images were taken from this report show the frogs are currently active in the area and as such mitigation measures will need to be put in place to ensure not GBFs are impacted by the development either directly by the activities themselves or indirectly via the introduction of chytrid to the site.



Figure 1 Mixophyes iteratus crossing Dingo Creek Road

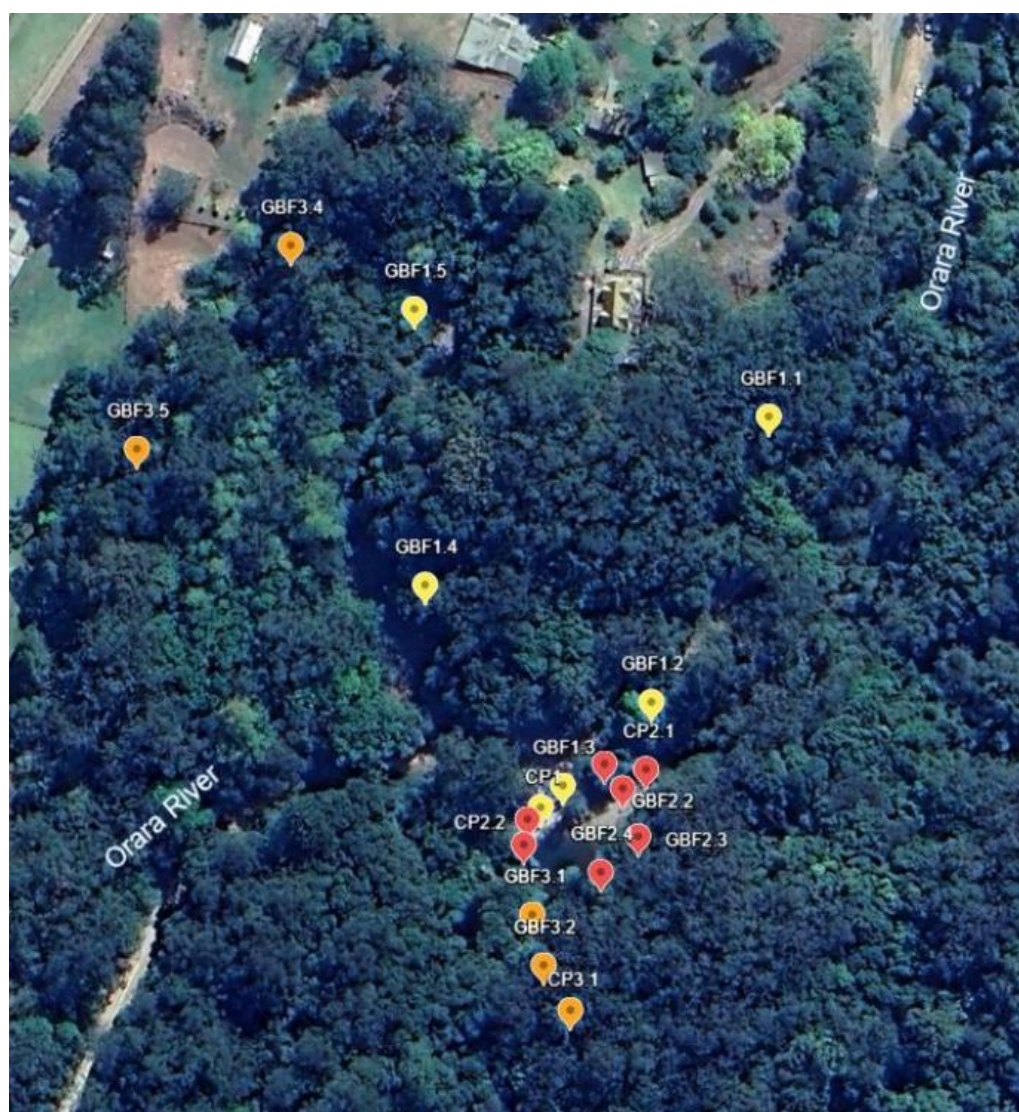


Figure 2: GBF records map above with the largest cluster of sightings and calls observed around the subject site.

Mitigation measures recommended within this report are as follows:

- All machinery to arrive on site clean and free of mud and debris.

- Siltation control to be managed by the contractor, who must have experience in river works
- Works not to commence during functional breeding season (ends 31 March)
- End of season to be confirmed by survey just prior to works
- All bank edges, banks, overhangs and slopes down to water within the work footprint to be searched by a qualified individual, and any eggs or frogs encountered removed to a safe location
- Frogs and eggs only to be handled by qualified individuals wearing clean surgical type gloves
- A new pair of gloves to be used for each frog handled
- Work not to commence until an ecologist confirms no frogs or eggs will be impacted by works
- Bush regeneration to be as chemical free as is possible given constraints of plant structure and physiology, and of resources allocated for works.

Additionally, EPO has recommended a spray disinfectant solution to be used before and after entering the site. This can be fungicide such as Path-X or simply a 70% methylated spirits mix applied via spray pack to tires boots and tools prior to entering and exiting the works area. Spray procedures should be confined to a designated area set back from the waterway at the designated entry and exit points.

For further information GBF sightings in near the construction area see “Survey effort and results for *Mixophyes iteratus* and other potentially occurring threatened frog species at the Magic Pools site on the Upper Orara River prior to restorative works” (T. Rothsey, 2024)

Additionally monitoring for Pale Vented Hen prior to construction has been recommended by the EPO as the present dense cover of flora and the proximity to the riparian area presents the perfect habitat for this threatened species. Monitoring can be carried out by EPO or contracted Ecologist and should include a period of playback (aka call back) monitoring.

9. Weeds of significance

The classification of significant weeds and Duty of action has been derived from the weed wise website. This website follows the information set forth by the Biosecurity Act 2015, its subordinate legislation, and the Regional Strategic Weed Management Plans (published by each Local Land Services region in NSW). It describes the state and regional priorities for weeds in New South Wales.

Definitions of the NSW biosecurity classifications are:

1. General Biosecurity Duty - prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised so far as is reasonably practicable.
2. Regional recommended measure – The plant or parts of the plant should not be traded, carried, grown or released in the environment. Land managers should mitigate the risk of spread of the plant from their land.
3. Prohibition on dealings – Must not be imported into the state or sold.

Out of the species observed on site 13 are considered weeds in northern NSW (see table 1). Of these weeds 7 are classified as weeds of significance and require a general biosecurity duty and an additional weed (*Lantana camara*) has also been listed. This weed (*Lantana camara*) requires a general biosecurity duty and an additional biosecurity duty (prohibited on certain dealings) and cannot be contained in any sold material including mulch.

Table 1: list of identified weed species, locations and biosecurity duties associated with each species. Key: No action required = NA, General Biosecurity Duty = GBD, Regional recommended measure = RRM and Prohibition on certain dealings = PD

Name	Biosecurity duty	Location
Blue billy goat weed (<i>Ageratum houstonianum</i>)	NA	Southern bank
Paddy's lucerne (<i>Sida rhombifolia</i>)	NA	South bank
tall nightshade	NA	South bank
Cobblers pegs	NA	South bank
Thick head (<i>Crassocephalum crepidioides</i>)	NA	South bank
Crofton weed (<i>Ageratina adenophora</i>)	GBD	Patches throughout
Broad leaf paspalum (<i>Paspalum mandiocanum</i>)	GBD	Patches throughout
Palm grass (<i>Setaria palmifolia</i>)	GBD	Patches throughout
Balloon vine (<i>Cardiospermum grandiflorum</i>)	GBD	Small shoots on southern bank
Winter senna (<i>Senna septemtrionalis</i>)	GBD	Patches throughout
Privet - broad-leaf (<i>Ligustrum lucidum</i>)	GBD	Patches throughout
Privet - narrow-leaf (<i>Ligustrum sinense</i>)	GBD	Patches throughout
Lantana (<i>Lantana camara</i>)	GBD and PD	Southern limit of the project and at the entrance of Dingo Creek Road along the eastern edge of the road in both instances.
Cats Claw Creeper (<i>Dolichandra unguis-cati</i>)	GBD and PD	Along riparian area near intersection of Dingo Creek Road and South Island Loop Road

10. Key threatening processes:

Infection of frogs by amphibian chytrid causing the disease chytridiomycosis is listed as a key threatening process under schedule 4 of the biodiversity and conservation act 2016 appropriate mitigation and prevention measures have been discussed above.

The following are other potential key threatening process taken from schedule 4 of the biodiversity and conservation act 2016 and schedule 6 of the Fisheries Management Act 1994. These should be addressed within the part 5 report with potential mitigation measures and impacts addressed:

- Degradation of native riparian vegetation along New South Wales water courses
- Removal of large woody debris from New South Wales rivers and streams
- Removal of dead wood and dead trees
- Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands (as described in the final determination of the Scientific Committee to list the threatening process)

Impact assessment summary and recommendations from site visit (29/06/2024)

- In the event that the moderately sized dead tree on the southern bank requires removal further investigation and approval from an arborist and either an ecologist or EPO will be

required. Address the need for removal due to safety and environmental concerns (eroding bank and or diverting the natural flow) and mention the required approvals in part 5 document.

- Assess key threatening processes and report on potential impacts and mitigation measures in part 5 document.
- Giant barred frog mitigation measures to be included in on site toolbox and part 5 document. EPO and/or ecologist on site to clear the area of giant barred frogs prior to construction.
- Given the presents of above listed biosecurity weeds any material containing vegetation transported from the subject site is to be subject to all feasible mitigation measures to reduce the risk of spreading weeds. Recommended measures include: covering loads, reduced load size, no material overhanging truck bodies, machinery cleaned of all vegetation at the end of each work day and no material containing the identified Lantana (Lantana camara) is to be sold or spread to areas outside of the construction footprint.

Appendix G

Technical advice regarding root wad realignment

From: [Shaun Morris](#)
To: [Samantha Hessey](#)
Subject: RE: Root wad realignment at the Magic Pools site, Dingo Creek Road Upper Orara
Date: Friday, 31 May 2024 3:12:01 PM

Hi Sam

I inspected the site with Tony Broderick and we came to the following conclusions.

It is important to note that in the lifecycle of a snag recruitment the log is only half way into its alignment process. ie snags naturally move from perpendicular to flow to parallel with flow with consecutive flood events, pivoting on the axis of their rootwad. In this case flows have not been significant enough vs the size of the snag to fully rotate the trunk parallel to flow prior to it being buried with gravel. This is most likely due to the significance of historical bed disturbance promoting a greater amount of bed material transport than what should occur naturally. Therefore aligning the snag parallel to flow should be seen as means by which we maintain habitat features, nearby bank stability and completing a natural process for snag alignment to ensure it remains in situ for as long as possible without affecting geomorphic stability.

Without this realignment the risks are far more considerable and include the following:

1. Increased bed height will be maintained by the snag in question for a considerable distance upstream reducing the channel cross sectional area within this zone.
2. Given that discharge is a constant the reduction in channel capacity will see bank erosion on both banks continue to occur as flood power will only be able to be buffered by the bank edges not the bed floor.
3. This will then impact on any riparian vegetation adjacent to any bed level increases caused by the snag promoting further erosion from the lack root complexes holding bank material together.
4. The loss of this riparian vegetation will likely promote bed realignment as floods attempt to find the path of least resistance and greatest capacity for flows. The likely pathway for this will be to dissect the road reserve.
5. If this occurs it will not only be expensive to fix but could possibly promote reduction in sinuosity, increase in stream power and therefore further bed and bank erosion.
6. It will also continue to bury important fringe (near bank) habitat. The gravel collected at site has already filled in much of this habitat where significant small-bodied fish diversity was greatest. Fringe habitat is critical to the life history requirements of small bodied native fish in this system.
7. It should be noted that bed level increases here have also begun to influence the integrity of the upstream bridge abutments via its limiting of channel capacity to convey flows under the bridge. It is envisaged that if the snag is left in situ more maintenance will be required on these bridge abutments than what would be needed if the snag was realigned.
8. Realignment will still provide habitat and in a more favourable long term position ie there will be no net loss of habitat via realignment. maintenance of the snag in its current position for habitat purposes alone is therefore not a valid position.

Cheers
SM

From: Samantha Hessey <Samantha.Hessey@chcc.nsw.gov.au>
Sent: Friday, 31 May 2024 2:11 PM
To: Shaun Morris <shaun.s.morris@lls.nsw.gov.au>
Subject: Root wad realignment at the Magic Pools site, Dingo Creek Road Upper Orara

Dear Shaun,

Could you please confirm that the root wad from the fallen River Oak in the Magic Pool at Dingo Creek Road, Upper Orara, does require realignment? We understand its current location is restricting the movement of gravel from the Orara River downstream, has caused bed raising of the Orara River branch immediately upstream of the Magic Pool, and will create bank erosion on the western bank (road reserve) if the gravel continues to build up at that location. It has also impacted aquatic habitat at the site.

Any technical information you can provide on why the root wad requires realignment is welcome as we will attach it to our Review of Environmental Factors for the proposed environmental protection works at the site.

Many thanks for your expertise,

Sam



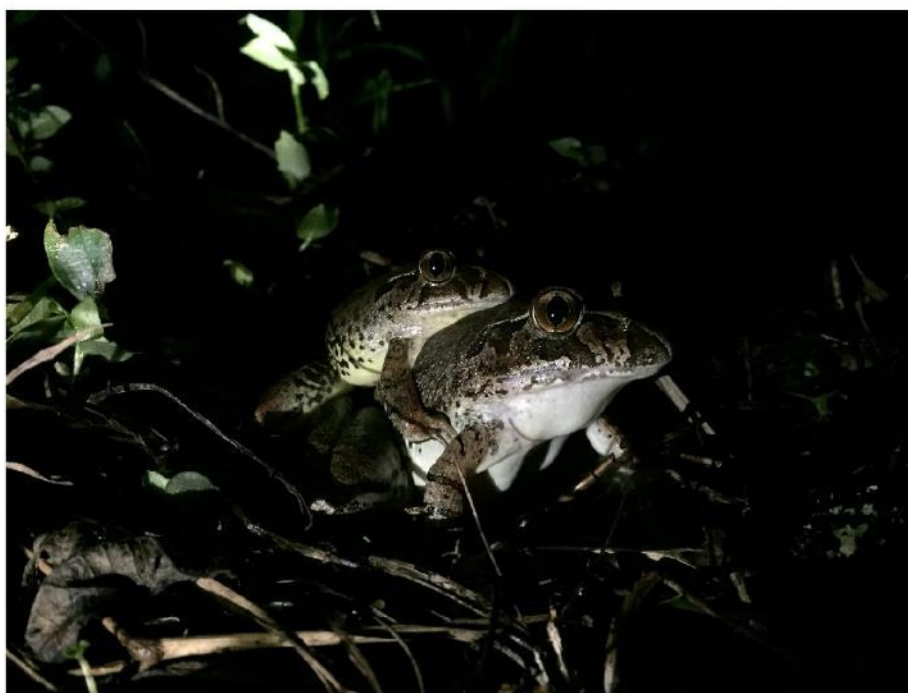
Samantha Hessey
Biodiversity Projects Officer | Orara River Rehabilitation Project | City of
Coffs Harbour
Part time – Mon/Tues/Thurs 9:30-15:00
P: 02 6648 4661 | M: 0407 849 439
E: samantha.hessey@chcc.nsw.gov.au W: www.coffsharbour.nsw.gov.au

Appendix H

Mixophyes iteratus survey

Survey effort and results for *Mixophyes iteratus* and other potentially occurring threatened frog species at the Magic Pools site on the Upper Orara River prior to restorative works

Tom Rothsey



*Figure 1: Female and male *Mixophyes iteratus* engaged in amplexus upstream from the magic pool site, 11 January 2024 10.22 p.m.*

Surveys: Tom Rothsey, assisted by Jasper Rothsey (04/01/24), Alistair Llewelyn-Smith and Jasper Rothsey (10/01/24), and Sarah Kenny (11/01/24).

Literature review and report: Tom Rothsey

Mixophyes iteratus

Tom Rothsey

Survey effort and results for *Mixophyes iteratus* and other potentially occurring threatened frog species at the Magic Pools site on the Upper Orara River prior to restorative works – Tom Rothsey

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Survey effort and results for *Mixophyes iteratus* and other potentially occurring threatened frog species at the Magic Pools site on the Upper Orara River prior to restorative works – Tom Rothsey

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Background and remit

Heavy and thoughtless human activity at the Magic Pool site has led to pollution and degradation of what has been a long established breeding stronghold for the threatened frog species *Mixophyes iteratus*. Activity at the pool covers every recognised threatening process for this species, and consequently both breeding activity and population density have declined markedly over the last few years. Activities and their fall out that detrimentally impact the viability of *Mixophyes iteratus* at this location include, but are not limited to:

- Pollution: the washing down of 4WD vehicles on the river bed at the pools depositing toxic grease and oils/fluids; long term camping on the river bed where fluids and lubricants leak in to the river; human defecation close, hard up to, and even in the river; used nappies and wet wipes; slicks of sunscreen and the grease from discarded fried foods; takeaway containers of all kinds; petroleum based fire starters; syringes; and broken glass (figure 2)
- Stream flow dynamics: The pressures of heavy human and vehicular traffic have led to tree falls which have vastly altered both the relative occurrence and disposition of laminar, turbulent, and helical flows. Heavy vehicle traffic on the river bed shifts, loosens or compacts the rock and shingle beds in random and unpredictable ways, again with impacts on flow dynamics
- Erosion: The combination of heavy foot traffic, vehicle traffic, and vehicle parking close to actively eroding banks is compounding the serious erosion caused by stream flow alteration. Vertical or overhanging banks are an essential prerequisite to successful breeding for *Mixophyes iteratus*, and these are being lost to erosion
- Loss of habitat: vital habitat components close to the pool are degraded, the areas of leaf litter utilised have become tainted with pollutants, and native regeneration is often cut or snapped off
- Weed incursion: human traffic, habitat degradation, and pollution serve to not only distribute weedy species, but to also create an environment that favours their succession over native succession
- Major bank slumping: a bend in the river is held by two river oaks whose exposed roots are constantly being driven over and parked upon (figure 3). It is only a matter of time until this kills the trees, leading to tree fall and major changes in local hydrodynamics

The aim of the surveys is to determine: whether the frogs occur at the site; whether they free call at the site; whether they respond to call playback; an estimate of relative gender distribution; signs of egg deposition; and evidence of active breeding.

There are several other threatened species which may theoretically occur in the region of the site, and even though their occurrence is both unlikely and unrecorded, best practice indicates playing the calls for these frogs. The additional calls played were: *Assa darlingtoni*, *Philoria sphagnicolus*, *Litoria brevipalmata*, *Litoria subglandulosa*, and *Mixophyes balbus*.

Mixophyes iteratus

Tom Rothsey



Figure 2 Long term camping on the river bed in the middle of the local breeding stronghold of *Mixophyes iteratus*



Figure 3 Caravan parked on exposed river oak tree roots

4

Mixophyes iteratus

Tom Rothsey

Taxonomy

Conventionally known as *Mixophyes iteratus* Straughan, 1968, with no synonyms, sub-species, varieties or races recognised.

Conservation Status

The giant barred frog (*Mixophyes iterates*) is listed as endangered under NSW legislation¹, and as vulnerable under both Federal legislation² and within the International Union for Conservation of Nature's 'Red List' system³.

Description

Mixophyes iteratus, or the giant barred frog (hereafter GBF), is the largest of the barred frogs and Australia's second largest frog. Females are larger than males, their maximum snout-to-vent length (SVL) is 120 mm and weight reaches 190 g. Males reach 88 mm (SVL) and weigh up to 80 g. The dorsal (upper) skin is finely granular above and smooth ventrally (below). The dorsal surface is beige to dark brown, with darker blotches. An irregular, dark, vertebral stripe is present, which is typical of barred frogs. The stripe commences between the eyes and extends to the vent, sometimes breaking up into a series of blotches along the midline. The flanks are pale yellow with irregular dark spots or mottling. The ventral surface is yellow to white in colour. The head is large and broad with a prominent, projecting snout, giving the GBF a more triangular shape than other *Mixophyes* species. A black stripe commences at the snout and continues posteriorly, through the nostrils and eyes, extending over a distinct tympanum, before terminating at a point above the forelimbs. The ventral surface of the chin is typically yellow with fine brown mottling. The upper lip has irregular darker markings. The eyes are prominent with a vertical black pupil and an iris colour of pale silvery-white to pale gold above, darker in the lower portion. The limbs have a series of dark and pale crossbars of similar width. The hind limbs are proportionately larger than in other *Mixophyes* species, with the back of the thigh ranging from black with a few large yellow spots to being marbled black and yellow. There is often a rust colouration along the outer toes and fingers. The fingers lack webbing, while the toes are fully webbed, with only the last two joints of the fourth toe free (as opposed to three joints of the toe being free of webbing in the other *Mixophyes* species). The outer metacarpal is poorly developed. The inner metatarsal tubercle is well developed but only half as long as the first toe (versus being nearly of equal length in the other *Mixophyes* species). Discs are absent on the toes and fingers^{4,5,6,7}.

Metamorphs have been measured at 30 mm (SVL). They closely resemble adults except that they are a dull gold colour (which brightens as they grow), have a golden iris and lack a visible tympanum⁷.

Tadpoles are large (maximum length over 100 mm), deep-bodied and ovoid, with the tail twice as long as the body. From above, the colouring is gold or dull copper-gold, with dark spots/splotches, and a dark patch at the base of tail. As the tadpole grows, gold pigments may gradually become

duller. The underside is transparent in early stages, gradually becoming silver-white in later stages. The snout of the tadpole is rounded, and the eyes are positioned dorsolaterally and prominent with a vertical pupil noticeable by the later stages of development (about stage 37). The iris is golden, and a bright gold ring surrounds the pupil. The nares are equidistant between snout and eyes and open laterally. The oral disc is surrounded by papillae. The spiracle is short and opens in a dorsoposterior fashion below the body axis, near the midpoint of the body. The vent tube is dextral. The tail is thick and muscular with fins that are moderately arched to near midpoint before tapering to a rounded tip. The fins are opaque with dark flecking (except the anterior half of the ventral fin)^{4,5,7}.

Distribution

The GBF is sparsely distributed on the east coast of Australia from Hervey Bay in Queensland, to Warrimoo in the Blue Mountains region west of Sydney, New South Wales (NSW). Within Queensland, 65% of the total population are within the Mary River Catchment, while in NSW, 75% of the total population are outside of the reserve system (e.g. National Parks). In NSW, contraction of the range and population density of the GBF is ongoing from both the north and the south, leaving a small area of stronghold and breeding associated with the Coffs Harbour/Dorrigo catchment systems^{4,8}. Theoretically found up to 1000 m elevation, a more realistic national maximum elevation would be 500 – 600 m, with the GBF today rarely being found above 300 m in the Coffs Harbour/Dorrigo area.

Ecology

The GBF is a large ground-dwelling frog found near permanent flowing drainages of lower velocity in lowland open wet-forests (rainforest, wet sclerophyll) and (to a lesser degree) on cleared land^{7,9,10}. The species is mostly associated with pools in larger streams, and the GBF has been associated with the Magic Pool site and actively breeding there until recently. As a habitat specialist the GBF stays within the riparian zone all year round, generally confined to a narrow strip of vegetation either side of a stream or river^{4,5,11,12}. This habitat provides deep, damp, leaf litter that is utilised for both shelter and foraging, with the permanent wet conditions negating the need for seasonal migrations¹². Occasionally, the Giant Barred Frog has been found in other riparian habitats, such as those in drier forest or degraded riparian remnants and even around dams.

Weather

Suitable weather conditions for sampling the GBF include an ambient temperature of 18 °C and above, high relative humidity, and rainfall either during or recently preceding sampling (i.e. up to one week prior to sampling). Sampling should not be undertaken during periods of heavy rainfall or high stream flow¹³. While the suitable window for GBF surveying is considered to be September through to May¹⁴, October to March is a more realistic period, while years of surveys and

Mixophyes iteratus

Tom Rothsey

observations at both the site, and within the wider north east of the state indicate the optimal period to be late November to early February.

Survey Procedure

Call playback surveys consisted of two minutes playing the call of the target species, followed by 10 minutes of listening time. The next call was played as soon as the 10 minute listening time for the previous call expired. Data entered as 'CP' followed by site number

Visual surveys consisted of searches of known habitat under low power LED light. Eyeshine detection is not considered a positive identification, but is used to allow closer inspection. Where frogs could be photographed without undue stress to the animal, they were, and care was taken not to shine light directly in the eyes where this was possible for positive photographic identification. No frogs were handled, protocols for handling are detailed at the end of this document. The waterway verges and banks where suitable habitat occurred were carefully surveyed, though disturbance of habitat was unnecessary during this component as the target species was freecalling and sighted visually. Data entered as 'GBF' followed by site number.

Data were recorded using WGS84, expressed here as decimal lat/long. Altitude is not recorded individually, the average altitude is 170 m across all sites except GBF3.6 and CP3.2, which are both a little over 190 m.

Survey 1

Date and time: 04 January 2024, 2030 - 2230

Temperature: 18° C

Wind: SE, light

Rainfall: on and off during survey, very light

Rainfall before and after survey: Heavy rain event (200+ mm) 01/01/24, < 10 mm 02/01/24, < 1 mm 03/01/24, 1 mm 04/01/24, < 1 mm 05/01/24, < 3 mm 06/01/24

Observers: Tom Rothsey, Jasper Rothsey

Survey one consisted of a visual search of the road and verges from the beginning of Dingo Creek Road up to the Magic Pool site, followed by a visual inspection of the compacted area north of the pool outside of the river footprint, then continuing upstream on the river bed and banks from the bridge for 150 m as far as the tip of the meander that orients SW to NE. Calls were played by the edge of the pool.

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Mixophyes iteratus

Tom Rothsey

Mixophyes iteratus was freecalling right from the beginning of the road transect, continuing throughout the entire survey. First sighting was most likely a male based on size and behaviour. The animal was crossing Dingo Creek road from east to west, so away from the Orara River. Both male and female GBFs will move away from the river footprint when a large rain event is imminent, but this was not the case here. 200 ml was recorded three days previously, but rainfall since then and after the survey date was minimal and patchy. Males will disperse to other locations if there are no females apparent to hear their calls, and 100 m further west of the sighting point is a bow (meander) in the Orara. Given the terrain (steep, thick and wet, heavy with debris), the functional distance is greater than this, and the possible intention to take a hard route to the river rather than the easier river footprint may indicate a first year male, which may in turn indicate at least some successful breeding last season. Frogs calling at the Magic Pool site itself estimated to be 20 individuals.

No females identified, no sign of eggs.

Site: GBF1.1

Time: 2045

Location: -30.3097881 152.9829535

Details: *Mixophyes iteratus* observed crossing Dingo Creek Road. Photographed (figure 4)

Site: GBF1.2

Time: 2100

Location: -30.3104520 152.9826343

Details: *Mixophyes iteratus* heard freecalling, detected by eyeshine, confirmed by inspection, west of river. Site free of exotic vegetation.

Site: GBF1.3

Time: 2113

Location: -30.3106486 152.9823987

Details: *Mixophyes iteratus* not calling, confirmed by inspection, sitting on the edge of a slumped bank in some sparse broad leafed paspalum.

Site: GBF1.4

Time: 2127

Location: -30.3101824 152.9820290

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Mixophyes iteratus

Tom Rothsey

Details: 2 x *Mixophyes iteratus* heard freecalling, eastern bank of the Orara

Site: GBF1.5

Time: 2142

Location: -30.3095338 152.9820016

Details: 3 x *Mixophyes iteratus* heard freecalling, north-western bank of the Orara

Site: CP1

Time: 2206 - 2306

Location: -30.3107003 152.9823391

Details: Calls played for *Assa darlingtoni*, *Phyllorhina sphagnicolus*, *Litoria brevipalmata*, *Litoria subglandulosa*, and *Mixophyes balbus*. No response from target species.



Figure 4 *Mixophyes iteratus* crossing Dingo Creek Road

Survey 2

Date and time: 10 January 2024, 2000 - 2150

Temperature: 19.5° C

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Mixophyes iteratus

Tom Rothsey

Wind: SE, light

Rainfall: on and off during survey, very light

Rainfall before and after survey: no rain 07/01/24, no rain 08/01/24, no rain 09/01/24, 2 mm 10/01/24, 1.5 mm 11/01/24, 3 mm 12/01/24, 1 mm 13/01/24

Observers: Tom Rothsey, Alistair Llewelyn-Smith, Jasper Rothsey

Survey two consisted of a search of the river footprint and banks of the Magic Pool. GBF were freecalling on arrival, and individuals were sighted and photographed. The GBF call was played to see if it elicited greater or lesser calling, but there was no perceptible change. The calls for the other 5 potentially occurring frogs were played with the listening time reduced to 5 minutes. No response from target species. A rough estimate of the number of GBF calling at the site is 20 individuals.

No females identified, no sign of eggs.

Site: GBF2.1

Time: 2030

Location: -30.3106537 152.9825583

Details: Smaller *Mixophyes iteratus* detected close to a lone Lomandra on the dry central section of river bed. Photographed. Close by were a soiled sock and a large unidentified scat. See figure 5.

Site: GBF2.2

Time: 2050

Location: -30.3105973 152.9825099

Details: *Mixophyes iteratus* heard calling, located by eyeshine, identified at close range and photographed at the base of a Lomandra, the chosen location notable for the lack of exotic vegetation. See Figure 6.

Site: GBF2.3

Time: 2100

Location: -30.3107653 152.9825995

Details: Rock and shingle deposited due to altered flow have led to a north west braid of the river fed by the Orara, and a south east braid of the river fed by Dingo Creek, which conjoin further downstream from the pool. 3 x *Mixophyes iteratus* calling from low scrub beyond the south east braid.

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Mixophyes iteratus

Tom Rothsey



Figure 5 *Mixophyes iteratus* on riverbed downstream from Magic Pool



Figure 6 *Mixophyes iteratus* in native vegetation

Mixophyes iteratus

Tom Rothsey

Site: GBF2.4

Time: 2105

Location: -30.3108489 152.9824997

Details: 2 x *Mixophyes iteratus* heard calling from scrubby bank south east of the pool

Site: GBF2.5

Time: 2110

Location: -30.3107874 152.9822937

Details: 2 x *Mixophyes iteratus* heard calling in vegetation or bank behind the root ball of the fallen river oaks.

Site: CP2.1

Time: 2005 - 2017

Location: -30.3106085 152.9826196

Details: Played call for *Mixophyes iteratus*, no discernible increase in call number, frequency or intensity in response.

Site: CP2.2

Time: 2115 - 2150

Location: -30.3107280 152.9823041

Details: Calls played for *Assa darlingtoni*, *Phyloria sphagnicolus*, *Litoria brevipalmata*, *Litoria subglandulosa*, and *Mixophyes balbus*. No response from target species.

Survey 3

Date and time: 11 January 2024, 1925 - 2230

Temperature: 20° C

Wind: NE, light

Rainfall: on and off during survey, light with occasional moderate falls

Rainfall before and after survey: No rain 08/01/24, no rain 09/01/24, 2 mm 10/01/24, 1.5 mm 11/01/24, 3 mm 12/01/24, < 1 mm 13/01/24, > 50 mm 14/01/24

Observers: Tom Rothsey, Sarah Kenny

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Mixophyes iteratus

Tom Rothsey

Survey three consisted of wading through the Magic Pool and up Dingo Creek to the first bend, followed by a walk to the splash crossing over Dingo Creek on the first compartment road. This was followed by a drive and walk through the river to a location just downstream of where Frontage Creek enters the Orara. Finally, the upstream section of the meander surveyed during survey one assessed, with multiple freecalls heard, several individuals sighted, including a pair in amplexus, the only confirmed female encountered during all surveys. There was no sign of eggs. GBF were freecalling on the initial Dingo Creek survey, two individuals observed, and calls played for the other potentially occurring frogs (no response). Multiple freecalls of the GBF were heard at the Frontage Creek site, and calls for the other possible five frogs were played a little further downstream (identified as potential *Mixophyes balbus* habitat), but there were no responses to the calls.

Site: GBF3.1

Time: 1950

Location: -30.3109497 152.9823160

Details: 2 x *Mixophyes iteratus* observed under vines W of the creek, several also heard on the other side.

Site: GBF3.2

Time: 1955

Location: -30.3110671 152.9823461

Details: Estimate 3 or 4 *Mixophyes iteratus* freecalling

Site: GBF3.3

Time: 2045

Location: -30.3128759 152.9829986

Details: First splash crossing on Dingo Creek, no calls at crossing but several *Mixophyes iteratus* heard calling further downstream, but not as far downstream as site GBF3.2.

Site: GBF3.4

Time: 2222

Location: -30.3093810 152.9816650

Details: A maximum of 8 *Mixophyes iteratus* calls heard from the surrounds, but no less than 6. A male and female were observed in amplexus on the western bank of the river above a section of historically eroded bank on private property (figure 1). The location had recently been cleared of

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Mixophyes iteratus

Tom Rothsey

broad leaved paspalum and blue billy goat weed without the use of chemicals, apparently providing an ideal mating platform. No sign of eggs.

Site: GBF3.5

Time: 2240

Location: -30.3098626 152.9812415

Details: A permanent pool on private property. At least 10 freecalling *Mixophyes iteratus* individuals heard, possibly more. No sign of eggs. Two *Mixophyes iteratus* sighted, one individual seen deep in scrub appeared large enough in comparison to the equally distant second individual to be assumed a female.

Site: GBF3.6

Time: 2110

Location: -30.3156999 152.9689881

Details: 2 x *Mixophyes iteratus* observed, 4 freecalling individuals, but not the ones observed.

Site: CP3.1

Time: 2000

Location: -30.3111708 152.9824179

Details: Calls played for *Assa darlingtoni*, *Phyloria sphagnicolus*, *Litoria brevipalmata*, *Litoria subglandulosa*, and *Mixophyes balbus*. No response from target species. Two, possibly 3 *Mixophyes iteratus* freecalling.

Site: CP3.2

Time: 2125

Location: -30.3163384 152.9693476

Details: Calls played for *Assa darlingtoni*, *Phyloria sphagnicolus*, *Litoria brevipalmata*, *Litoria subglandulosa*, and *Mixophyes balbus*. No response from target species.

Conclusions

The degradation of the Magic Pool site is easily apparent, but less apparent is the effect on the threatened species for which the site is important habitat. The hypothesis prior to surveying was that human impact in all its forms is having a detrimental effect on the endangered species *Mixophyes iteratus*, and the results here seem to suggest that the females have abandoned their traditional breeding site at the pool, and have moved upstream to cleaner and less disturbed waters. Years of personal observation at the site show that numbers appear to have decreased at the Magic Pool site, and increased upstream. This hopefully allows a continuation of successful breeding but the fall of the eroded banks to the river from many areas upstream make this problematic. One pair was observed in amplexus upstream, and one probable female was also observed close by. A large rain event which overtopped the banks occurred before the banks and overhangs there could be checked for eggs (50 mm 14/01, 90 mm 15/01). No tadpoles large enough to be GBF were observed throughout. Restoration of the Magic Pool site, exclusion of vehicles from the pool, river and eroding banks is essential for the continued viability of *Mixophyes iteratus* in the area.

Common frogs that were heard calling during the surveys provided no surprises, except perhaps in the conspicuous absence of *Mixophyes fasciolatus* and *Litoria fallax*. Given that frogs are widely considered to be barometers of eco-system health due to their sensitivity, this supports the notion that the Magic Pool site is dangerously degraded.

Care around banks and overhangs is essential during works as the female *Mixophyes iteratus* uses her back legs to kick the fertilised eggs onto a vertical bank side or overhang. The edges of the bank as they grade into bush also require care so dormant or concealed individuals are not squashed by feet or machinery.

Protocols for Works

- All machinery to arrive on site clean and free of mud and debris.
- Siltation control to be managed by the contractor, who must have experience in river works
- Works not to commence during functional breeding season (ends 31 March)
- End of season to be confirmed by survey just prior to works
- All bank edges, banks, overhangs and slopes down to water within the work footprint be searched by a qualified individual, and any eggs or frogs encountered removed to a safe location
- Frogs and eggs only to be handled by qualified individuals wearing clean surgical type gloves
- A new pair of gloves to be used for each frog handled
- Work not to commence until an ecologist confirms no frogs or eggs will be impacted by works
- Bush regeneration to be as chemical free as is possible given constraints of plant structure and physiology, and of resources allocated for works.

Mixophyes iteratus

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- Only naturally occurring species to be planted, preferably of local provenance, such as obtainable from Orara Valley Native Plant Nursery.
- Species selection of plantings to be made by a qualified land conservation manager, bush regenerator or native plant community ecologist
- Informational signage (if any) to be checked by a suitably qualified individual to ensure all information is correct and current

Photo Credits

Tom Rothsey: figures 1, 3, 4, 5, 6

Jill Llewelyn-Smith: figure 2

Google Earth project screen shot: figures 7, 8

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Maps of survey sites



Figure 7 Survey sites close to the Magic Pool site



Figure 8 All survey sites

Appendix I

Crown Lands correspondence

From: [Silas Sutherland](#)
To: [Samantha Hessey](#); [Tina Clemens](#)
Cc: [Derek Van Leest](#); [Shannon Powell](#); [Crownland Grafton Mailbox](#)
Subject: RE: The Magic Pools site, Dingo Creek Road, Upper Orara 2450 - letter of support requested urgently
Date: Thursday, 27 April 2023 7:57:58 PM
Attachments: [image001.png](#)
[image002.png](#)
[RE Letter from Mr Gurnesh Singh MP attached CO16344.msg](#)
[Draft Magic Pools map for bollards and rehabilitation.png](#)
[Magic Pools Dingo Creek visitor impacts photos.pdf](#)

Hi Sam,

I hope you're well!

Thank you for the email below and attached documents. Crown Lands is happy to support Council and community groups seeking to undertake beneficial works on Crown lands, waterways and roads.

In this instance Crown lands is unsure whether the Dingo Creel and Orara River are in fact a Crown waterways – per the attached. A status investigation for presumptive title – *ad medium filum aquae* will be required. Crown Lands provides this search for a fee – see attached link: [Order a search on the status of crown land | Crown Lands \(nsw.gov.au\)](#) noting search times can be in excess of 6 months.

I'm happy to consider a letter of support with the caveat that it may not be Crown land, status would need to be confirmed prior to any authorisation being considered by Crown Lands if a funding application was successful. Crown Lands will need some time to prepare the letter if required – can you please advise any critical timeframes?

Kind regards,

Silas

Silas Sutherland
Area Manager North Coast

Crown Lands | Department of Planning and Environment
Level 3 | 49-51 Victoria Street | Grafton | PO Box 2215 | DANGAR | NSW | 2309
P: (02) 6591 3580 | M: 0429 499 597 | F: (02) 6642 5375 | E: silas.sutherland@crownland.nsw.gov.au
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I acknowledge the traditional custodians of the land and pay respect to Elders past and present. I also acknowledge all the Aboriginal and Torres Strait Islander staff working with the NSW Government at this time.

From: Samantha Hessey <Samantha.Hessey@chcc.nsw.gov.au>
Sent: Thursday, 27 April 2023 11:19 AM
To: Silas Sutherland <silas.sutherland@crowland.nsw.gov.au>; Tina Clemens <tina.clemens@crowland.nsw.gov.au>
Subject: The Magic Pools site, Dingo Creek Road, Upper Orara 2450 - letter of support requested urgently

Hi Silas and Tina,

My manager Sally Whitelaw spoke to Silas recently about the ownership of the Magic Pools site on Dingo Creek Road Upper Orara, adjacent to 434 North Island Loop Road and confirmed it was NSW Government Land – Crown and State Forests. In the past few years it has had increasing numbers of 4WDs driving into the pools, up the waterways, damaging native vegetation, causing riverbank erosion at the access points they are using, and leaving rubbish. The site has breeding giant barred frogs, and some lowland subtropical rainforest on floodplain, and endangered ecological community.

The local Cochrans Pool Urumbilum Rivercare group would like to apply for some funding from Council's Environmental Levy program to rehabilitate the site, with key works including:

- Placing hardwood bollards (3m lengths placed 2m deep, 1m above ground reinforced with steel) to exclude vehicles from accessing the pool and protecting riparian vegetation but retaining aesthetic appeal and parking
- Small amount of rock revetment at an erosion site
- Realignment of a fallen River Oak (native tree) to move it out of the pool swimming area and align it with the far bank to buffer against flood waters and provide fish habitat
- Interpretive signage
- A short video to record the works and use for promotion and education
- Basic draft map and some photos attached for your information
- We understand the bollards will be tampered with/removed from time to time, but we think that the works will deter 99% of people! With still reinforcement, the bollards will look nice but not be able to be chain sawed or dragged out.
- Ryan Ellis from State Forests has been advising on bollard style as he has worked on similar projects in Bellingen LGA

The group will need to apply for a Crown Lands permit/licence and a Fisheries permit to do these works.

My project (Orara River Rehabilitation Project) is providing in-kind support for the project and will assist with the permit applications.

If you are able to support the proposal, would you be able to provide a letter of support addressed to the applicant (Margaret Hoschke, President, Cochrans Pool Urumbilum Rivercare group, 489 Upper Orara Road, Upper Orara, 2450) as the landholder?

Timing is tight as the application is due in tomorrow but we could supply the letter later as they do permit this.

Many thanks and please call anytime to discuss if needed.

Sam

Samantha Hessey

Biodiversity Project Officer

Orara River Rehabilitation Project & Regional State of the Environment Reporting

City of Coffs Harbour

P: 6648 4661 | M: 0407 849 439

Part time Mon/Tues/Thurs 9:30 am – 3:00 pm

E: samantha.hessey@chcc.nsw.gov.au | W: www.coffsharbour.nsw.gov.au

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