TWEED SHIRE COUNCIL

Review of Environmental Factors

Hopping Dicks Creek bank stabilisation, Limpinwood

November 2022

Version control

Version number	Date	Prepared by	Reviewed by
1.0 Draft for internal review	7/11/2022	Engineering Division Environmental Scientists	Engineering Division Environmental Scientists
1.1 Final Draft for Project Client and Project Manager Signoff	16/11/2022	Engineering Division Environmental Scientists	[redacted]
1.2 Final	31/1/2023	Engineering Division Environmental Scientists	Engineering Division Environmental Scientists

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Important notes and definitions

This Review of Environmental Factors (REF) has been prepared in accordance with the Tweed Shire Council Procedure titled: Environmental assessment procedures for Council Infrastructure Works V1.0, 2019 (the Procedure).

REF (Type A projects) template: Infrastructure works assessed using the REF (Type A project) template include routine maintenance works, emergency works, and projects with minor or predictable environmental impacts that can be managed using standard operating procedures and work methods, and industry adopted mitigation measures and management approaches.

Projects assessed using this template typically have minor environmental impacts, and do not require detailed assessment and environmental management plans to manage or offset project impacts. Refer to Part C, Section 5.0 of the Procedure for further guidance on REF assessment pathways.

Prior to works commencing

An activity under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A) must not be commenced prior to both the REF being "determined" by an appropriately delegated staff member and the determination report (the certified REF) being recorded in the Council's electronic data/records system.

The REF must sign off that Council has fulfilled its duty to consider the environmental impact of the activity pursuant to Section 5.5 of the EP&A Act. This includes certifying that the environmental safeguards and mitigation measures proposed ensure the environmental impact is not significant.

It is the responsibility of the person completing this REF that:

- Section 9.0 (certification and signoff) of this REF has been completed
- the project can proceed subject to project mitigation measures and relevant environmental safeguards outlined in Section 10.0 and any associated plans and external authorities
- all relevant approvals, licences, and permits have been obtained prior to works commencing
- all relevant construction personnel are aware of:
    - their responsibilities under this REF
    - the project specific mitigation measures and environmental safeguards outlined in Section 10.0
    - the conditions in any approvals, licences or permits
    - the project details and likely impacts of the project on the community.

Consultation

Environmental planning instruments (EPIs) set out obligations to notify and/or consult with stakeholders, including state agencies, councils and the community as part of the Division 5.1 process of the EP&A Act. Community consultation and referrals may also be required for certain types of approvals (consents, licences and permits) granted by determining authorities under legislation other than the EP&A Act. Proponents and determining authorities must consider any feedback from stakeholders on the proposed activity and/or its environmental impacts. EPIs set out obligations to notify stakeholders. All notification and consultation requirements must be met before a determination is made on the activity. A decision statement by each determining authority needs to be published alongside the published REF document.

Determining authorities will keep the following REF documentation available for public access once a determination has been made:

- the final REF document including appendices
- any associated SIS or BDAR
- the Decision Statement
- any REF document addenda.

The REF must be published on the determining authority's website or the NSW planning portal if the activity is triggered by any of the requirements outlined in clause 171(4) of the EP&A Regulation (clause 171(4)). For further information, refer to Section 6.0 of this REF.

Terms of reference for the assessment

For the purposes of this assessment, the following terms of reference are used:

- Disturbance footprint – refers to the direct footprint subject to development, including any disturbance associated with ancillary works (e.g. temporary access tracks or stockpile sites).
- Study area – the study area includes the disturbance footprint and any additional lands approximately 50 m either side of the disturbance footprint that could be affected directly or indirectly from the proposal. The objective of the assessment would ensure that impacts beyond the direct disturbance footprint are also considered where relevant.
- Subject site – refers to the parcel/s of land on which the development is proposed.
- Broader study area – lands within 10 km of the local study area and includes the Office of Environment and Heritage (OEH) Atlas of NSW Wildlife and Commonwealth Protected Matters database search areas.
- IBRA bioregion and subregion – the Interim Biogeographic Regionalisation for Australia (IBRA) identifies the lands within the Tweed Shire as within the South Eastern Queensland IBRA bioregion. Subregions within this bioregion include the Sunshine Coast-Gold Coast Lowlands, Burringbar-Conondale Ranges and Scenic Rim. These terms are used to describe the occurrence of threatened species, populations and communities at a regional level.

Direct and indirect impacts are defined in accordance with DPE (2022) as follows:

- Direct impacts are those that usually occur at the same time as the project and in the vicinity of the site.
    - For example, impacts may directly affect the habitat of species and ecological communities and of individuals using the study area. They include, but are not limited to, death through predation, trampling, poisoning of the animal/plant itself and the removal of suitable habitat
- Indirect impacts are those that occur as a consequence of the project of the direct impacts of a project. They may be delayed and happen further away from the site.
    - For example, impacts may sterilise or reduce the habitability of adjacent or connected habitats. They can include loss of individuals through starvation, exposure, predation by domestic and/or feral animals, loss of breeding opportunities, loss of shade/shelter, reduction in viability of adjacent habitat due to edge effects, deleterious hydrological changes, increased soil salinity, erosion, inhibition of nitrogen fixation, weed invasion, noise, light spill, fertiliser drift, or increased human activity within or directly adjacent to sensitive habitat areas.

Impact significance is rated as low, medium or high in this REF. Examples of low and high adverse impacts are as follows:

Low adverse impacts typically:	High adverse impacts typically:
are small scale	are large scale
are localised	are extensive
are short term	are long term
have a small impact dispersed over a long period	have a large impact over a short or long period
have reversible impacts	have potentially irreversible impacts
have effective mitigation measures available	have unavailable or untested mitigation measures
are totally compliant with standards, plans and policies	have uncertain or part compliance with standards, plans and policies
have a low interest from the public	have a high interest from the public
have a high level of understanding of the activity and expected impacts	have a low level of information on and understanding of the key issues

For further guidance on evaluating impacts, refer to Attachment A of the Department of Planning and Environment, Guidelines for Division 5.1 assessments, February 2022.

1.0 Project details

Table 1: Project details

Project Details	
Project Name	Hopping Dicks Creek Bank Stabilisation
Project Location	[redacted] (Figure 1 and 2)
Project Owner	Tweed Shire Council and private property owner
Project Brief Number	No brief
Environmental Scientist (assessing officer)	[redacted]
Determining Officer	
Project Client	
Project Manager	

2.0 Site details

Table 2.1: Site details

Site / Parcel description	Zoning	Land owner
Lot 1 DP709676	RU1 – Primary Production (Figure 3)	[redacted]

TABLE NOTES:
A: For works on Crown Land refer to Activity Specific Procedure – Council Infrastructure Works on Crown Land.
B: Owner's consent is not required for the preparation of Part 5 assessments of private land. Prior to works commencing on private land, Council officers are to notify property owners advising details of project and entry to land as permitted by the Powers of Entry provisions in sections 191A-193 of the Local Government Act, 1993.

3.0 Proposal description and permissibility

Table 3.1: Project proposal details

Description	Comment
Project background and need	From November 2021 through to June 2022, Australia was experiencing a La Niña weather event (BOM[1], 2022). This caused above average rainfall leading to major flooding in the Tweed Shire. The rainfall and multiple flood events (specifically the flood from February to March 2022) have caused erosion of the Hopping Dicks Creek waterway bank leading to loss of prime agricultural land. The property owner has previously had waterway bank stabilisation works undertaken in adjacent stretches of the waterway that withstood the flooding. This downstream section now requires bank stabilisation to prevent further loss of land and vegetation.
Alternatives considered	The preferred method to stabilise the eroded bank is proposed to batter the bank to reduce the gradient of the bank and construct rock toe revetment. Revegetation will be

Description	Comment
	undertaken on and above the waterway bank to provide long-term stabilisation of the soil. Other methods of bank stabilisation were considered including varying rock revetment methodologies and the do-nothing approach, however the proposed method is the best approach. If a do-nothing approach was followed through, the private property owner would potentially continue to lose more grazing land which is identified as their drought-proof paddock and is extremely important to the success of their enterprise, and it is expected that there would be ongoing impacts on the waterway with further erosion, sedimentation and water quality issues.
Proposal description key project elements (e.g. nature, scale and extent of proposed activity)	The proposed works would utilise a combination of stabilisation techniques which would be chosen depending on the size and scale of erosion at various section along the alignment. The techniques include: • bank battering to provide a more stable slope suitable for vegetation establishment (1V:3H) • rock toe revetment or full height rock revetment using 400–700 mm diameter rock • riparian revegetation (mass planting) The proposed disturbance footprint extends for approximately 210 m along the southern bank of Hopping Dicks Creek. Mature riparian vegetation was lost during the flood events and the site is currently devoid of significant vegetation. The scour embankment is variable and at a maximum is approximately 2 m from the top of bank to water level.
Construction activities (e.g. how will the project be constructed?). Explain construction footprint, site preparation activities (e.g. vegetation clearing, alternate access etc.), construction timeframes, hours of operation, relevant work methods, plant and equipment, earthworks, management of materials, traffic and access management, sensitive receivers etc.)	In summary, the proposed activity would involve: • installation of environmental management controls • construction of a suitable access path to the site to enable delivery of materials and machinery • construction of bank stabilisation works using the following methodologies as depicted in Appendix A - bank battering of creek bank - rock toe revetment - full height rock revetment - riparian revegetation of bank areas • stabilisation of any other disturbed surfaces • removal of environmental management controls and vegetation protection barriers. Design plans of the proposed works are provided in Appendix A of this REF.
Ancillary facilities (e.g. site compounds, stockpiles, set down areas, vegetation clearing and	Ancillary activities associated with construction of the proposed bank stabilisation works would include: • establishment of a construction compound

Description	Comment
protection requirements, sensitive receivers etc.)	• establishment of a suitable access path to the site to enable the delivery of materials • material stockpiling • equipment laydown • environmental management activities (including erosion and sediment control, tree vegetation protection measures). All ancillary activities would be undertaken in previously cleared areas adjacent the alignment.
Property access and acquisition requirements	All of the proposed works would occur within the private property. Consultation with the landowner would occur prior to undertaking works to ensure safe access is available. No acquisition of land is required.
Estimated construction commencement date	November 2022
Estimated construction completion date	December 2022
Estimated cost of works	[redacted]
Construction hours	Monday to Saturday 7 am to 6 pm. No works Sunday or public holidays.

Table 3.2: Environmental site description

Description	Comment
Include a brief background description of the following environmental assessment elements	
Biodiversity (vegetation communities, flora and fauna species)	The proposed works alignment comprises private property within a rural, agricultural area that has previously been cleared of vegetation. The Tweed Vegetation Management Strategy (TVMS) mapping (Kingston, 1994) identifies two vegetation communities as occurring within the study area, being 'Substantially Cleared of native Vegetation' and 'Not Assessed'. Field investigations indicate that the mapping is generally reflective of the site. Historically the mature vegetation that was present and within the mapped 'Not Assessed' community was naturally occurring riparian vegetation dominated by River she-oak (*Casuarina cunninghamiana*) and revegetated hoop pine (*Araucaria cunninghamii*) and bunya pine (*Araucaria bidwillii*).
Surface water and ground water	The proposed works alignment occurs on the bed and banks of Hopping Dicks Creek.
Flood prone land	The subject site is impacted by flooding during periods of high rainfall as it is located on the banks of Hopping Dicks Creek.
Soils and geology	The soil landscape within the proposed works alignment is identified as the Brays Creek (bc) landscape (Morand, 1996).

Description	Comment
	The Brays Creek landscape is described as upland alluvial plains and valley flats. Slopes 2%, local relief <2 mm elevation 80–140 m. Plains are narrow (200–500 m) and gravel bars common. Vegetation of this landscape is described as extensively cleared open and closed-forest. Soils of this landscape are described as shallow to deep (50–100 cm), well-drained Alluvial Soils and minimal Prairie Soils on floodplain/bar plain. Moderately deep (100–200 cm), moderately well-drained Alluvial Prairie Soils on alluvial plain.
Bushfire risk	The subject site is located within mapped areas of Vegetation Category 1 and bushfire buffer as per the Bushfire Prone Land mapping.
Coastal hazards	The subject site is located outside of coastal hazard mapped areas.
Extreme climate/weather events	The subject site is likely to be impacted by extreme climate and weather events.
Traffic and transport	The proposed works alignment occurs within private property off Limpinwood Road and within the bed and banks of Hopping Dicks Creek.
Noise and vibration	The subject site is situated within a rural area which is considered to be a low noise environment. However, background sources of noise at the site include vehicular traffic from Limpinwood Road and surrounding rural properties.
Scenic value	The subject site is not visible to any public places, however the scenic value would be important to the private property owner.
Property and land use	The proposed works alignment comprises of private property whereby Hopping Dicks Creek passes through. The creek in this location has meandered away from the Crown Land waterway boundaries of the creek and is therefore within private property only.
Public access	The subject site is within private property and therefore access to the general public is restricted.
Aboriginal heritage and historic (non-Aboriginal) heritage	The proposed works footprint is not associated with any State or local heritage items. The subject site is not located within any mapped known or predictive Aboriginal cultural heritage areas according to the Aboriginal Cultural Heritage Management Plan (ACHMP).
Any other environmental elements	Nil.

Table 3.3: Consultation

Description	Comment
Include a description of the public authority and community consultation requirements and outcomes	
Public authorities	Part 2 Division 1 of the State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP) defines the consultation required with relevant public authorities during the assessment process and prior to development commencing. Sections 2.15(1) and 2.15(2) refer to the proponent's consultation requirements with public authorities other than Councils for a specified development. Section 2.15(1) states that a public authority must not carry out specified development that this Policy provides may be carried out without consent, unless the authority has provided notice to respective authorities as per subsection 2.15(1)(a) and (b). The proposed works are not considered specified development.
Community consultation	The proposed design has been developed in consultation with the land owner of where the works would occur. Given the limited nature of works and its relative isolation from surrounding residential areas, no further community consultation would be proposed.

Table 3.4: Permissibility of the proposal

Description	Comment
Relevant planning instrument	State Environmental Planning Policy (Transport and Infrastructure) 2021
Division / section / subsection	Division 25 Waterway or foreshore management activities Section 2.165 Development permitted without consent
Controlling provisions / performance criteria	(1) Despite clause 129A, development for the purpose of waterway or foreshore management activities may be carried out by or on behalf of a public authority without consent on any land. (2) To avoid doubt, subsection (1) does not permit the subdivision of any land. (3) In this section, a reference to development for the purpose of waterway or foreshore management activities includes a reference to development for any of the following purposes if the development is in connection with waterway or foreshore management activities— (a) construction works (d) environmental management works
Comments	In this Division ***waterway or foreshore management activities*** means—

Description	Comment
	(a) riparian corridor and bank management, including erosion control, bank stabilisation, resnagging, weed management, revegetation and the creation of foreshore access ways (b) instream management or dredging to rehabilitate aquatic habitat or to maintain or restore environmental flows or tidal flows for ecological purposes.

Table 3.5: Design options

Description	Comment
Include a description of design constraints and measures taken to avoid and minimise potential environmental impacts	
Avoid / minimise / offset measures	The proposed method of rock revetment and revegetation will reduce further erosion and stabilise the bank in the short and long term. The do-nothing approach will eventually lead to more loss of prime agricultural land. The subject site currently lacks quality habitat for flora and fauna due to the scale of the erosion, and therefore the potential of environmental impacts of the proposed works is negligible. No offsets will be required.

4.0 Duty to consider environmental impacts pursuant to Section 5.5 of the *Environmental Planning and Assessment Act 1979*

4.1 Confirmation of design and construction footprint

This section is to confirm the design and construction footprint of the proposed activity prior to undertaking the environmental impact assessment in the following sections.

Table 4.1: Confirmation of design and construction footprint

Footprint type	Confirmed (Yes/No)	Date confirmed	Comment or outcome
Design footprint	Yes	15/9/2022	Project Manager provided shapefiles via email.
Construction footprint	Yes	15/9/2022	Project Manager provided shapefiles via email.

4.2 Environmental planning requirements

This section is intended to fulfil the duty to consider environmental impacts pursuant to Section 5.5 of the EP&A Act 1979:

"a 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."

Table 4.2: Environmental planning, cultural, and community impact considerations and assessment

Item	Impact considerations	Relevance to proposal? (Yes/No)	Impact identification and assessment (Direct, indirect and cumulative; consider type, extent, size, duration, importance, level of concern/interest) (Consider construction & operation)	Impact evaluation[1] (Low, medium, high)[2]	Mitigation actions[#] (See notes below)
Environmental and ecological considerations					
1	Does the subject site contain Environmental Protection Zones (as defined under the Tweed LEP 2014)?	No	N/A	N/A	N/A
2	Are works within or adjacent to a national park, nature reserve, Aboriginal area, conservation area, marine park or marine reserve?	No	N/A	N/A	N/A
3	Does the subject site contain Matters of National Environmental Significance (NES) (RAMSAR Wetlands, threatened species, migratory birds, World Heritage, National Heritage, nature reserve etc.) or on Commonwealth land (refer Commonwealth Department of Agriculture, Water and the Environment)?	Yes	Refer to Appendix B for the assessment of the matters of NES. No matters of NES were recorded within the subject site. It is expected that [redacted]	Low	A
4	Will the project impact upon Matters of NES described above?	Yes	It is not expected that the proposed bank revetment works will impact upon any matters of NES including the [redacted]	Low	A
5	Are works within or near areas protected by State Environmental Planning Policies (SEPP) for conservation purposes?	No	N/A	N/A	N/A
6	Does the subject site contain NSW endangered or vulnerable	Yes	During the site visit there were no threatened species, populations or ecological communities identified within the disturbance footprint or site.	Low	A

Item	Impact considerations	Relevance to proposal?	Impact identification and assessment	Impact evaluation[1]	Mitigation actions[#]
	species, populations, or ecological communities or their habitats, pursuant to the NSW *Biodiversity Conservation Act 2016* (BC Act) or the *Fisheries Management Act 1994* (FM Act)?		It is expected that the [redacted] would fly over the site. There are no food trees or habitat within the proposed disturbance footprint.		
7	Will the project impact upon NSW endangered or vulnerable species, populations, or ecological communities or their habitats, pursuant to the NSW BC Act or the FM Act?	Yes	It is not expected that the [redacted] would be impacted by the proposed bank stabilisation works which are of short duration and will not impact feeding trees or habitat.	Low	A
8	Does the subject site contain, or is the site adjacent to a flying-fox colony?	No	[redacted] of the subject site at [redacted] and is sufficiently removed. Impacts on [redacted] or their feeding habitat are not expected.	Low	A
9	Does the subject site contain, or is the site adjacent to a raptor nest?	No	N/A	N/A	N/A
10	Does the subject site contain habitat areas falling within an identified wildlife corridor?	No	N/A	N/A	N/A
11	Is native vegetation (including understorey vegetation layers), or native trees likely to be affected? Native vegetation includes marine vegetation (i.e. mangroves, saltmarsh, or seagrass), freshwater wetlands with emergent or floating plants, sedgelands, native grasslands, heath and shrub lands, woodlands, open forests and rainforests?	Yes	Works will be limited to bank stabilisation in the form of rock revetment, bank battering and revegetation, some vegetation may be impacted. Historical revegetation undertaken by the private property owner includes endemic Hoop pines (*Araucaria cunninghamii*) and non-endemic Bunya pines (*A. bidwillii*) and is located on the western side of the waterway in the disturbance footprint. A few of these trees have been lost due to the erosion and others are being undermined. The River she-oak is also present within the waterway and these trees and the banks they are on are also being affected by erosion. It is expected that where possible vegetation will be retained to provide long-term stabilisation of soils, however some trees may be required to be cleared to allow for the correct construction methodology proposed for those sections of the creek.	Low	A

Item	Impact considerations	Relevance to proposal?	Impact identification and assessment	Impact evaluation[1]	Mitigation actions[#]
			No threatened species were identified within the proposed disturbance footprint. Following the construction of the rock revetment, revegetation will be undertaken to replace trees lost during flooding and through the construction process. Revegetation will include endemic species of all strata.		
12	Removing or lopping trees within an area mapped under a Tree Preservation Order?	No	N/A	N/A	N/A
13	Does the proposed works include artificial lighting?	No	N/A	N/A	N/A
14	Does works involve dredging and/or reclamation of water land (refer Department of Primary Industries (DPI) Fisheries)?	Yes	The proposed works involve rock revetement of the banks of the waterway. The waterway has moved westward from the original Crown Land waterway mapping and even more so from the 2022 flooding event. The proposed works are within private property and the revetment works constitute reclamation works and therefore as per section 200 of the Fisheries Management Act a dredge and reclamation permit will be sought from NSW DPI Fisheries prior to any works being carried out.	Low	A, B
15	Would development comprise a fixed or floating structure in or over navigable waters (consultation required with Transport for NSW – Maritime)?	No	N/A	N/A	N/A
16	Working within a Crown Land waterway, Coastal Reserve, or other Crown Land reserve?	No	N/A	N/A	N/A
Historic Archaeological Heritage Considerations					
17	Are works within the ‘place’ of a ‘Heritage Item’ identified on the Register of the National Estate, under the NSW *Heritage Act 1977* or an environmental planning instrument (refer Commonwealth and State Heritage Registers, Schedules of the Tweed Local	No	N/A	N/A	N/A

Item	Impact considerations	Relevance to proposal?	Impact identification and assessment	Impact evaluation[1]	Mitigation actions[#]
	Environmental Plan 2014 (TLEP))?				
18	Are works within or adjacent to a mapped predictive or known location of Aboriginal Cultural Heritage (ACH) identified in the Aboriginal Cultural Heritage Management Plan (ACHMP) 2018? Is it located in or near a declared site or place identified by the Aboriginal Heritage Information Systems (AHIMS) Web Services?	Yes	The proposed works [redacted] Refer to section 4.6 and Appendix D for further information.	Low	A
Community considerations					
19	In regards to specified development described in Division 1 of the SEPP Transport and Infrastructure, is consultation required with other public authorities?	No	N/A	N/A	N/A
20	Will the project involve generating, handling, storing, transporting or disposing of special (e.g. asbestos, clinical, tyres), liquid, hazardous (batteries, coal tar, lead paint waste etc.), or restricted solid waste (e.g. contaminated soil etc.), dangerous goods, or controlled chemicals?	No	N/A	N/A	N/A
21	Involve discharging anything to a waterway or stormwater drain?	Yes	Runoff from the subject site during construction is expected to enter Hopping Dicks Creek. Mitigation measures including erosion and sediment controls will be implemented throughout construction (see Section 10 and Appendix A). Maintenance of these controls will be undertaken periodically and after weather events to reduce impacts on the local	Low	A

Item	Impact considerations	Relevance to proposal?	Impact identification and assessment	Impact evaluation[1]	Mitigation actions[#]
			waterway systems. Without these controls it is expected that a medium impact would occur on these waterways due to sediment entering the system. These controls reduce the sediment entering the waterways and therefore a low impact is expected during construction. Post-construction, all disturbed surfaces will be stabilised and controls will be removed. It is expected that there would be no impacts on waterways post-construction.		
22	Disturb subsurface or above ground utilities – Country Energy, Telstra, local council water and sewer?	No	N/A	N/A	N/A
23	Works requiring interception of a ground aquifer (i.e. dewatering)?	No	N/A	N/A	N/A
24	Works that intercept acid sulfate soils (ASS) or potential acid sulfate soils (PASS)?	No	N/A	N/A	N/A
25	Works involving noise generating activities such as pile drivers, hydraulic hammers, machine-mounted rock breakers, generators or similar equipment in an urban area?	Yes	The use of machinery will be used to undertake the bank stabilisation works. The subject site is located in a private property in a rural location. Works will be short term and will protect the further loss of agricultural land caused by erosion. Mitigation measures identified in Section 10 will be used to reduce noise impacts on the surrounding receptors and therefore the proposed works will cause minor impacts.	Low	A
26	Is it expected that traffic volumes would be similar to the most recent traffic counts? Is it expected that the proposed works would impact traffic?	No	The proposed works are within private property and will not affect traffic on nearby roads.	N/A	N/A
Will works occur in other sensitive or constrained areas as outlined below?					
27	Working on a classified road including freeway, highway, main road, tourist road etc.?	No	N/A	N/A	N/A
28	Using flames during a total fire ban or working within bushfire protected lands?	No	N/A	N/A	N/A
29	Areas or items of high architectural, historical,	No	N/A	N/A	N/A

Item	Impact considerations	Relevance to proposal?	Impact identification and assessment	Impact evaluation[1]	Mitigation actions[#]
	environmental protection or scientific value?				
30	Coastline and dune fields, caves, wetlands (not state significant) or other unique landforms?	Yes	Hopping Dicks Creek is adjacent to the subject site and works will be undertaken within the bed and banks of the waterway. The proposed works will stabilise the banks of the waterway and allow for revegetation to occur. This will improve the waterway in the current locality but also improve the ecosystem as a whole by providing habitat for flora and fauna and reducing sedimentation into the creek. The proposed works will also protect the agricultural land.	Low	A
31	Areas or items of high scenic value?	Yes	The subject site is located in a private property that is only visible to the landowners and therefore has no scenic visibility according to the Draft Scenic Landscape Strategy Interactive Mapping Tool. That being said it is important visually to this property and therefore a basic visual impact assessment is satisfactory. Prior to the flood event that led to the erosion of the creek bank, visually the area was quite scenic with mature River she-oaks, Hoop pines and Bunya pines present. The proposed routine works aim to stabilise the bank via constructed rock revetment and provide revegetation to improve long term stabilisation. During construction the site will have an increase in machinery and personnel. In the short-term negligible adverse visual impacts would be experienced by the property owner. Post-construction, the areas will be stabilised and revegetated with local native species. Post-construction and once the plants have time to mature, it is predicted that in the long-term, visual impacts are expected to have improved within the landscape character.	Low	A
32	Recreational areas (beaches, foreshores, parks, picnic areas, lookouts, national features, tourist areas, tourist roads/routes etc.)?	No	N/A	N/A	N/A
33	Erosion prone areas?	Yes	The creek line is susceptible to further erosion as the waterway has moved westwards. Riparian vegetation and revegetation that was planted historically by the landowner is present, however has been impacted by the flooding and erosion with some losses of trees. Further rain events and flooding has caused erosion and has undermined vegetation present. The proposed works will stabilise the waterway bank by using rock revetment and the revegetation will be a long-term stabilisation method. If the bank stabilisation works was not to occur, further erosion would continue with potential moderate to high impacts to the	Low	N/A

Item	Impact considerations	Relevance to proposal?	Impact identification and assessment	Impact evaluation[1]	Mitigation actions[#]
			surrounding grazing land within the private property. The proposed works will reduce the impact risk.		
34	Bush regeneration areas, dune regeneration areas etc.?	No	N/A	N/A	N/A
35	Areas of high bushfire risk?	Yes	The subject site is within mapped Vegetation Category 1 bushfire prone land and Vegetation Buffer areas as per the 2012 Bushfire Prone Land Mapping.	Low	A
36	Weeds?	Yes	The proposed works will ensure that weeds are not spread.	Low	A
37	Urban bushland or remnant roadside vegetation?	No	N/A	N/A	N/A
38	Major pedestrian routes (e.g. foreshore walks, around sporting venues etc.)?	No	N/A	N/A	N/A
39	Schools, childcare centres, playgrounds etc.?	No	N/A	N/A	N/A
40	Works on private land?	Yes	The proposed works are located wholly within private property. Consultation with the private property owner has and will continue to occur.	Low	A

[1] For further guidance on evaluating impacts, refer to Attachment A, Department of Planning and Environment, Guidelines for Division 5.1 assessments, February 2022.
[2] See the Terms of Reference for the Assessment section of this REF for explanation of low and high adverse impacts (pg 3).

[#]MITIGATION ACTIONS – the following actions are required as part of completing Table 4.1:

A: Include specific environmental safeguards if required within Section 10.0 to avoid, minimise or mitigate impacts of the project.
B: Attach a copy of the relevant approval, licence, permit or record of correspondence.
C: If the subject site contains Matters of National Environmental Significance, and works are not considered to impact upon these species, populations, or ecological communities, then complete the Matters of NES template and append to this application. If impacts are likely, a separate referral is required to the Commonwealth Department of Agriculture, Water and the Environment (AWE) and the project is not eligible to be lodged as an REF (Type A Project) template format. Refer to Part C, Section 5 for guidance on preparing an REF (Type B Project) template assessment.
D: If works are within the SEPP Resilience and Hazards area, and the Action Type is N/A, then comments or further assessment must be appended providing justification. There is no requirement to address matters within the SEPP Resilience and Hazards for activities under Part 5 of the EP&A Act unless required under the SEPP Transport and Infrastructure. Similarly, there are no requirements to undertake a SEPP Biodiversity and Conservation Koala assessment report for activities under Part 5 of the EP&A Act, however, clearing of koala feed trees within the Tweed Coast Comprehensive Koala Plan of Management area must be justified in accordance with Clause 5.4 of that plan.
E: A referral to the relevant authority is required under the SEPP Transport and Infrastructure and a period of 21 days allowed for response. All responses are to be considered and included in this assessment.
F: Undertake relevant database searches as described in Part C, Section 3.2, Section 5.0 and as identified within relevant Activity Specific Procedures in Part D of the Procedure.
G: If the subject site contains NSW endangered or vulnerable species, populations, or ecological communities or their habitats, pursuant to the BC Act or the FM Act, but these species or populations will not use on-site habitats on occasion, or will not be influenced by off-site impacts of the proposal as per the NSW Office of Environment and Heritage (OEH) Threatened Species Test of Significance Guidelines (OEH, 2018), then the project can proceed with caution subject to standard environmental safeguards in Section 10.0.

H: If the subject site contains NSW endangered and vulnerable species, populations, or ecological communities or their habitats, pursuant to the BC Act or the BC Act and the works are not considered to impact significantly upon these (refer to the NSW OEH Threatened Species Test of Significance Guidelines), then details must be appended providing justification. If impacts are likely and non-standard biodiversity mitigation measures are required to offset these impacts, the project is not eligible to be lodged as an REF (Type A Projects) template assessment and an REF (Type B Projects) template assessment must be used. Refer to Part C, Section 5.0, Table C5 of the Procedure for further guidance on REF template selection and to the Activity Specific Procedure – Biodiversity assessment and mitigation for guidance on offsetting approaches and requirements.

I: Councils are exempt from Controlled Activity Approvals under the Water Management Act 2000 (WM Act).

J: Geotechnical investigations would be undertaken prior to the commencement of works to determine the depth of groundwater and the presence of ASS. Should investigations identify that ASS would be impacted during construction, then an ASS management plan would be prepared prior to the commencement of works. Additionally, should investigations identify that groundwater is likely to be intercepted, then a dewatering management plan would be prepared prior to the commencement of works. Refer to the relevant Activity Specific Procedures in Part D of the Procedure for further guidance.

K: A biosecurity matter and a biosecurity impact are described in Section 10 and Section 13 of the Biosecurity Act 2015. Refer to Schedule 3 of the Biosecurity Regulation and the North Coast Regional Weed Strategic Management Plan 2017 for further information on priority weeds and their management.

4.3 Species Impact Statements (SIS) and Biodiversity Development Assessment Report (BDAR) requirements

Section 7.8 of the BC Act states that a proposal that is regarded as an activity that significantly affects terrestrial threatened species and ecological communities, or their habitats, is taken to also significantly affect the environment.

Section 221ZX of the FM Act states that an activity is likely to significantly affect the environment if aquatic threatened species, populations or ecological communities will be affected according to the test in section 220ZZ of the FM Act.

Table 4.3: Requirements of significant impacts

Significant impacts	Test to identify significant impact	Significant impacts likely for this proposal?	Required outcome of tests	Required for this activity? (N/A, REF, SIS, BDAR)
Will there be significant impacts on terrestrial threatened species, ecological communities or their habitats?	• Test of significance Section 7.3 of BC Act.	No (Refer to App. C)	No = REF Yes = REF & SIS or REF & BDAR If proponent elects to provide BDAR in place of SIS, then needs to consider whether proposed activity would exceed the biodiversity offset scheme threshold.	REF
Will there be significant impacts on aquatic threatened species, populations or ecological communities?	• Test in Section 220ZZ of FM Act.	No (Refer to App. C)	No = REF Yes = REF & SIS	REF
Will there be significant impacts on both terrestrial and aquatic threatened species, populations and/or ecological communities?	• Test of significance Section 7.3 of BC Act and • Test in Section 220ZZ of FM Act.	No (Refer to App. C)	No = REF Yes = REF & SIS & BDAR	REF

4.4 Tweed Shire Council's Contaminated Land Policy Assessment

Table 4.4: Response to TSC's Contaminated Land Assessment (V1.1) items of consideration

Item	Consideration	Response
1	Please specify all land uses to which the site has been put, including the current use.	A review of available historical aerial photography from 1961 to 2020 indicates that the subject area has predominantly been utilised for grazing land in a rural area. In the 1961 historical photo, the subject site appears to be the riparian area where some mature native trees were present. The broader surrounding area was mostly cleared of native trees and exists as low stature vegetation (e.g. grasses) presumably used for grazing purposes. Throughout the progression of historical imagery through the decades the subject site has seen changes specifically to the alignment of Hopping Dicks Creek (moving westwards) and the amount of riparian vegetation present. In comparing the 1978 image to that of the 1961 and 1970 images, it is clear that major destruction occurred to this section of the creek. It is unknown what caused the major loss of vegetation—flood, land clearing or other means. From the 1986 imagery the vegetation had begun to regenerate, and between 1990 and 1996 revegetation had occurred as documented by the property owner. The vegetation continued to get denser right through to the latest imagery in 2020. Refer to Figures 5 to 13 in Section 11.
2	Is the proponent aware of uses to which properties adjoining the site have been put? If so, please specify.	No. Refer above.
3	Do any of the uses correlate with the potentially contaminating activities from current or historical land use? Refer to Table 1 in Schedule 1 of the Contaminated Land Policy for potential contaminants of concern.	No. Although agricultural land use is apparent within the subject site and broader surrounds, the historical land use of the subject site prior to the imagery dates is not known, however it is likely that the site has always been used for grazing. No sheds, yards or structures are visible in the sequence of historical aerial photos from 1961 through to 2020 within the disturbance footprint. Vegetation clearing had been undertaken historically in the broader surrounding area and perhaps periodically in the earlier imagery from 1961 to 1990, disturbing surface soils and perhaps adding to the ever-changing alignment of the creek. The closest cattle dip site (the Baileys Dip) is located approximately 495 m south-east from the works footprint, and is removed from the subject site.
4	If the answer to 3 is yes - has there	A site walkover has been undertaken to identify and assess any evidence of historical or recent surface contamination at the site such

Item	Consideration	Response
	been any testing or assessment of the site and, if so, what were the results?	as chemical drums, odours, discoloured patches of earth etc. This investigation did not identify any such evidence within or adjacent to the proposed alignment.
5	Is the proponent aware of any contamination on the site?	No.
6	What remediation work, if any (carried out voluntarily or ordered by a government agency), has been taken in respect to contamination which is or may have been present on the site?	Nil, proceed with caution. Works would cease immediately if any potential source of contamination (e.g. soil discolouration, odours or asbestos material) is uncovered during construction. In such instances, further site investigations would be undertaken to determine if additional investigations or remediation in accordance with a council approved Remediation Action Plan would be required.

Refer to the following document for further information: Tweed Shire Council Contaminated Land Policy Version 1.1, November 2007.

TABLE NOTES:

A: Refer to the Activity Specific Procedure – Preliminary contaminated land use assessments in Part D of the Procedure for further guidance.

B: In the event that contamination is suspected, chemical testing should be undertaken and a contamination assessment report appended to confirm that contaminated lands are not present and /or would not be impacted by the proposal.

C: Under section 60 of the Contaminated Land Management Act 1997, a person whose activities have contaminated land or a landowner whose land has been contaminated is required to notify NSW Environment Protection Authority (EPA) when they become aware of the contamination.

4.5 Preliminary acid sulfate soils assessment

Table 4.5: Preliminary acid sulfate soils assessment

Item	Consideration	Response
1	Is the project site located within a known mapped ASS constraint area as per Table 4.4 of classes below? If yes, please specify. If no, further assessment for ASS is NOT required.	No. The 1:25000 ASS Planning maps indicate that the subject site is not within any Class 1, 2, 3, 4 or 5 mapped area. No further assessment required.
2	Will the projects maximum depth of excavation impact the identified ASS class? Please specify.	N/A
3	Has soil sampling and analysis been carried out to determine if an Acid Sulfate Soils Management Plan (ASSMP) is required? Please specify.	N/A
4	Based on the above items is an ASSMP required? Please specify.	N/A

Refer to the following documents for further information: TSC Acid Sulfate Soil Management Plan for Minor Works and Acid Sulfate Soil Manual (published by the Acid Sulfate Soil Management Advisory Committee (ASSMAC) 1998).

TABLE NOTES:

A: Refer to the Activity Specific Procedure – Preliminary contaminated land use assessments in Part D of the Procedure for further guidance.

B: In the event that ASS is suspected, chemical testing should be undertaken and an assessment report appended to confirm that ASS lands are not present and /or would not be impacted by the proposal and therefore requiring an ASSMP.

C: Under Part 7 Additional Local Provisions, Clause 7.1 ASS of the TLEP (2014), a person must not, without development consent, carry out works on land shown as being Class 1, 2, 3, 4 or 5 land on the series of maps held in the office of the Council and marked “Acid Sulfate Soils Map”, being the works specified for the class of land.

Table 4.6: Classes of ASS as per ASS Maps (TLEP 2014)

Class of land	Specified works
1	• Any works.
2	• Works below the natural ground surface. • Works by which the water table is likely to be lowered.
3	• Works more than 1 metre below the natural ground surface. • Works by which the water table is likely to be lowered more than 1 metre below the natural ground surface.
4	• Works more than 2 metres below the natural ground surface. • Works by which the water table is likely to be lowered more than 2 metres below the natural ground surface.
5	• Works within 500 metres of Class 1, 2, 3 or 4 land that is below 5 metres Australian Height Datum and by which the water table is likely to be lowered below 1 metre Australian Height Datum on adjacent Class 1, 2, 3 or 4 land.

4.6 Aboriginal cultural heritage preliminary assessment

As explained within the Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (DECC&W, 2010), the NSW Aboriginal cultural heritage due diligence assessment is a code of practice developed to assist individuals and organisations to exercise due diligence when carrying out activities that may harm Aboriginal objects and to determine whether they should apply for consent in the form of an Aboriginal Heritage Impact Permit (AHIP). The *National Parks and Wildlife Act 1974* (NPW Act) provides that a person who exercises due diligence is determining that their actions will not harm Aboriginal objects and has a defence against prosecution for the strict liability offence if they later unknowingly harm an object without an AHIP.

Tweed Shire Council has developed a Preliminary Aboriginal Cultural Heritage Assessment (PACHA) to ensure Council infrastructure projects minimise the risk of harm to Aboriginal places and objects of cultural heritage significance. The objective is to identify those projects with a significant risk of harm to Aboriginal cultural heritage and conversely, those projects for which the risk of harm is low. Projects determined to have a high risk of harm to ACH require a more detailed assessment in the form of an Aboriginal Cultural Heritage Assessment Report (ACHAR) and potentially an Aboriginal Heritage Impact Permit (AHIP). Those determined to have a low risk of harm to ACH may proceed with caution without an ACHAR or AHIP.

A PACHA is provided in Appendix D. In summary, the PACHA found that harm to Aboriginal places and objects can be avoided and an ACHAR and AHIP is not required.

5.0 Clause 171(2) factors

According to clause 171(2) of the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation 2021), Council must take into account the following factors when consideration is being given to the likely impact of the activity on the environment.

Table 5.1: Clause 171(2) assessment conditions

Matters for consideration	Likely impact (nil/positive/negative)
(a) Any environmental impact on a community	The assessment of this REF has demonstrated that there would be minimal environmental impact on the community.
(b) Any transformation of a locality	The proposed activity would result in a temporary transformation of the locality during construction in association with construction machinery, equipment and materials. Following construction, the locality would be reflective of the current situation.
(c) Any environmental impact on the ecosystems of the locality	The environmental impact on local ecosystems is expected to be minimal based on the minor scope of works and short duration of construction works.
(d) Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality	There would be a minor reduction in the aesthetic value of the locality due to the temporary presence of construction workers and associated plant and control measures.

Matters for consideration	Likely impact
(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	The proposed activity is not expected to negatively impact on any locality, place or building having aesthetic, anthropological, archaeological, architectural, or historic value. Long-term, the revegetation and increase in canopy cover and riparian vegetation is likely to have a beneficial impact on scenic quality.
(f) Any impact on the habitat of protected animals (within the meaning of the Biodiversity Conservation Act 2016)	The site is disturbed from past and current land uses. The site has minimal habitat value for fauna. Accordingly, the proposal would not have a significant impact on habitat of protected fauna species.
(g) Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air	The site is disturbed from past and current land uses. The site has minimal habitat value for fauna. Accordingly, the proposal would not have a significant impact on habitat relied upon by threatened, endangered or vulnerable species.
(h) Any long-term effects on the environment	Mitigation measures listed in Section 10 of this REF would be implemented during construction to ensure that there are no long-term effects on the environment. Creek bank erosion stabilisation includes the use of vegetation and bio-engineered design that maximise ecological and amenity values and is a key environmental sustainability principle of the Tweed Shire Council Draft Environmental Sustainability Prioritisation Strategy – Council operations and environmental programs 2015–2020. Improving ecosystem health is a key priority identified in the Tweed Shire Council Climate Change Management Policy 2020. The proposed works of stabilising the waterway bank and reducing sedimentation into the waterway will work to improve the surrounding ecosystem health.
(i) Any degradation of the quality of the environment	Construction works would likely result in some minor short-term impacts on the environment. Mitigation measures as listed in Section 10 of this REF would ensure that these impacts do not degrade the quality of the environment in the longer term.
(j) Any risk to the safety of the environment	The proposed activity would have minimal risk to the safety of the environment. A range of risk management measures would be utilised during construction which are summarised in Section 10 of this REF.
(k) Any reduction in the range of beneficial uses of the environment	The proposed activity would not reduce the overall range of beneficial uses of the environment.

Matters for consideration	Likely impact
(l) Any pollution of the environment	Mitigation measures as listed in Section 10 of this REF would minimise the risk of pollution to the environment during works.
(m) Any environmental problems associated with the disposal of waste	There would be no environmental problems associated with the disposal of waste. There would be only a minor contribution of construction waste to landfill.
(n) Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply	Some demand for additional materials would be generated as part of the proposed development. There would also be a minor contribution to reliance upon non-renewable fuel resources during construction.
(o) Any cumulative environmental effect with other existing or likely future activities	Construction machinery and plant relies on non-renewable fuel which contributes to atmospheric greenhouse gasses and, subsequently, anthropogenic climate change. Council's operations generate greenhouse gas emissions primarily from the use of fossil-fuel powered electricity (79% at July 2019), from burning transport fuels across Council's fleet (15% at July 2019) and from nitrous oxide and methane emissions from wastewater treatment plants (6% at July 2019). Although there are currently limited alternative energy sources for Council's plant and machinery, Council's Renewable Energy Action Plan (REAP) have set a target of reducing its greenhouse gas emissions from electricity use by 50% by 2025. Although there is currently a cumulative environmental effect from the generation of greenhouse gas emissions, measures listed within Council's REAP will mitigate long-term effects.
(p) Any impact on coastal processes and coastal hazards, including those under projected climate change conditions	The subject site is located outside the coastal hazard zone as per the Tweed Shire Coastal Hazards Assessment completed in November 2013. Therefore, the proposal is unlikely to impact upon coastal processes or hazards.
(q) Any applicable local strategic planning statements, regional strategic plans or district plans made under the Act, Division 3.1	The Local Strategic Planning Statement 2020 (LSPS) themes align with 4 goals from the North Coast Regional Plan 2036 (NCRP) being: 1. Natural environment 2. Thriving economy 3. Liveable communities 4. Diverse housing and lifestyles.

Matters for consideration	Likely impact
	The planning priorities within the LSPS are broadly consistent with the NCRP and the Community Strategic Plan 2017–2027 (CSP) strategic direction. This project incorporates the following planning priorities of the LSPS: • Planning priority 1: Protect the Tweed's significant natural environment, resources and landscape qualities, while cultivating sustainable growth and development, which promotes the health and vitality of the community. • Planning priority 2: Promote, protect, conserve and enhance the Tweed's high scenic quality, biological and ecological values for future generations and ecosystem health. • Planning priority 3: Increase resilience and adapt to the impacts of natural hazards and climate change to ensure our future prosperity and wellbeing. • Planning priority 10: Ensure productive agricultural land is protected and sustainably managed while creating appropriate, sensitive and diverse economic opportunities through compatible boutique industries, rural living and recreation. • Planning priority 12: Foster enhanced partnerships and collaboration with local Aboriginal and Torres Strait Islander communities. This project incorporates the following goals from the CSP: • Goal 1.1: Protect and manage the environment and natural beauty of the Tweed for current and future generations, and ensure that ecologically sustainability and climate change consideration underpin decision making in Council. • Goal 1.2: Protection of people and property by managing the risk of flooding and its impacts on property owners, the environment and the broader community. • Goal 3.2: Provide places for people to live, work, visit, play and enjoy the Tweed.
(r) Any other relevant environmental factors	No other relevant environmental factors require consideration.

6.0 Publication requirements

According to clause 171(4) of the EP&A Regulation 2021, Council must publish REFs and all relevant information if identified in Table 6.1.

Table 6.1 Clause 171(4) publication requirements

Publication requirements[1, 2]	**Publication requirement** (yes or no)	**Published** (n/a, TSC website)
A capital investment value of more than $5 million	No	N/A
An approval or permit for activity that requires approval under:		
• FM Act sections 144, 200, 205 or 219	Yes	TSC website
• *Heritage Act 1977* section 57	No	N/A
• *National Parks and Wildlife Act 1974* section 90	No	N/A
• *Protection of the Environment Operations Act 1977* sections 47–49 or 122	No	N/A
If the determining authority considers it to be in the public interest[3]	No	N/A

TABLE NOTES:

1: There are allowances for exceptional circumstances where publication is not required; this is at the Planning Secretary's discretion.

2: Where certain parts of this REF document is sensitive, such as sensitive cultural information requested to be redacted by Aboriginal parties or cyber security impacts and mitigation measures, in these instances, the REF document content can be redacted where required. The REF document (excluding sensitive information) needs to be available online

3: For further guidance refer to Point 6 in Attachment A of the Department of Planning and Environment, Guidelines for Division 5.1 assessments, February 2022.

4: The review must be published before the activity commences; or if publishing the review before the activity commences is not practicable—as soon as practicable, and no later than 1 month, after the activity commences.

7.0 Supporting documentation

Table 7.1 below provides a summary of additional assessment, management plans, permits, licences and approvals required for the proposed activity.

Table 7.1: Summary of additional assessments, plans and approvals

Checklist of additional assessments, management plans, permits, licences, or approvals:	Required? (yes/no)	Attached? (yes/no)
DATA BASE SEARCHES		
NSW Wildlife Atlas Flora and Fauna Records Search	Yes	No – Information on file and incorporated into Appendix C.
Commonwealth Protected Matters Search	Yes	No – Information on file and incorporated into Appendix B.
Aboriginal Heritage Information Management System search (AHIMS)	Yes	No – Information on file
State Heritage Inventory	Yes	No – Information on file
Maritime Heritage Database	No	N/A
ASSESSMENTS		
Assessment of matter of National Environmental Significance	Yes	Yes. Refer to Appendix B
Contaminated Lands Assessment	No	Due diligence assessment provided in Section 4.4.
Preliminary Flora and Fauna Assessment	Yes	Yes. Refer to Appendix C
MANAGEMENT PLANS		
Acid Sulfate Soil Management Plan for Minor Works	No	N/A
Project-specific Acid Sulfate Soil Management Plan	No	N/A
Dewatering Management Plan	No	N/A
Landscape Management Plan	No	N/A
Vegetation Management Plan	No	N/A
Waste Management Plan	Yes	Yes. Refer to Appendix E. All waste disposal will follow TSC's Field Guide for Waste Disposal Procedure.
PERMITS / LICENCES / APPROVALS		
A water access licence (WAL) or water supply works approval under the Water Management Act 2000.	No	N/A
NSW DPI Fisheries Permit	Yes	A dredge and reclamation permit will be sought from NSW DPI Fisheries prior to works being undertaken.

NSW DPE Crown Lands – General or Short-term Licence	No	N/A
CONSULTATION		
NSW Environment, Energy and Science (EES)	No	N/A
Transport for NSW	No	N/A
PUBLISHING REQUIREMENTS		
Sensitive information required to be redacted prior to publishing online	Yes	Sensitive information will be redacted in this document prior to publishing online.

Link to information on file:

[redacted]

8.0 Conclusions

This REF has assessed the proposed activity and any potential impacts. The activity is unlikely to significantly affect the environment, and therefore an EIS is not required.

The activity is unlikely to significantly affect threatened species, populations, ecological communities or their habitats and therefore an SIS and/or BDAR is not required.

9.0 Certification and determination

Table 9.1: Certification by Environmental Scientist preparing the assessment

Certification (person preparing the assessment)	
I certify to the best of my knowledge that: a. this REF provides a true and fair review of the proposed activity in relation to its likely effects on the environment. It assesses to the fullest extent possible all matters affecting or likely to affect the environment as a result of the proposed activity b. this REF has established that the activity is not likely to significantly affect the environment and an Environmental Impact Statement is not required c. the REF has concluded that there will be no significant impacts on matters of national environmental significance or any impacts on Commonwealth land d. the proposal should proceed subject to the implementation of all environmental safeguards and management actions identified in the REF and compliance with all other relevant statutory approvals, licenses, permits and authorisations. Note 1: Projects with unacceptable impacts are recommended not to proceed (with reasons stated) or be subject to further investigation and assessment in accordance with an Environmental Impact Statement process. Note 2: The imposition of environmental safeguards and management actions identified in the REF are to minimise any adverse impact the activity may cause and to give effect to the objectives of Part 5 of the Environmental Planning and Assessment Act, 1979.	
Name	[redacted]
Signature	
Position	
Date	

Table 9.2: Review and final determination under delegated authority

Review and Final Determination (person with delegated authority to review and determine the assessment)	
I certify: • to the best of my knowledge that based on the completed REF and my knowledge of the project, the assessment has been adequately completed, and the conclusion as to the likely environmental impact of the project is reasonable and the project can proceed subject to the relevant management measures and environmental safeguards and other relevant authorities described within the REF. • 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 Regulation and the Guidelines approved under clause 170 of the EP&A Regulation, and the information it contains is neither false nor misleading.	
Name	[redacted]
Signature	

Position	[redacted]
Date	

Table 9.3: Project client signoff

Project Client Signoff	
I confirm that: • the REF provides an accurate description of the project scope of works • the mitigation measures proposed within the REF are budgeted for and form part of the final project scope of works.	
Name	[redacted]
Signature	
Position	
Date	

Table 9.4: Project manager signoff

Project Manager Signoff	
I confirm that: • I have reviewed the design and construction footprint as assessed within this REF • the mitigation measures proposed within the REF will be implemented as described during construction and operation of the works • any changes to the project scope of works or disturbance footprint will be communicated to Council's Engineering Division Environmental Scientist, for further assessment (if required).	
Name	[redacted]
Signature	
Position	
Date	

10.0 Project mitigation measures

Table 10.1: Project mitigation measures

General and/or non-standard mitigation measures	Code
The activity is to be completed in general accordance with the Review of Environmental Factors.	**GNS1**
All work associated with this activity is to be carried out so as not to cause a nuisance to residents in the locality from noise, water or air pollution.	**GNS2**
All construction and/or demolition site work including the entering and leaving of vehicles is limited to the following hours, unless otherwise permitted by Council: • Monday to Saturday from 7.00 am to 6.00 pm • No work to be carried out on Sundays or Public Holidays.	**GNS3**
All construction personnel working at the site would be inducted prior to commencement of works.	**GNS5**
A site-specific erosion and sediment control plan would be prepared prior to works commencing.	**GNS7**
All required erosion and sediment control works would be installed and maintained in accordance with the Sediment and Erosion Control Plan and in accordance with the Blue Book – *Managing Urban Stormwater – Soils and Construction.*	**GNS8**
Works to be undertaken in accordance with the NSW DPI Fisheries permit conditions.	**GNS-HDC-1**
Waste disposal will follow TSC's Field Guide for Waste Disposal Procedure in Appendix E.	**GNS-HDC-2**

Flora and fauna	Code
Pre-construction	
Vegetation that is to be retained, including high conservation zones, is to be clearly identified and delineated from the construction footprint. High-visibility temporary fencing (e.g. scrim or flicker tape) identifying no-go zones is to be installed prior to the commencement of construction works.	**F&F1**
Where construction works or movement of materials are considered likely to damage trees (trunks, branches or roots), precautionary measures including trunk and branch protection in line with Section 4 of AS4970-2009 would be installed.	**F&F2**
In the event that threatened fauna species are identified within the disturbance footprint, construction would avoid disturbance of the individuals and, if necessary, the individuals would be relocated by experienced wildlife handlers.	**F&F4**
If nests and/or eggs of threatened species are identified within the disturbance footprint, the construction works would be postponed until the eggs are hatched and the hatchlings have dispersed on their own accord or an experienced wildlife handler has safely relocated them.	**F&F5**
All machinery used on site is to be clean – i.e. tracks, vehicle tyres, buckets and attachments are to be visibly free of soil and plant material to minimise the risk of introduction and spread of weed propagules.	**F&F9**

Flora and fauna	Code
During construction	
Earthworks are to be managed such that areas outside the scope of the works remain undisturbed as far as possible and vegetation clearing is kept to the absolute minimum required.	**F&F10**
No construction materials, stockpiles, or construction equipment including heavy vehicles and machinery shall be located or parked within the drip line of trees adjacent the project.	**F&F11**
All works in regards to the management of vegetation (pruning of roots or branches or removal of identified trees) would be supervised by a suitably qualified arborist.	**F&F12**
Remove all waste containing weeds and seeds from the site and dispose of so that the spread of weeds is minimised.	**F&F18**
When controlling weeds, refer to measures stipulated by the *New South Wales Weed Control Handbook – A guide to weed control in non-crop, aquatic and bushland situations.*	**F&F19**
If aquatic snags are present within the disturbance footprint at the time of construction, they require relocation in accordance with the following guidelines: • Snags are to be realigned and/or relocated to a zone of low velocity and at an angle of 20^{o} to 40^{o} to the bank facing downstream. The location is to be determined in consultation with the Project Environmental Scientist. • Snags with rootballs are to be aligned so that the root-ball is against the bank and at the upstream end.	**F&F20**
Post-construction	
Areas which are disturbed during construction and not permanently transformed are to be revegetated.	**F&F22**

Erosion and sediment control	Code
Pre-construction	
All required erosion and sediment controls would be in place prior to the commencement of work and maintained until all works are completed.	**ESC1**
During construction	
Where practicable, construction works would be staged to minimise the area of disturbance at any one time.	**ESC2**
Works would be stopped if unsuitable weather conditions are predicted, such as during and after heavy rain.	**ESC4**
The condition of sediment control structures would be monitored and maintained in proper working order throughout the time they are in place. They would be kept clear of debris at all times and cleared of sediment if filled >50% capacity.	**ESC5**
Stockpile sites would be located in existing cleared areas away from drains and surface water flows and protected with an upslope diversion bund and down slope sediment fencing (if required).	**ESC6**
'Clean' run-on water would be diverted around the disturbance area.	**ESC7**
Construction plant should be floated on-site using established access roads/tracks or areas previously cleared of vegetation.	**ESC8**

Erosion and sediment control	Code
In the event that significant tracking of mud and soil occurs on adjacent roads, cleaning of the road will be undertaken as soon as practically possible.	**ESC10**
Post-construction	
Following completion of construction works, the site would be cleared of all debris, waste soil and foreign matter.	**ESC11**
All disturbed surfaces would be reinstated and stabilised as soon as possible after completion using turf and/or grass seed.	**ESC12**
All temporary erosion and sediment control structures would be removed once the site is stabilised.	**ESC13**

Water quality management	Code
During construction	
In-stream sediment fences are to be provided at all work sites where riparian or in-stream works are to be undertaken and sediment is to be mobilised with a potential endpoint within the waterway**.**	**WQ1**
In-stream sediment fences are to remain in place throughout the duration of works.	**WQ2**
In-stream sediment fencing is to cover the entire depth of the water column and is to be weighted or installed in a manner such that the bottom of the sediment fence is flush with the riverbed directly downstream of the area of works.	**WQ3**
In-stream sediment fencing is not to cover the full width of the stream in order to allow for fish passage.	**WQ4**
In-stream sediment fencing is to surround the work footprint and be installed as close as possible to the work area.	**WQ5**
In-stream sediment fencing is to consist of geofabric of suitable mesh size such that the smallest anticipated sediments will be trapped within the mesh.	**WQ6**
In-stream sediment fences can either be supported on a floating boom or staked in place with star pickets or similar. Floating booms are appropriate in deeper channels and/or in slow moving streams. Stakes are more appropriate in shallow streams and/or where increased velocity is experienced.	**WQ7**
The condition of sediment control structures would be monitored and maintained in proper working order throughout the time they are in place. They would be kept clear of debris at all times and cleared of sediment if filled >50% capacity.	**WQ8**
There is to be no release of dirty water into drainage lines and/or waterways.	**WQ9**
Visual monitoring of local water quality (i.e. turbidity, hydrocarbon spills/slicks) is to be undertaken on a regular basis to identify any potential spills or deficient erosion and sediment controls.	**WQ10**
Water quality control measures are to be used to prevent any materials (e.g. concrete, grout, sediment etc.) entering drain inlets or waterways.	**WQ11**
All materials including paints, coatings and fuels used when working over a waterway are to be appropriately contained and hand held tools tethered correctly.	**WQ12**
During construction, sediment from silt curtains will be regularly cleared, and weather forecasts will be monitored to reduce the potential for sediment release during flood events.	**WQ17**

Water quality management	Code
To minimise the risk of water pollution and disturbance to the streambed substrate, machinery is not to enter or work from the waterway without prior written approval.	**WQ18**
To avoid fines, clay and other sediments unnecessarily entering the waterway, only clean rock is to be used for construction works within the waterway.	**WQ19**

Land use and amenity	Code
During construction	
The proposed activity would be managed such that the development footprint is limited to the extent necessary to complete the scope of works.	**LUA1**
All plant, equipment, materials and waste would be removed from the site at the completion of works.	**LUA2**

Noise and vibration	Code
During construction	
The operation of plant and equipment would be restricted to standard hours of 7:00 am to 6:00 pm Monday to Saturday. No work would be undertaken on Sunday or public holidays.	**N&V3**
Trucks and equipment would not arrive or queue outside the site before 7 am Monday to Saturday.	**N&V4**
Operating periods for particularly noisy activities (i.e. rock breaking/drilling, if required) would be reduced where possible to provide respite periods.	**N&V5**
Machines/equipment would be turned off when not in use or throttled down to a minimum.	**N&V6**
Reversing of vehicles would be minimised where possible to alleviate the annoyance of beeping reverse alarms (or less tonal 'broadband' or 'quacker' type alarms would be utilised).	**N&V7**

All reasonable steps shall be taken to muffle and acoustically baffle all plant and equipment. In the event of complaints from the neighbours, which Council deem to be reasonable, the noise from the construction site is not to exceed the following:
• Short Term Period – 4 weeks.
  ○ LAeq, 15 min noise level measured over a period of not less than 15 minutes when the construction site is in operation, must not exceed the background level by more than 20dB(A) at the boundary of the nearest likely affected residence.
• Long term period – the duration.
  ○ LAeq, 15 min noise level measured over a period of not less than 15 minutes when the construction site is in operation, must not exceed the background level by more than 15dB(A) at the boundary of the nearest affected residence.
	N&V8

Noise and vibration	Code
All plant would be maintained in good condition, with all reasonable and feasible acoustic treatments (i.e. residential mufflers and plant enclosures) installed and maintained (refer to AS 2436 – 1981 'Guide to noise control on construction, maintenance and demolition sites').	**N&V9**
Any stationary equipment (e.g. generators) would be located as far as possible from residential receptors.	**N&V10**
Plant operators would be instructed to operate equipment in a manner that does not generate unnecessary noise, such as: • avoiding excessive revving • avoiding dragging objects or dropping objects from a height • minimising impact with solid objects where possible • using excavator bucket heads or rock claw attachment to move solid objects • using excavator bucket, claw or rock ripper pick in preference to rock drillers or splitters, where possible • turning off machines/plant equipment when not in use or throttled down to idling.	**N&V11**

Air quality management	Code
During construction	
All plant and machinery would be serviced at regular intervals to minimise exhaust emissions.	**AQ1**
The constructor would observe local meteorological conditions and predicted forecasts on a daily basis and prepare site for extreme weather events (i.e. high winds, rainfall).	**AQ2**
Works would be staged, where practicable, to minimise the area of disturbance at any one time.	**AQ3**
All necessary precautions shall be taken to minimise impacts from dust during construction works and from construction vehicles.	**AQ4**
Dust dispersion would be managed via stockpile control (e.g. soil stockpiles covered during high wind conditions), erosion and sediment controls, and wetting down if required.	**AQ5**
Any transport trucks would be covered during journeys to and from the site.	**AQ6**
Vehicles would be switched off when not in use.	**AQ7**
Dust screens will be considered where necessary to protect adjacent residences from wind-blown dust.	**AQ8**
All stockpiles, exposed areas, unsealed trafficable areas and compound areas will be covered where practicable (using plastic, mulch, hydromulch, etc.) or wet down as required to minimise wind-blown and traffic generated dust. Wetting down of these areas should not be done to the extent that run-off occurs.	**AQ9**
Post-construction	
Disturbed areas would be stabilised once works are complete, or progressively where appropriate.	**AQ10**

Traffic Management	Code
During construction	
Parking for construction workers would be accommodated within the construction footprint and existing cleared areas within the nearby road reserve.	**TM4**

Contaminated lands	Code
During construction	
Works are to cease immediately if any potential source of contamination is uncovered during works (e.g. chemical drums). In such an instance remediation in accordance with a Council approved Remediation and Validation Action Plan would be required.	**CLM1**
All imported fill material shall be from an approved source. Prior to commencement of construction, details of the source of the fill, description of the material, and evidence that the material is free of contaminants, must be produced.	**CLM2**

Hazard management	Code
During construction	
Appropriate spill kits, advocated for use in association with fuels and chemicals are to be maintained on-site. These are to include spill booms and other methods aimed at the containment of fuels and chemicals spilled within the aquatic environment.	**HAZ5**
Fuels and chemicals are to be stored off-site, however, if required to be stored on-site, they are to be located in a bunded area away from drainage lines.	**HAZ6**
No refuelling is recommended within the subject site. If however, refuelling is required at the subject site, areas designated for the storage, refuelling and maintenance of plant are to be established where native vegetation has previously been cleared and at least 30 m from a waterway.	**HAZ7**
Forecast checks of the Bureau of Meteorology site would be undertaken daily. In the event that heavy rain is predicted, arrangements are to be made immediately to remove any plant and equipment from within the banks of the waterway prior to the rain event. All plant and equipment would be removed to higher ground above the 1 in 100 year flood level.	**HAZ8**
In the event of flooding, no workers would be directed into flood waters.	**HAZ9**
Any debris and spoil accumulated within the works site as a result of flooding would be removed to the designated stockpile area.	**HAZ10**
All environmental controls would be reinstated as soon as possible following flooding.	**HAZ11**

Cultural heritage management	Code
During construction	
If an Aboriginal object or objects, or any cultural heritage material is identified during the works, all works would stop immediately and the Manager Infrastructure Deliver, Tweed Shire Council (TSC) notified. The TSC contact is to advise the Tweed Byron Local Aboriginal Land Council (TBLALC) Aboriginal Sites Officer (on 07 553601926) and OEH. No works or development may be undertaken until the required investigations have been completed and any permits or approvals obtained, where required, in accordance with the *National Parks and Wildlife Act 1974*. It is possible that in such a case there may be a necessity to apply for an AHIP and further investigations may be required. The *National Parks and Wildlife Act* requires that, if any person finds an Aboriginal object on land and the object is not already recorded on AHIMS, they are legally bound under Section 89A of the Act to notify OEH as soon as possible of the object's location.	**CH1**
In the event that objects suspected of being of Aboriginal Cultural Heritage significance are uncovered, the TSC ACHMP unexpected finds procedure must be followed.	**CH2**
If human remains are found during the works, then all works shall cease immediately. The area must be secured within an exclusion zone to prevent unauthorised access and the NSW Police and OEH must be informed as soon as possible.	**CH3**
If non-aboriginal heritage is discovered, work should stop and the item demarcated. An in-situ heritage assessment is required to determine whether the item is a relic. If the item is concluded to be a relic, the NSW Heritage Council are to be contacted as soon as practical. The NSW Heritage Council would advise the appropriate course of action to be taken. **N.B.** The Heritage Act 1977 defines '*Relic'* as meaning any deposit, artefact, object or material evidence that: (a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and is of State or local heritage significance.	**CH4**

Waste minimisation and management	Code
During construction	
All reasonable efforts will be made to avoid and minimise waste and to reuse or recycle where possible.	**WM3**
Separate waste and recycling bins will be provided on site for the removal of workers and building rubbish.	**WM4**
All waste bins on site will have self-closing lids preventing waste from being airborne.	**WM5**
All general rubbish and construction waste would be removed from the site and disposed of in an appropriate bin or Council waste recovery facility.	**WM6**

11.0 Figures and plates

Figure 1: Locality (pink polygon = proposed disturbance footprint)

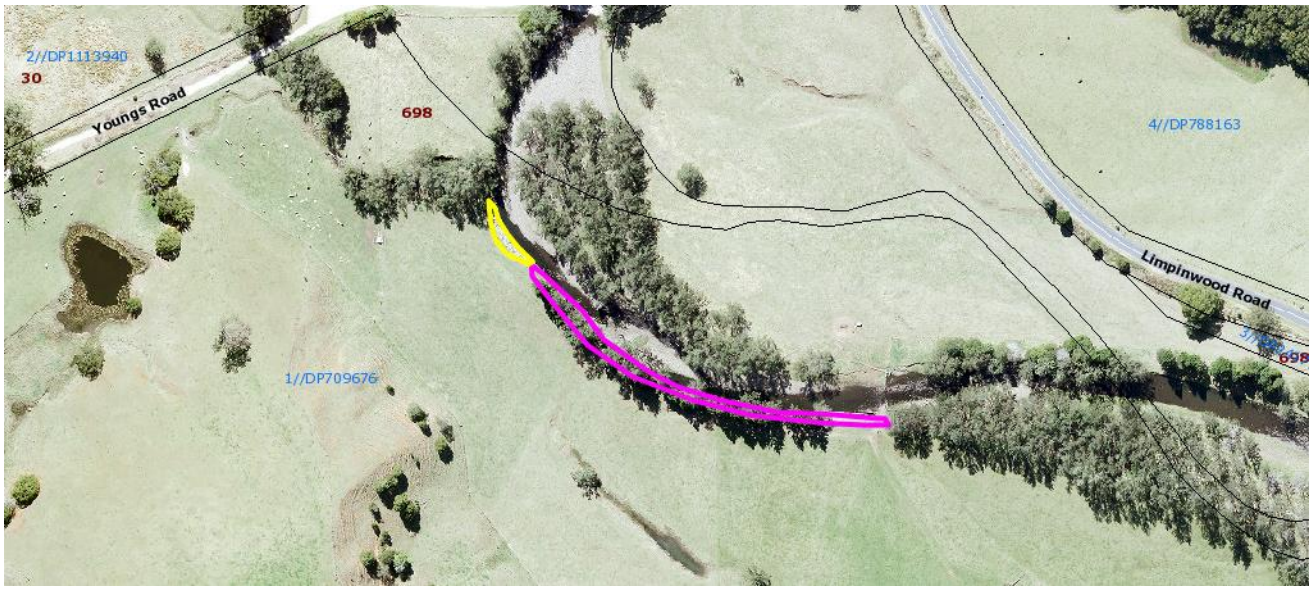


Figure 2: Subject site (pink polygon = proposed disturbance footprint; yellow polygon = historic successful revetment)

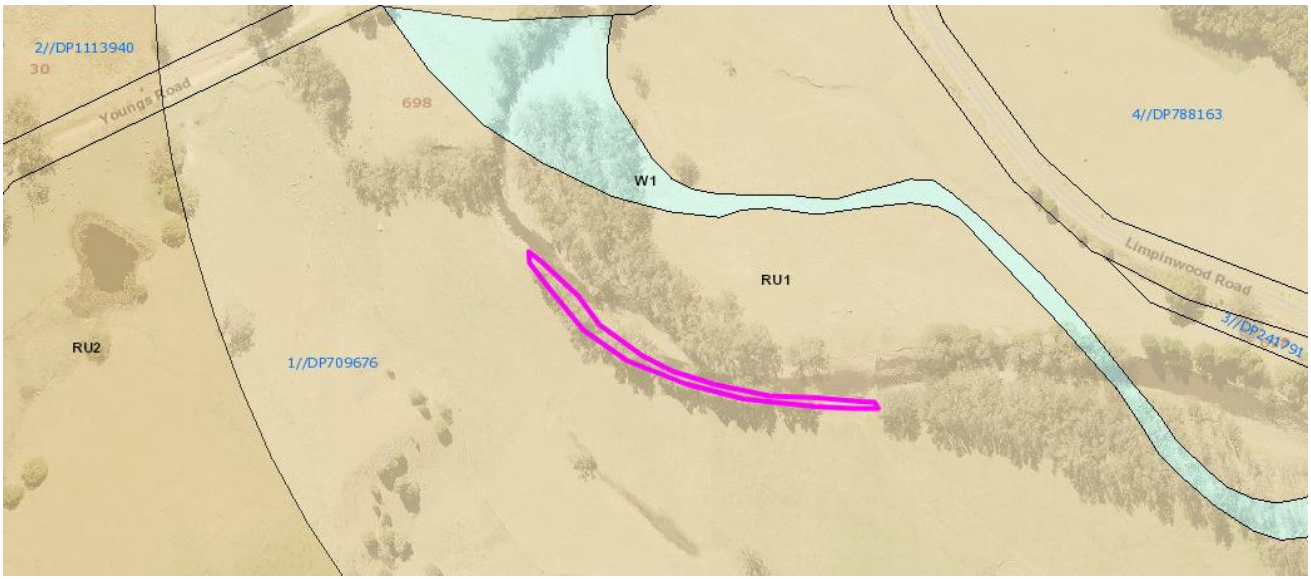


Figure 3: Land zoning – proposed works outside of the mapped waterway

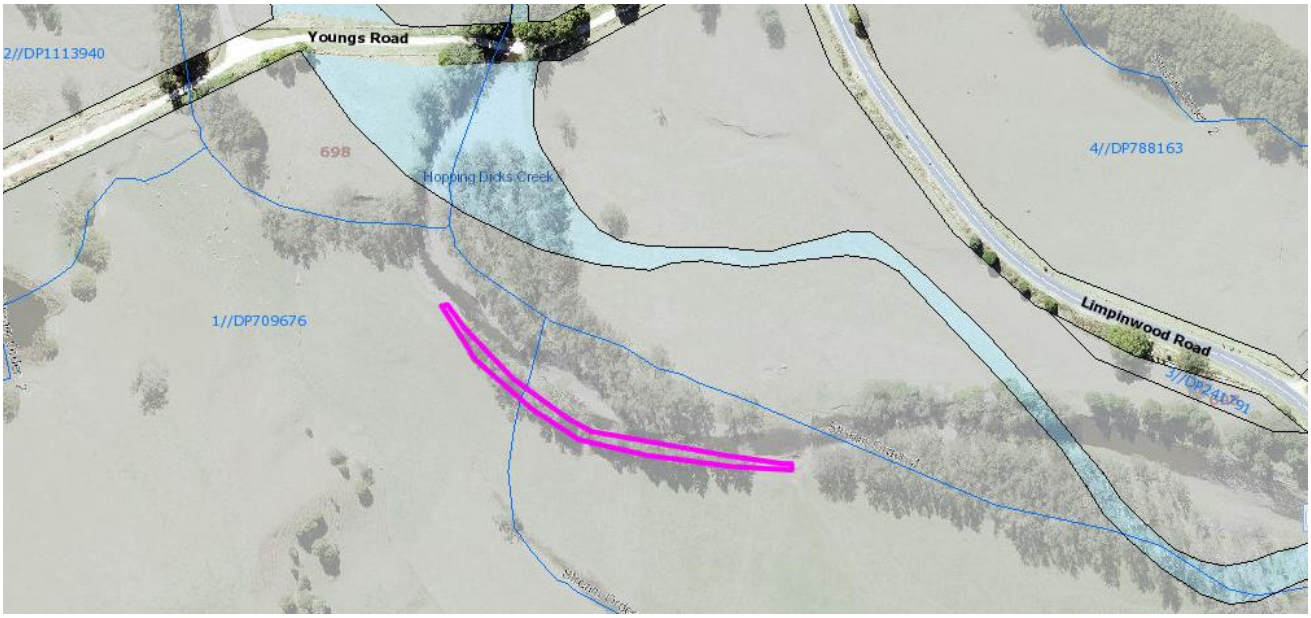


Figure 4: Land tenure – proposed works outside of the crown land waterway (blue shading = mapped Crown waterway; grey shading = freehold; blue line = stream order mapping)

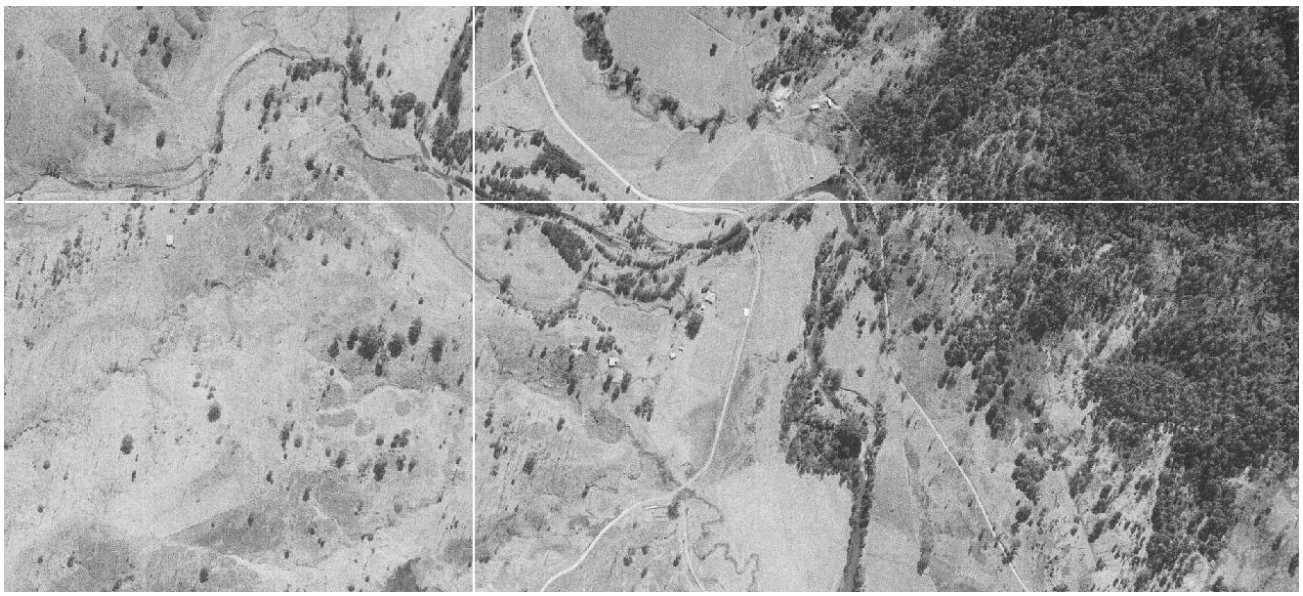


Figure 5: Historic aerial imagery from 1961, white cross hairs indicate subject site (source: Historical Imagery Viewer)

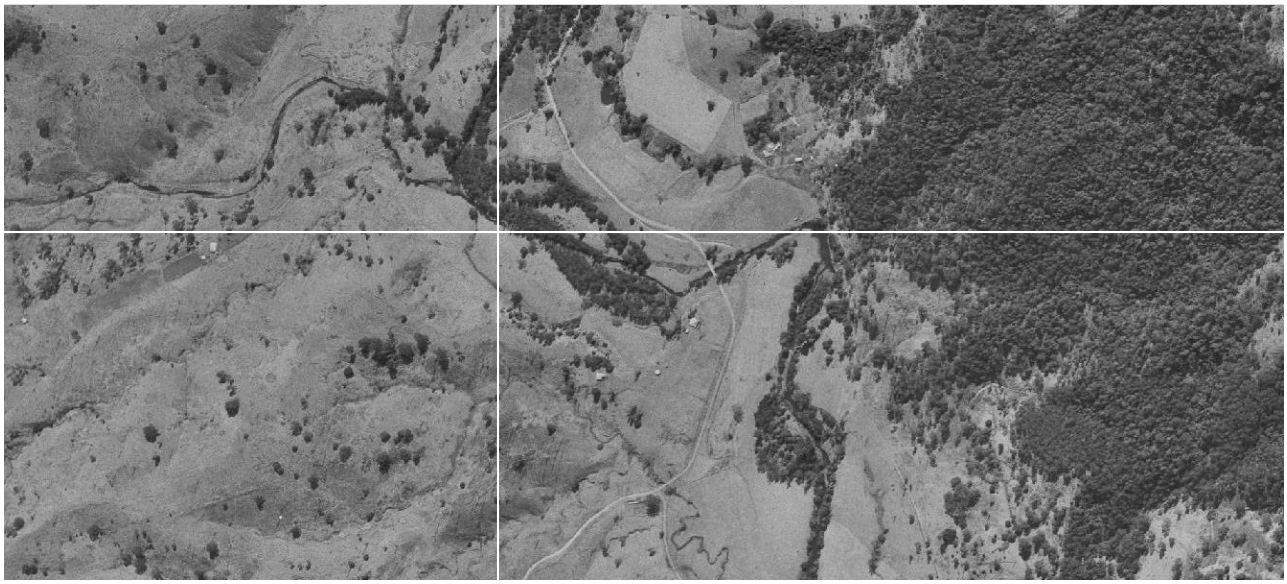


Figure 6: Historic aerial imagery from 1970, white cross hairs indicate subject site (source: Historical Imagery Viewer)

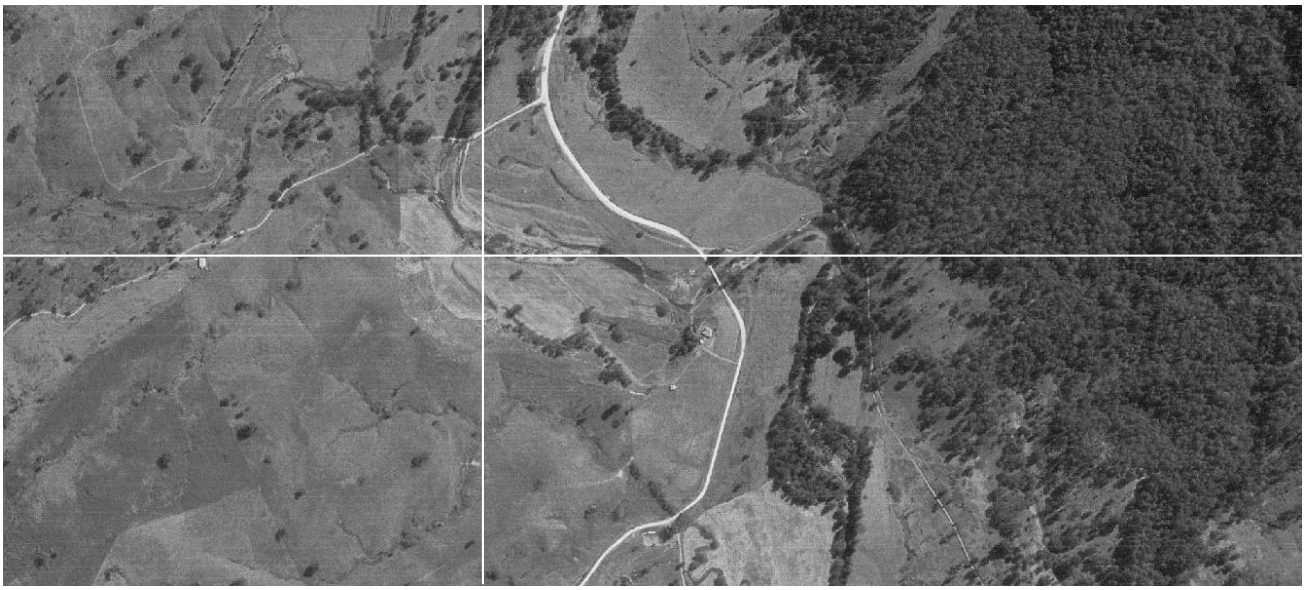


Figure 7: Historic aerial imagery from 1978, white cross hairs indicate subject site (source: Historical Imagery Viewer)

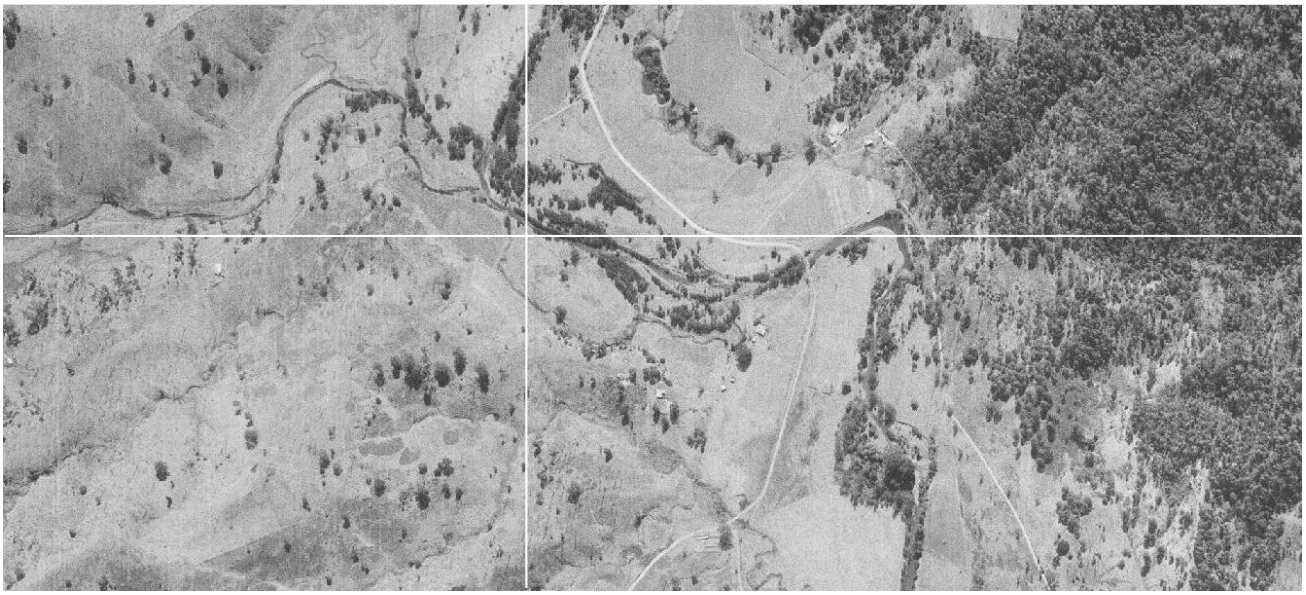


Figure 8: Historic aerial imagery from 1986, white cross hairs indicate subject site (source: Historical Imagery Viewer)

Figure 9: Historic aerial imagery from 1990, white cross hairs indicate subject site (source: Historical Imagery Viewer)

Figure 10: Historic aerial imagery from 1996, white cross hairs indicate subject site (source: Historical Imagery Viewer)

Figure 11: Historic aerial imagery from 2007, white cross hairs indicate subject site (source: TSC Weave)

Figure 12: Historical aerial imagery from 2016, white cross hairs indicate subject site (source: TSC Weave)

Figure 13: Historic aerial imagery from 2020, white cross hairs indicate subject site (source: TSC Weave)

Plate 1: Southern end of proposed disturbance footprint where creek is moving west (looking north)

Plate 2: Middle of proposed site looking north

Plate 3: Historically planted hoop and bunya pines (approximately 30 years prior) now being affected by creek moving west. Losses of trees evident.

12.0 References

Department of Environment and Climate Change NSW (DECC) (2007). *Threatened species assessment guidelines: The assessment of significance*.

Department of Environment, Climate Change and Water NSW (DECCW) (2011). *Road Noise Policy*. NSW Government, March 2011.

Department of Environment and Climate Change NSW (DECC) (2009). *Guidance for Licensing of Mineral-sand Mining that Generates Radioactive Residues*. NSW Department of Environment and Climate Change.

Department of Planning and Environment (DPE) (2022). *Guidelines for Division 5.1 assessments – For publication*. State of New South Wales.

Department of Primary Industries (DPI) (2013). *Fisheries NSW Policy and Guidelines for Fish Habitat Conservation and Management (2013 update)*. Published by the NSW Department of Primary Industries, a part of the Department of Trade and Investment, Regional Infrastructure and Services.

Morand, D.T. (1996). *Soil Landscapes of Murwillumbah – Tweed Heads 1:100 000 Sheet Report*. Department of Land and Water Conservation, Sydney.

Office of Environment and Heritage (OEH) (2012). *Tweed Vegetation Management Strategy 2012*. Prepared for Tweed Shire Council.

Stone, Y., Ahern, C.R., and Blunden, B. (1998). *Acid Sulfate Soil Manual 1998*. Acid Sulfate Soil Management Advisory Committee, Wollongbar, NSW, Australia.

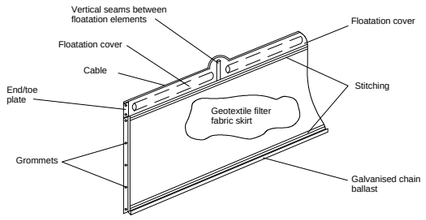
Tweed Shire Council (TSC) (2022). *Council's sustainable operations*. https://www.tweed.nsw.gov.au/environment/climate-sustainability/sustainable-operations . Accessed 7 June 2022.

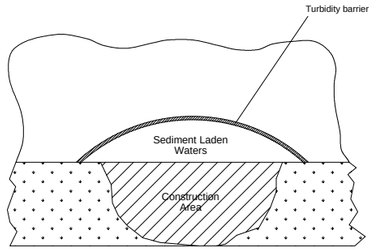
Tweed Shire Council (TSC) (2018). *Tweed Scenic Landscape Strategy – Draft for Exhibition*. Murwillumbah, NSW, Australia.

Tweed Shire Council (TSC) (2017). *Tweed Shire Council Renewable Energy Action Plan – Electricity in Council facilities*. Murwillumbah, NSW, Australia.

13.0 Appendices

Appendix A Design Plans

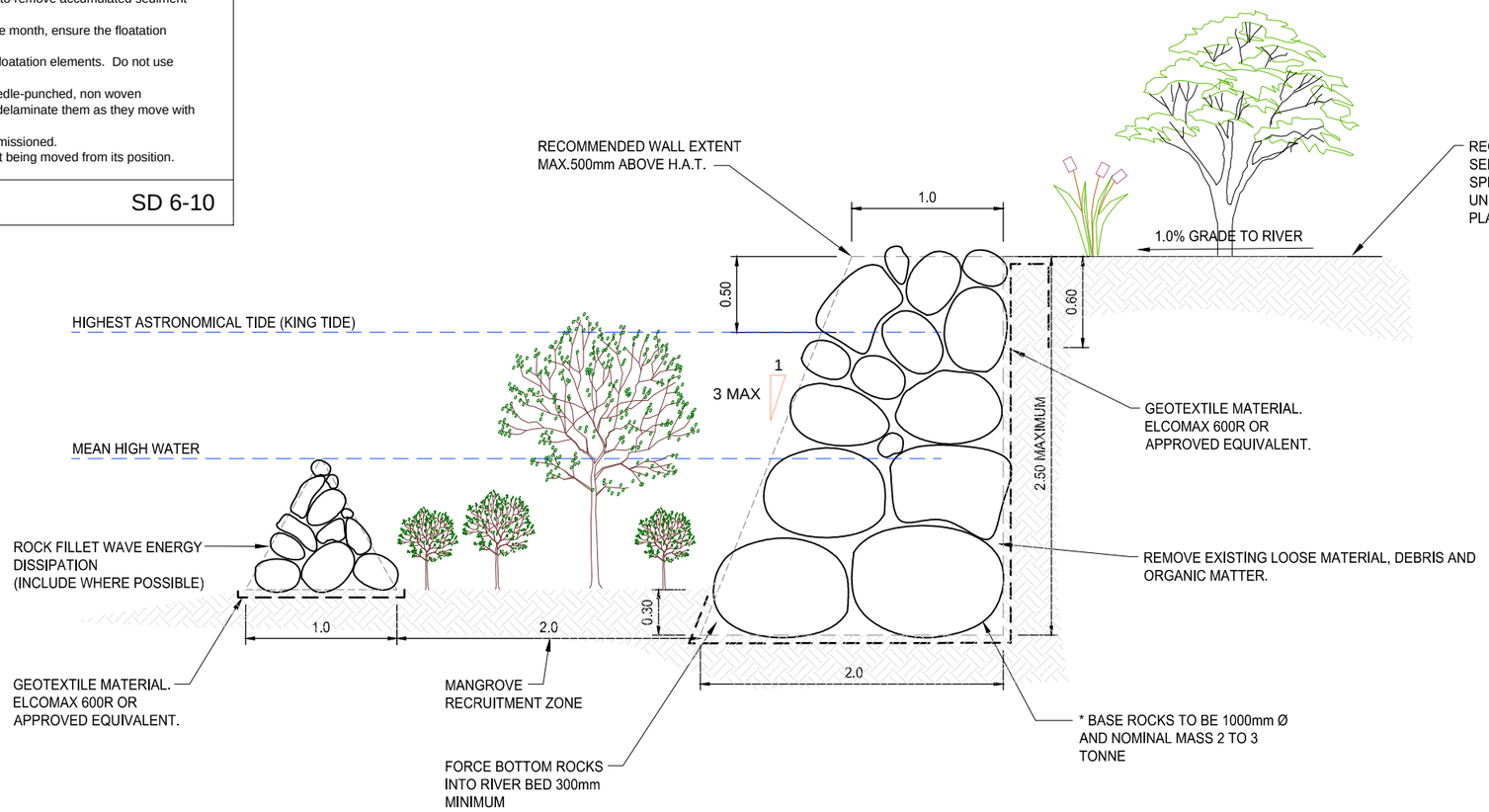




Construction Notes

1. Use turbidity barriers only where high flows are unlikely to remove accumulated sediment and/or move the curtain significantly.
2. Where the barrier is to remain in place for more than one month, ensure the floatation cover is a UV-resistant, durable material.
3. Use only closed cell foam or foam-filled PVC piping as floatation elements. Do not use unfilled pipes.
4. Use only woven or heat-set non woven geotextiles. Needle-punched, non woven geotextiles can become fouled with debris that fray and delaminate them as they move with the waves or currents.
5. Remove captured sediment before the barrier is decommissioned.
6. In tidal areas, ensure the barrier can rise and fall without being moved from its position.

TURBIDITY BARRIER SD 6-10



TYPICAL SECTION: REVETMENT

SCALE: 1:20 (A1)

NOTE:
FINAL ALIGNMENT AND DESIGN OF ROCK REVETMENT TO BE DETERMINED ON SITE BY SITE OVERSEER

NOTE:
HIGHEST ASTRONOMICAL TIDE (H.A.T.) AT MURWILLUMBAH IS 1.1m AHD.

ARMOURING NOTES.
NOM DIA. D=500mm
NOM MASS W=220kg.
THE ROCK SHALL LIE WITHIN THE FOLLOWING LIMITS:
RANGE: D = 300 - 800mm WITH:
50% > D = 500mm
AND IN ADDITION AT LEAST 50% BY NUMBER SHALL BE MORE THAN THE SPECIFIED NOMINAL MASS.
* REFER NOTE RE BASE ROCK SIZE

ISSUE	AMENDMENT DETAILS	DRAWN	CHECK	DATE
1	ORIGINAL ISSUE	A.D.		13.02.15

SCALE: A1 SHEET 1:20, A3 SHEET 1:40
0 0.2 0.4 0.8 1.2 1.6 2 m

USE FIGURED DIMENSIONS ONLY. DO NOT SCALE.

DESIGN UNIT
COUNCIL OFFICES
TUMBULGUM ROAD,
MURWILLUMBAH NSW 2484.
PHONE 02 66702400
FAX 02 66727513
WEBSITE www.tweed.nsw.gov.au

TWEED SHIRE COUNCIL

DESIGN ENGINEER ..... DATE .....

DESIGNED	-	-		
DRAWN	A.D.	13.02.15	COORDS ADOPTED	
CHECKED			EASTING	
HORIZONTAL DATUM		MGA	NORTHING	
VERTICAL DATUM		AHD	R.L.	

PROJECT:

PROJECT NUMBER:

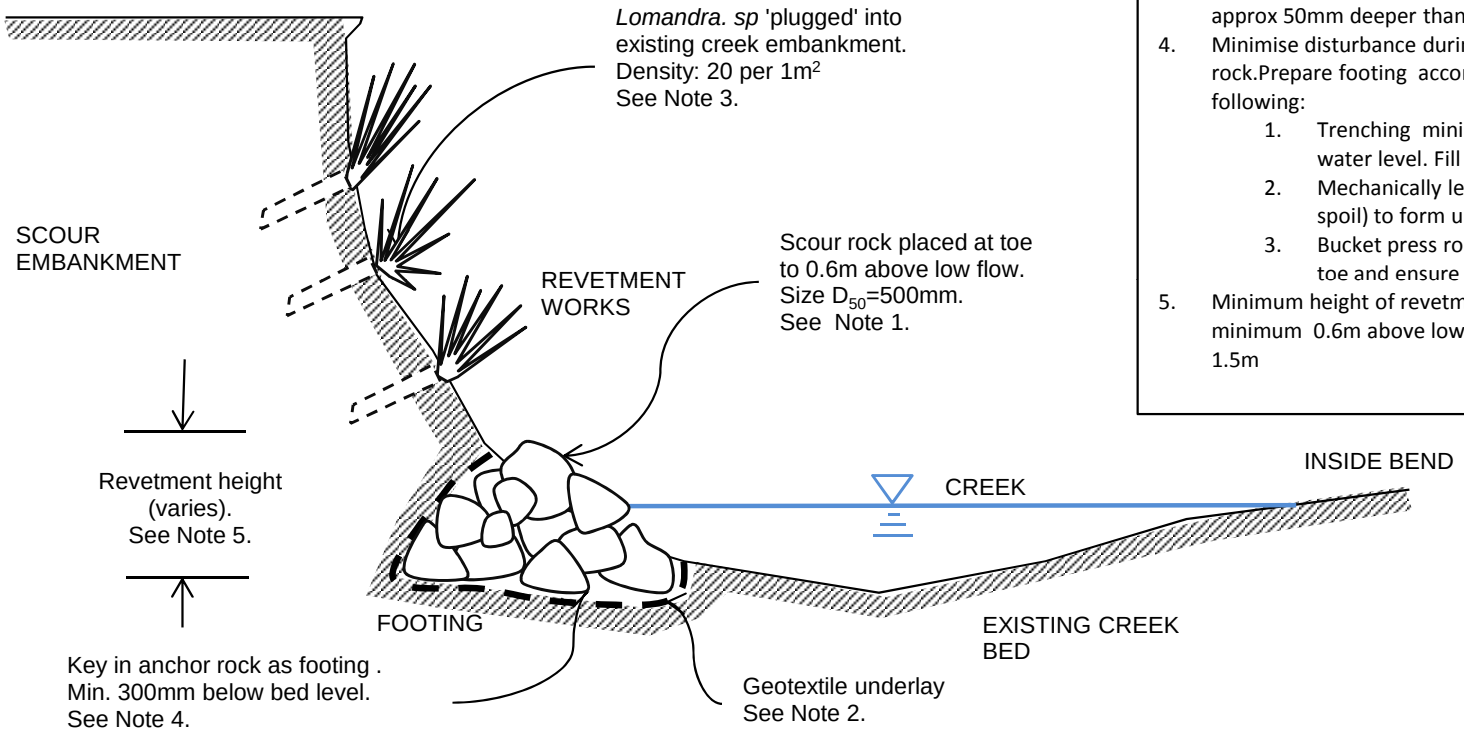
PLAN TITLE: **TYPICAL SECTION & DESIGN SPECS. REVETMENT WALL MAIN CHANNEL TWEED RIVER**

DRAWING NUMBER:

ISSUE:

ACAD FILE No: C:\Users\adoyle\Desktop\Revetment Standard.dwg

SD1 - Rock Revetment unbattered



TYPICAL CROSS-SECTION

NOTES

1. Rock placement to be shaped to achieve it's natural angle of repose (approx 60° and triangular shaped and not vertical).
2. Line underside of scour rock with geotextile (minimum grade equivalent to Bidim A49). **This is particularly important where revetment is only 1 rock thick and the bank material is exposed through voids. Where revetment is several rocks thick, with good sizes variation, geotextile liner may not be required.**
3. Use local providence tubestock if available and select hardy stock which hasn't been protected by nursery controls (high watering and shaded). Plant tubestock in hole slighty smaller than tubepot diameter. Bury plug approx 50mm deeper than normal surface depth.
4. Minimise disturbance during preparation of footing using anchor rock.Prepare footing according to site specific conditions via either of the following:
    1. Trenching minimum 300mm below bed level and parallel to water level. Fill with anchor rock and bucket press;
    2. Mechanically level and loosen footing with excavator bucket (no spoil) to form uniform footing for anchor rock.
    3. Bucket press rock direct without preparation into sediments at toe and ensure a uniform layer as footing .
5. Minimum height of revetment 0.6m measured from creek bed. Ensure minimum 0.6m above low flow water level Maximum revetment height of 1.5m

NSW Soil Conservation Service
36 Marina Drive Coffs Harbour 2450

Author	CC		Ph: 0437 013 126
Checked	TE		Ph: 0439 608 532

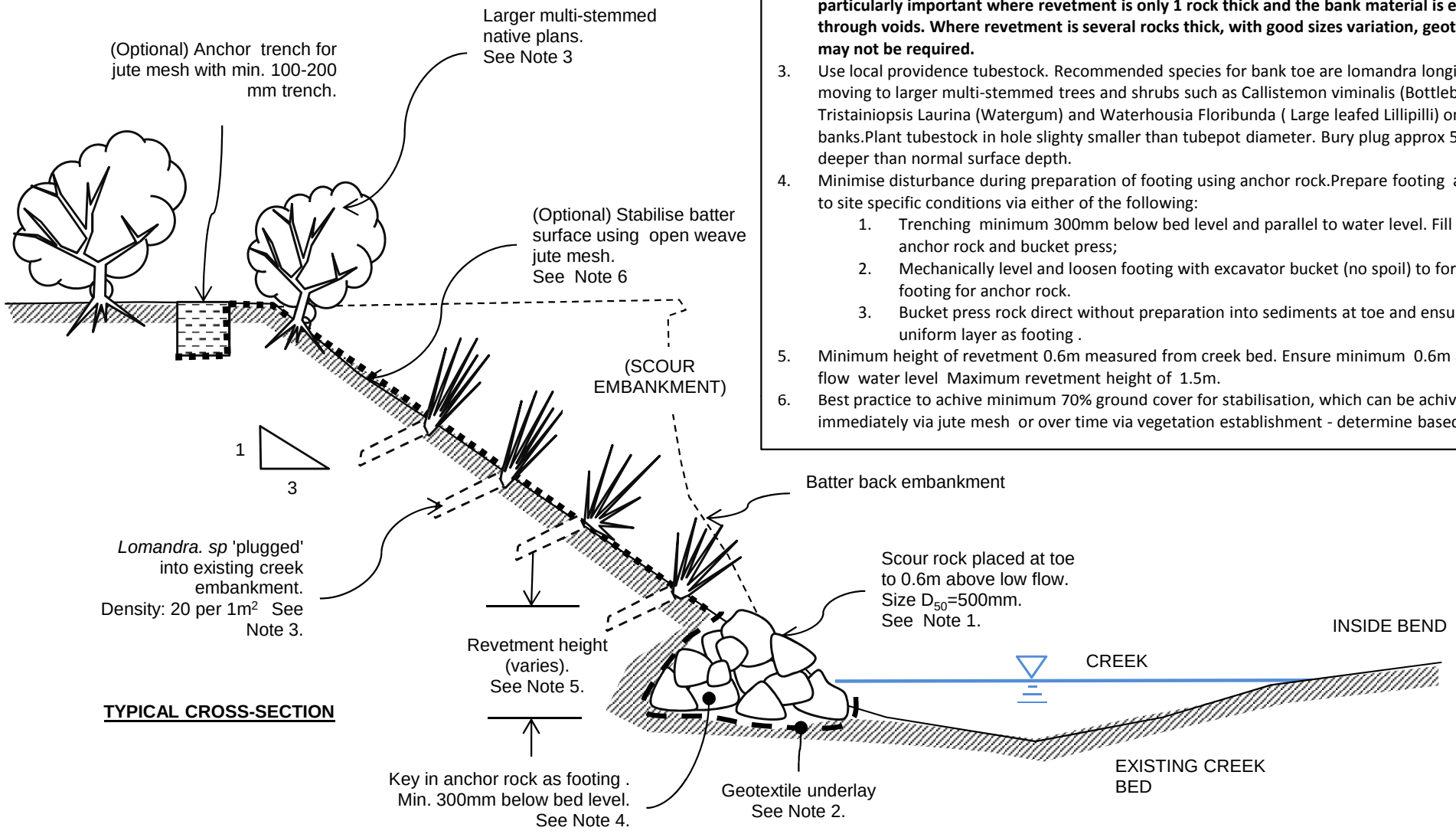
Project	Tweed Creeks
Client	Tweed Shire Council

Title	Riverbank Stabilisation
Drawing	SD 1 Rock Revetment + Vertical Wall

Rev.	Date

Proj. No:	5008xxx		
Scale:	N.T.S.		
Date:	26/09/2012		
Dwg No:	SD1	Rev	0

SD2 - Rock Revetment battered



NOTES

1. Rock placement to be shaped to achieve it's natural angle of repose (approx 60° and triangular shaped and not vertical).
2. Line underside of scour rock with geotextile (minimum grade equivalent to Bidim A49). **This is particularly important where revetment is only 1 rock thick and the bank material is exposed through voids. Where revetment is several rocks thick, with good sizes variation, geotextile liner may not be required.**
3. Use local providence tubestock. Recommended species for bank toe are lomandra longifolia, moving to larger multi-stemmed trees and shrubs such as Callistemon viminalis (Bottlebrush), Tristainiopsis Laurina (Watergum) and Waterhousia Floribunda (Large leafed Lillipilli) on higher banks.Plant tubestock in hole slighty smaller than tubepot diameter. Bury plug approx 50mm deeper than normal surface depth.
4. Minimise disturbance during preparation of footing using anchor rock.Prepare footing according to site specific conditions via either of the following:
    1. Trenching minimum 300mm below bed level and parallel to water level. Fill with anchor rock and bucket press;
    2. Mechanically level and loosen footing with excavator bucket (no spoil) to form uniform footing for anchor rock.
    3. Bucket press rock direct without preparation into sediments at toe and ensure a uniform layer as footing .
5. Minimum height of revetment 0.6m measured from creek bed. Ensure minimum 0.6m above low flow water level Maximum revetment height of 1.5m.
6. Best practice to achive minimum 70% ground cover for stabilisation, which can be achived immediately via jute mesh or over time via vegetation establishment - determine based on risk

NSW Soil Conservation Service
36 Marina Drive Coffs Harbour 2450

Author	CC		Ph: 0437 013 126
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Project	Tweed Creeks
Client	Tweed Shire Council
Title	Riverbank Stabilisation
Drawing	SD 2 Rock Revetment + Battered

Rev.	Date

Proj. No:	5008xxx		
Scale:	N.T.S.		
Date:	26/09/2012		
Dwg No:	SD2	Rev	0

EROSION AND SEDIMENT CONTROL NOTES

Progressive ERSED plans shall be developed and implemented as required by the Site Supervisor based on this plan and the following principles and standard site control measures.

Stabilise access to all work areas during construction
× Limit entry and exit points to and from the construction site including temporary lay-down compound locations for vehicles, plant and machinery.
× Sediment should not be tracked off-site onto roads or surrounding verge areas.
× Unnecessary disturbance of verge areas outside the disturbance footprint should be avoided by establishing no-go zones and restricting vehicle and machinery access.
Refer to Standard Drawing: SD 6-14

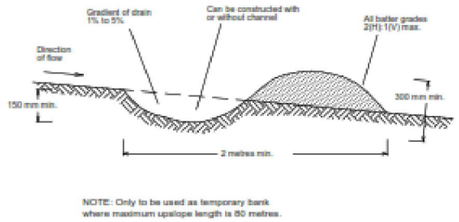
Minimise the extent and duration of ground and estuary disturbance
× Construction works to be managed including the establishment of no-go zones outside the disturbance footprint such that areas outside the scope of works remain undisturbed as much as possible.
× Maintain vegetation adjacent infrastructure that directs stormwater into waterways e.g. maintain roadside grass strip adjacent roads where possible.
× Minimise rock and woody debris removed from waterways in order to complete in-stream works.
× Aim to remove in-stream obstructions to works by picking out items rather than excavating material.

Control stormwater flows onto, through and from the site
× Divert 'clean' run-on water from 'dirty' (e.g. turbid) construction area water runoff.
× Construction area water runoff should be directed toward sediment filtration devices that reduce sedimentation prior to discharge from the works area.
× Construct permanent drainage structures early in the project including:
o Kerb and guttering
o Swale drains.
Refer to Standard Drawings: SD 5-4, SD 5-5,

Works to be staged with an emphasis placed on the progressive stabilisation of disturbed areas as works progress
× Stage the works by removing ground cover and completing work in stages, moving onto new sections following completion of the previous stage.
× Control dust and erosion by progressively stabilising disturbed areas.
× Ground stabilisation works shall be carried out as soon as possible following the completion of stages including reinstating roads and turf.
× All disturbed verges shall be established by revegetating with seed mix or turf as soon as practicable.
× Use topsoil generated by the project to ensure the success of revegetation works.
Refer to Standard Drawings: SD 4-2, SD 7-1

Use sediment control measures as the final measure to prevent off-site damage
× Soil and water management techniques should prevent erosion in the first instance.
× All rock used on the project should be washed and free from fines.
× The installation of sediment controls nevertheless to be installed prior to any ground disturbance or clearing.
× Ensure formed areas such as bitumen roads are swept and kept clean prior to rain or at the end of shift.
× Material stockpiles should be located in low hazard areas a minimum of 30m from waterways and away from stormwater channels. Stockpiles should be managed using vegetative cover, stormwater diversion and sediment fencing where required. Temporary stockpiles remaining longer than 10 days should be vegetated with seed mix.
Refer to Standard Drawings: SD 4-1, SD 6-8,

Inspect and maintain controls
× Ensure erosion and sediment control measures are progressively and continually implemented during construction.
× Initiate a program to regularly maintain (every 24 hours) erosion and sediment control measures including the removal of built up sediment in controls. Sediment control measures should be kept clear of debris at all times and cleared of sediment if filled to >50 % capacity.
× Arrange inspections by an Environmental Scientist to review and update control measures in consultation with the Site Supervisor. Additional inspections should be conducted during and/or immediately following significant rainfall events to monitor the effectiveness of control measures.
× All erosion and sediment control measures should be maintained until works are completed and disturbed areas have stabilised.
× Monitor 7 day rain forecast to determine the timing of works or preparation of ESC measures for forecast rain events.

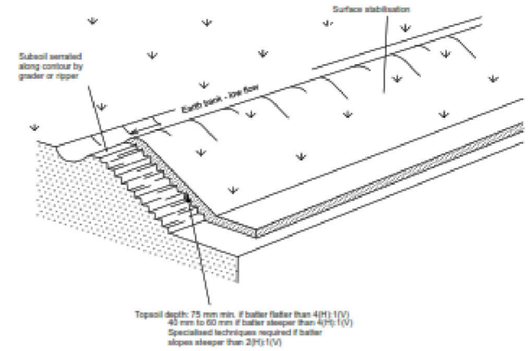


NOTE: Only to be used as temporary bank where maximum upslope length is 80 metres.

Construction Notes

1. Build with gradients between 1 percent and 5 percent.
2. Avoid removing trees and shrubs if possible - work around them.
3. Ensure the structures are free of projections or other irregularities that could impede water flow.
4. Build the drains with circular, parabolic or trapezoidal cross sections, not V shaped.
5. Ensure the banks are properly compacted to prevent failure.
6. Complete permanent or temporary stabilisation within 10 days of construction.

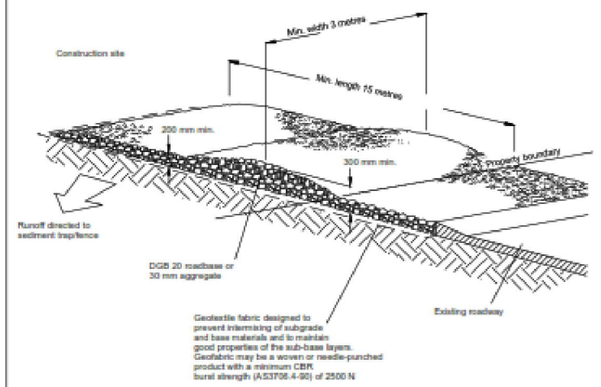
EARTH BANK (LOW FLOW) SD 5-5



Construction Notes

1. Scarify the ground surface along the line of the contour to a depth of 50 mm to 100 mm to break up any hardsetting surfaces and to provide a good bond between the respread material and subsoil.
2. Add soil ameliorants as required by the ESCP or SWMP.
3. Rip to a depth of 300 mm if compacted layers occur.
4. Where possible, replace topsoil to a depth of 40 to 60 mm on lands where the slope exceeds 4(H):1(V) and to at least 75 mm on lower gradients.

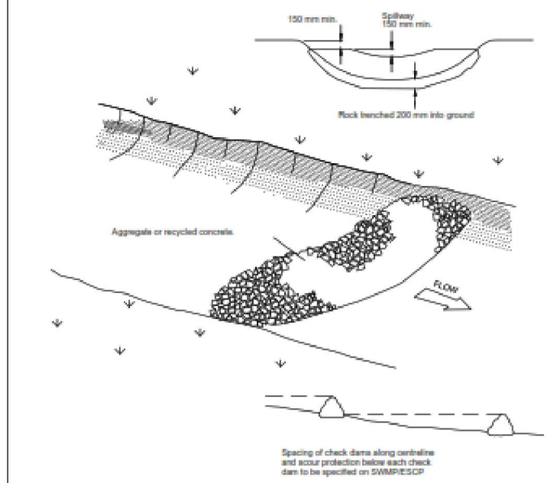
REPLACING TOPSOIL SD 4-2



Construction Notes

1. Strip the topsoil, level the site and compact the subgrade.
2. Cover the area with needle-punched geotextile.
3. Construct a 200 mm thick pad over the geotextile using road base or 30 mm aggregate.
4. Ensure the structure is at least 15 metres long or to building alignment and at least 3 metres wide.
5. Where a sediment fence joins onto the stabilised access, construct a hump in the stabilised access to divert water to the sediment fence

STABILISED SITE ACCESS SD 6-14

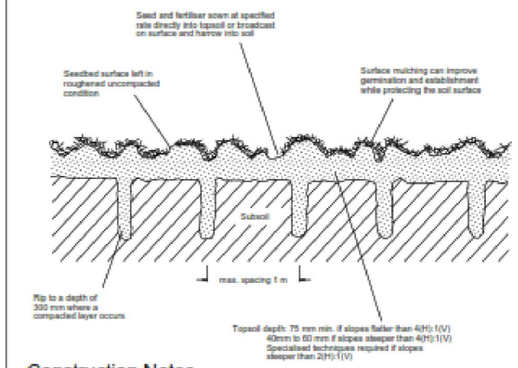


Spacing of check dams along centreline and scour protection below each check dam to be specified on SWMP/ESCP

Construction Notes

1. Check dams can be built with various materials, including rocks, logs, sandbags and straw bales. The maintenance program should ensure their integrity is retained, especially where constructed with straw bales. In the case of bales, this might require their replacement each two to four months.
2. Trench the check dam 200 mm into the ground across its whole width. Where rock is used, fill the trenches to at least 100 mm above the ground surface to reduce the risk of undercutting.
3. Normally, their maximum height should not exceed 600 mm above the gully floor. The centre should act as a spillway, being at least 150 mm lower than the outer edges.
4. Space the dams so the toe of the upstream dam is level with the spillway of the next downstream dam.

ROCK CHECK DAM SD 5-4



Construction Notes

1. Loosen compacted soil before sowing any seed. If necessary, rip the soil to a depth of 300 mm. Avoid rotary hoe cultivation.
2. Work the ground only as much as necessary to achieve the desired tilth and prepare a good seedbed.
3. Avoid cultivation in very wet or very dry conditions.
4. Cultivate on or close to the contour where possible, not up and down the slope.

SEEDBED PREPARATION SD 7-1

APPROVAL
ON BEHALF OF COUNCIL
[redacted]
DATE: 7.11.2022

PLAN TITLE:

EROSION AND SEDIMENT CONTROL PLAN

DESIGN UNIT

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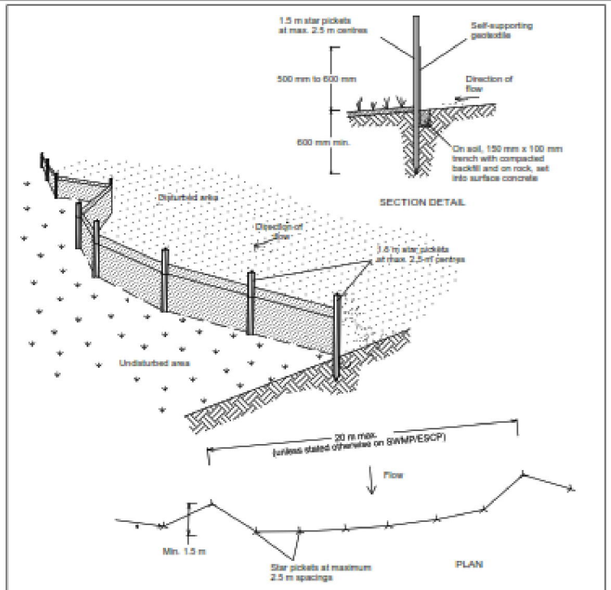
TWEED SHIRE COUNCIL

PROJECT:

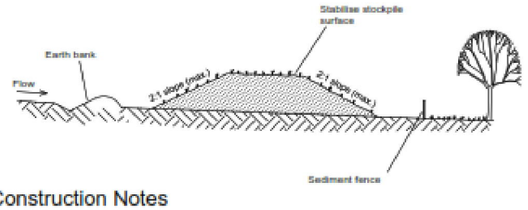
WATERWAY BANK STABILISATION – [redacted] HOPPING DICKS CREEK, LIMPINWOOD—TWEED SHIRE



Construction Notes

1. Construct sediment fences as close as possible to being parallel to the contours of the site, but with small returns as shown in the drawing to limit the catchment area of any one section. The catchment area should be small enough to limit water flow if concentrated at one point to 50 litres per second in the design storm event, usually the 10-year event.
2. Cut a 150-mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
3. Drive 1.5 metre long star pickets into ground at 2.5 metre intervals (max) at the downslope edge of the trench. Ensure any star pickets are fitted with safety caps.
4. Fix self-supporting geotextile to the upslope side of the posts ensuring it goes to the base of the trench. Fix the geotextile with wire ties or as recommended by the manufacturer. Only use geotextile specifically produced for sediment fencing. The use of shade cloth for this purpose is not satisfactory.
5. Join sections of fabric at a support post with a 150-mm overlap.
6. Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

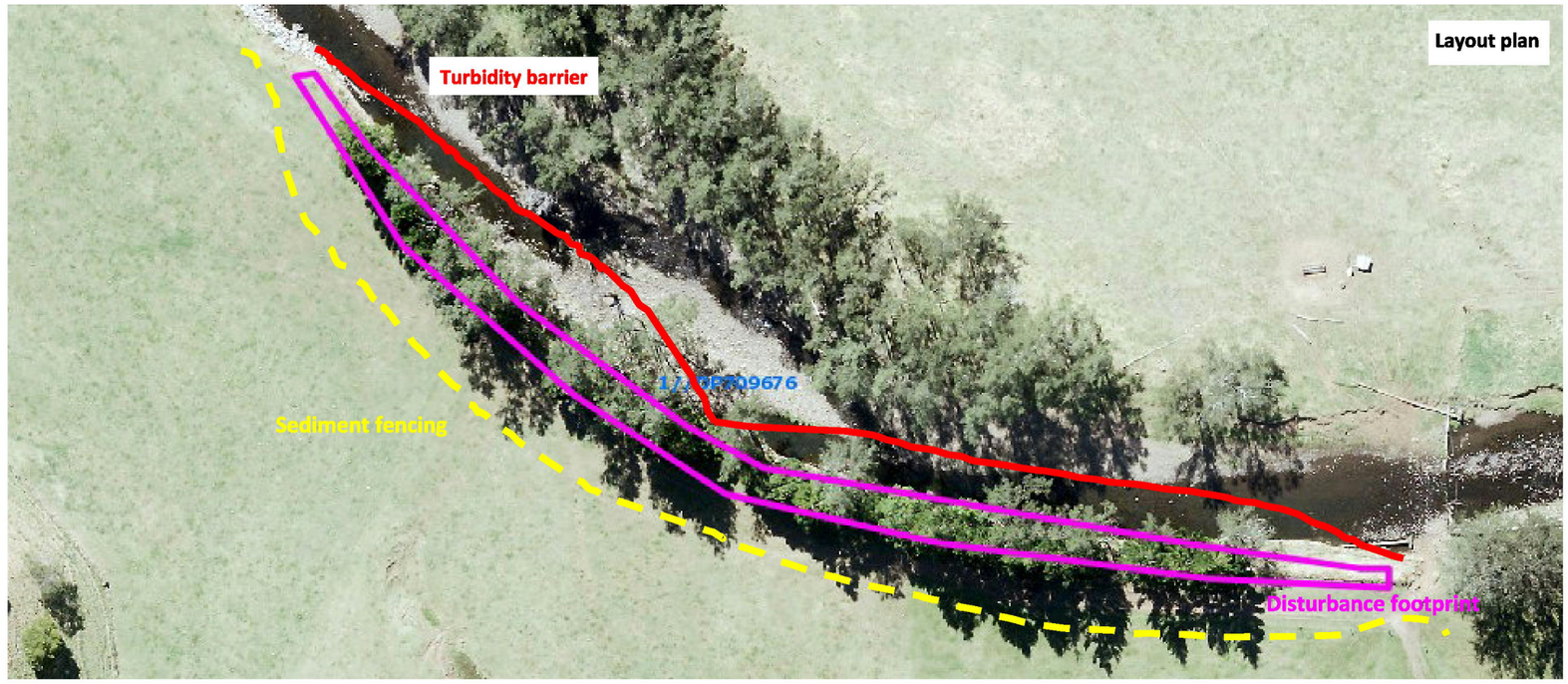
SEDIMENT FENCE SD 6-8



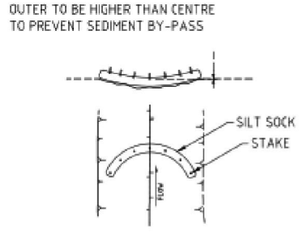
Construction Notes

1. Place stockpiles more than 2 (preferably 5) metres from existing vegetation, concentrated water flow, roads and hazard areas.
2. Construct on the contour as low, flat, elongated mounds.
3. Where there is sufficient area, topsoil stockpiles shall be less than 2 metres in height.
4. Where they are to be in place for more than 10 days, stabilise following the approved ESCP or SWMP to reduce the C-factor to less than 0.10.
5. Construct earth banks (Standard Drawing 5-5) on the upslope side to divert water around stockpiles and sediment fences (Standard Drawing 6-5) 1 to 2 metres downslope.

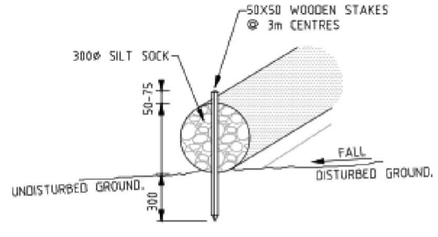
STOCKPILES SD 4-1



TYPICAL MEDIAN/TABLE DRAIN APPLICATION

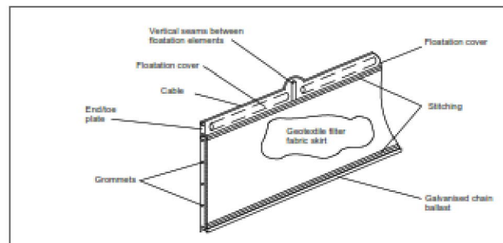


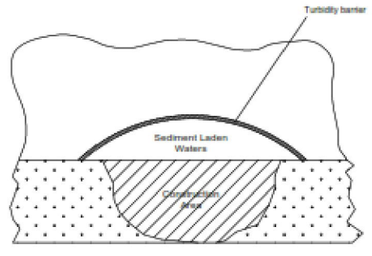
SEDIMENT CONTROL FOR OPEN CHANNELS
N.T.S.
SILT SOCK FOR OPEN CHANNELS



SILT SOCK DETAIL
N.T.S.

APPROVAL
[redacted]





Construction Notes

1. Use turbidity barriers only where high flows are unlikely to remove accumulated sediment and/or move the curtain significantly.
2. Where the barrier is to remain in place for more than one month, ensure the floatation cover is a UV-resistant, durable material.
3. Use only closed cell foam or foam-filled PVC piping as floatation elements. Do not use unfilled pipes.
4. Use only woven or heat-set non woven geotextiles. Needle-punched, non woven geotextiles can become fouled with debris that fray and delaminate them as they move with the waves or currents.
5. Remove captured sediment before the barrier is decommissioned.
6. In tidal areas, ensure the barrier can rise and fall without being moved from its position.

TURBIDITY BARRIER SD 6-10

PLAN TITLE:

EROSION AND SEDIMENT CONTROL PLAN

DESIGN UNIT

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TWEED SHIRE COUNCIL

PROJECT:

WATERWAY BANK STABILISATION - [redacted] HOPPING DICKS CREEK, LIMPINWOOD—TWEED SHIRE

Appendix B EPBC Matters of National Environmental Significance

Table B1 Matters of National Environmental Significance and their relevancy to the proposed activity

Matter of National Environmental Significance	Relevancy to the proposed activity
World Heritage Properties	One identified: • Gondwana Rainforests of Australia, Qld This World Heritage Property is not present at the subject site and the proposed works would not impact this area.
National Heritage Places	One identified: • Gondwana Rainforests of Australia, NSW This National Heritage Place is not present at the subject site and the proposed works would not impact this area.
Wetlands of International Importance (RAMSAR Wetlands)	One identified: • Moreton Bay The subject site is located approximately 30–40 km upstream from the Ramsar site. Considering the distance from the Ramsar site it is not expected it will be impacted by the proposed works.
Great Barrier Reef Marine Park	None.
Commonwealth Marine Areas	None.
Listed Threatened Ecological Communities	Six identified: • Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland ecological community • Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland • Dunn's white gum (*Eucalyptus dunnii*) moist forest in north-east New South Wales and south-east Queensland • Grey box-grey gum wet forest of subtropical eastern Australia • Lowland Rainforest of Subtropical Australia • White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland These vegetation communities are not mapped as being present at the site. The proposed works have been designed to stabilise the waterway bank and therefore protect vegetation upstream and downstream and would therefore not impact upon any TECs.
Listed Threatened Species	88 identified. Given the disturbed nature of the site, lack of vegetation and that works would be undertaken within an existing disturbed area, threatened species identified from the search are considered unlikely to be impacted by the proposal.
Listed Migratory Species	15 identified. All species are marine species (birds, cetaceans, sharks and turtles) or terrestrial or wetland birds. These species are highly mobile and the disturbance footprint represents a small area relative to their home ranges. Furthermore, the extent and condition of suitable habitat available for these species which would be altered as a result of the proposal is negligible. Accordingly, these species are not expected to be significantly impacted upon.

Additional matters protected under the EPBC Act identified in the EPBC Protected Matters report are summarised and the relevancy of these matters to the proposal are discussed in Table B2.

Table B2 Additional matters protected under the EPBC Act and relevancy to the proposed activity

Additional matter protected under the EPBC Act	Relevancy to the proposed activity
Commonwealth Lands	One identified: • Defence – VHF REPEATER STATION [31845], Qld The subject site is not with this Commonwealth Land and the proposed works would not impact these areas.
Commonwealth Heritage Places	None.
Listed Marine Species	20 identified. Given the small proposed disturbance footprint of the proposal, the nature of the proposed activity, and the distance from the marine environment, marine species are unlikely to be impacted upon.
Whales and Other Cetaceans	None.
Critical Habitats	None.
Commonwealth Reserves Terrestrial	None.
Australian Marine Parks	None.
Habitat Critical to the Survival of Marine Turtles	None.
State and Territory Reserves	Eight identified: • Border Ranges National Park, NSW • Couchy Creek Nature Reserve, NSW • Lamington National Park, Qld • Limpinwood Nature Reserve, NSW • Numinbah Nature Reserve, NSW • Springbrook National Park, Qld • Wollumbin National Park, NSW • Wollumbin State Conservation Area, NSW The subject site is sufficiently removed from the listed state and territory reserves and therefore the proposed works will not impact upon them.
Regional Forest Agreements	One identified. North East NSW RFA applies over the broader study area; however, none of the reserves included in the RFA occur within the study area.
Nationally Important Wetlands	One identified: • Upper Coomera River, Qld The subject site is sufficiently removed from the listed nationally important wetland and therefore the proposed works will not impact upon them.
EPBC Act Referrals	Five identified. The referrals listed have all completed or post-approval assessment statuses and are all unrelated to the proposed disturbance footprint and proposal.
Key Ecological Features (Marine)	None.
Biologically Important Areas	None.

Additional matter protected under the EPBC Act	Relevancy to the proposed activity
Bioregional Assessments	One identified. • Clarence-Moreton bioregion The proposed works are unrelated to coal seam gas and coal mining development.
Geological and Bioregional Assessments	None.

Based on the assessment provided in Table B1 and B2 above, matters protected under the EPBC Act are unlikely to be significantly impacted upon by the proposal and the proposal does not require referral to the Commonwealth Minister of the Environment.

Appendix C Preliminary Flora and Fauna Assessment

TWEED
SHIRE COUNCIL

Appendix C:
Preliminary Flora and Fauna Assessment

Introduction

The flora and fauna assessment included a review of the project brief, survey plans, and environmental planning legislation to consider the likely impacts of the proposed activity on native flora and fauna.

Reviews of Tweed Shire Council Weave GIS information including relevant environmental layers were carried out along with searches of State and Commonwealth ecological databases, followed by site visits to assess the potential impacts of the development.

For the purposes of this assessment, the following terms of reference are used:

- Disturbance footprint – refers to the direct footprint subject to development, including any disturbance associated with ancillary works (e.g. temporary access tracks or stockpile sites).
- Study area – the study area includes the disturbance footprint and any additional lands approximately 50 m either side of the disturbance footprint that could be affected directly or indirectly from the proposal. The objective of the assessment would ensure that impacts beyond the direct disturbance footprint are also considered where relevant.
- Subject site – refers to the parcel/s of land on which the development is proposed.
- Broader study area – lands within 10 km of the local study area and includes the BioNet Atlas of NSW Wildlife and Commonwealth Protected Matters database search areas.
- Bioregion – as classified by the Interim Biogeographic Regionalisation for Australia (IBRA) v 6 mapping (Thackway and Cresswell 1995). A bioregion is an area of common climate, geology, landform, native vegetation and species information. This project is located within the South East Queensland bioregion and Burringbar-Conondale sub-region.

Direct and indirect impacts are defined in accordance with OEH (2018) as follows:

- Direct impacts are those that directly affect the habitat of species and ecological communities and of individuals using the study area. They include, but are not limited to, death through predation, trampling, poisoning of the animal/plant itself and the removal of suitable habitat.
- Indirect impacts occur when project-related activities affect species or ecological communities in a manner other than direct loss within the subject site. Indirect impacts may sterilise or reduce the habitability of adjacent or connected habitats. Indirect impacts can include loss of individuals through starvation, exposure, predation by domestic and/or feral animals, loss of breeding opportunities, loss of shade/shelter, reduction in viability of adjacent habitat due to edge effects, deleterious hydrological changes, increased soil salinity, erosion, inhibition of nitrogen fixation, weed invasion, noise, light spill, fertiliser drift, or increased human activity within or directly adjacent to sensitive habitat areas.

Assessment aims

The principal aim of the assessment was to determine the potential impact of the proposed activity on significant flora, fauna and ecological communities using the following legislation and planning and management policies:

- NSW *Environmental Planning and Assessment Act 1979* (EP&A Act)
- NSW *Biodiversity Conservation Act 2016* (BC Act)
- Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- *Fisheries Management Act 1994* (FM Act)
- Tweed Coast Comprehensive Koala Plan of Management
- Threatened species recovery plans.

Specifically, the aims of the study were to:

- identify vegetation communities, flora and fauna species, and habitats within the study area
- undertake field and desktop assessments to identify the likelihood of conservation significant species and communities occurring within the study area
- assess the conservation status of the site
- identify impacts associated with the proposal pursuant to section 7.3 of the BC Act, if required
- determine whether there is a need to conduct a Species Impact Statement or make a referral to the Commonwealth Department of Agriculture, Water and the Environment (DAWE)
- provide recommendations to minimise impacts on conservation significant species and biodiversity generally.

Desktop assessment methodology

The desktop assessment involved a review of the following information:

- BioNet Atlas of NSW Wildlife database to identify any known records of significant flora and fauna species
- DAWE EPBC Act Protected Matters online database to identify any Matters of National Environmental Significance
- NSW EES and Department of Primary Industries registers of critical habitat (also referred to as Areas of Outstanding Biodiversity Value under the BC Act)
- NSW EES regional and subregional fauna corridor and key habitat mapping
- NSW and Commonwealth lists of Key Threatening Processes
- NSW EES threatened species website for existing Recovery Plans and Threat Abatement Plans
- Atlas of Living Australia wildlife records
- Tweed Coast Comprehensive Koala Plan of Management (TSC, 2014)
- Koala habitat mapping (TSC Weave GIS)
- Tweed Shire Council vegetation mapping (OEH 2012) to identify the potential presence of any Endangered Ecological Community (EEC) or Threatened Ecological Communities (TECs) listed under the BC Act or EPBC Act, respectively
- Tweed Shire Roadside Vegetation Management Plan (Tweed RVMP) (Bushland Restoration Services Pty Ltd & Landmark Ecological Services Pty Ltd, 2013)
- Tweed Shire Council GIS layers such as the contour mapping, slope and soils
- Past fauna survey and assessment reports for the area.

Database searches were undertaken using a 10 km radius of the subject site.

Desktop assessment results

The results of the desktop assessment are summarised in Table C.1 as follows:

Table C.1: Desktop assessment results

Attributes	Comments
Vegetation communities	The Tweed Shire Council vegetation mapping identifies two vegetation communities as occurring within the disturbance footprint: • Substantially cleared of native vegetation (veg code: 1099) • Not assessed Kingston et al (2004) describes the substantially cleared of native vegetation community as forming approximately half of the area of the Shire which includes areas cleared for agriculture, recreation facilities, roads and urban development. Vegetated areas occurring in this community type are generally dominated by exotic grass species. If native vegetation is present, it is very sparse and highly disturbed. The not assessed community is vegetation that was unable to be assessed at the time the TVMS was created, however prior assessments on the property identified the vegetation community as river she-oak open forest (veg code: 106). The river she-oak open forest community is described as a tall open forest. It is predominantly associated with flowing water, usually developing as a fringing forest along riparian zones on stony or sandy soils and upstream of tidal influence. Refer to Figure C.1 below.
Threatened ecological communities	None of the vegetation communities identified above are analogous with any threatened ecological communities listed under the BC Act or EPBC Act.
Threatened flora records	A search of threatened flora species on the BioNet Atlas of NSW Wildlife and Commonwealth Matters of National Significance databases was undertaken based on a 10 km buffer of the subject site. A total of 71 threatened flora species were short-listed from these searches. Of these 71 short-listed threatened flora species, a likelihood of occurrence assessment concluded none were likely to occur within the study area. The subject site is extremely degraded, is a grazed paddock with some existing native and exotic vegetation present; none of which are threatened species.
Corridor mapping	The subject site is not mapped as being within a regional or sub-regional corridor.
Osprey nests	[redacted] is [redacted]
Flying-fox camp	The [redacted] of the subject site at [redacted] It is expected that [redacted]
Marine vegetation	The subject site is outside of any tidal areas and therefore no marine vegetation occurs within the proposed disturbance footprint.

Attributes	Comments
Koala habitat	There is no koala habitat identified within the subject site. The closest patches of [redacted] of the site being associated with tallowwood open forest. The most recent koala records in the area are from 2004 [redacted] of the subject site.
Threatened fauna	A search of threatened fauna species recorded on the BioNet Atlas of NSW and Wildlife and Commonwealth Matters of National Significance databases was undertaken based on a 10 km buffer of the subject site. A total of 64 threatened fauna species and two populations were short-listed from these searches (marine and pelagic species were immediately dismissed on account of the absence of such habitat in the study area). Of these 64 short-listed threatened fauna species, one species was considered to have a high likelihood of occurrence within the study area: [redacted] None of the short-listed populations (koala and spotted-tail quoll) were considered likely to occur within the study area.
Key fish habitat	The proposed works are located within the bed and banks of Hopping Dicks Creek which is identified as key fish habitat.
Aquatic threatened species	NSW DPI modelling maps Hopping Dicks Creek where it passes through the subject site as potential habitat for the [redacted] (refer to Figure C.2). Note that mapped areas indicate only >33% probability of predicted presence.

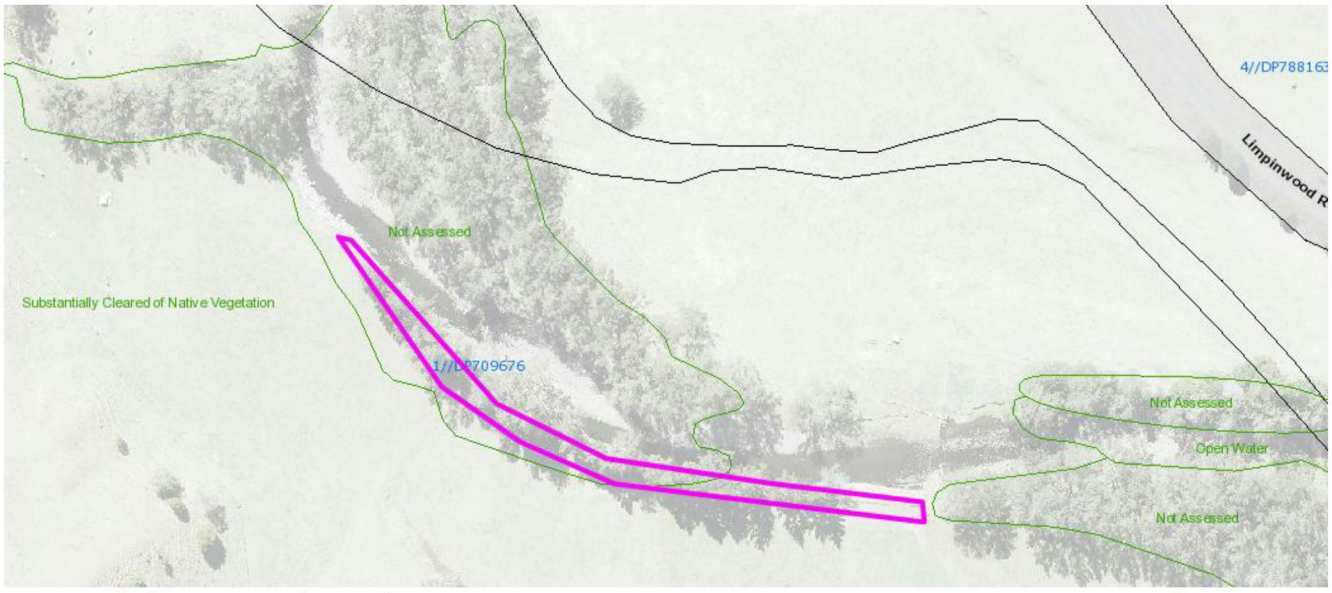

Figure C.1: Tweed Shire Council vegetation mapping, proposed disturbance footprint alignment in pink.

Figure C.2: DPI Fisheries Spatial Portal mapping; purple line = purple spotted gudgeon threatened species

Field assessment methodology

A preliminary diurnal field assessment was undertaken on 5 and 27 October 2022. The field assessment involved traverses over the disturbance footprint to validate the results of the desktop study and assess the potential impacts of the development in the study area. In summary, this involved carrying out searches for the following:

- Characterisation of vegetation communities within the development footprint.
- Identification of retained vegetation which may be impacted upon by root damage from construction works.
- Potential fauna habitat likely to be affected by the proposal such as burrows, hollow-bearing trees, flowering trees, nests, and other general signs of fauna activity such scats, tracks, and traces.
- The impact of disturbance on fauna movement and bushland linkages.
- Potential sources of erosion and sediment loss.
- Receiving waterways and the potential impacts on these aquatic habitats.

Field assessment results

Flora

The site assessment confirmed that vegetation within the study area is generally consistent with that mapped by Kingston et al (2004), being substantially cleared of vegetation. Vegetation present within the not assessed mapped areas aligns with the river she-oak open forest community. There are also areas of planted hoop pines (*Araucaria cunninghamii*) and bunya pines (*A. bidwillii*) planted by the owner approximately 30–40 years ago. Figure C.3 shows the proposed works and the field-validated vegetation present within the subject site

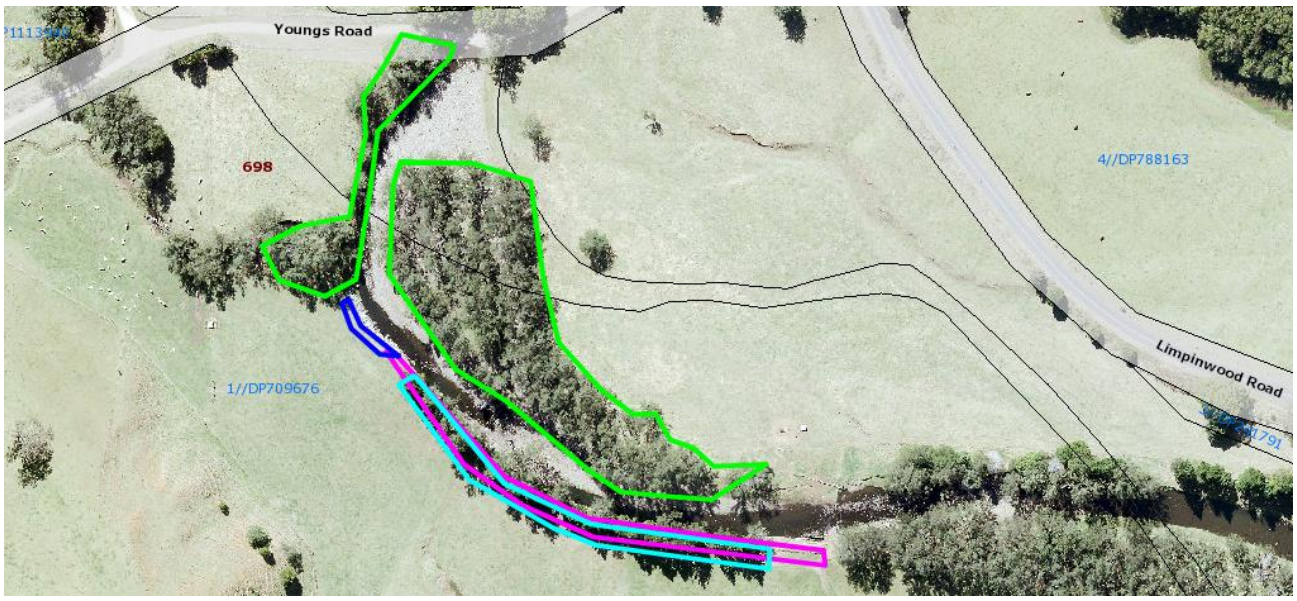

Figure C.3: Proposed bank stabilisation works (pink polygon); green polygon = river she-oak open forest; dark blue polygon = revegetation associated with prior bank stabilisation works; light blue polygon = historic hoop and bunya pine revegetation.

Field surveys found river she-oak open forest community to be consistent with the Kingston *et al* (2004) description. The majority of the subject site was grazed pasture with few mature remaining trees on the edge of the realigned riparian area. Many trees and vegetation have been lost due to the erosion caused by the flooding events. The dominant trees that remain include naturally occurring river she-oak (*Casuarina cunninghamiana*), and planted hoop pine and bunya pine. Native species revegetation is also present adjacent the prior bank stabilisation.

No threatened species were identified during the field survey.

Overall, the vegetation within the disturbance footprint is reflective of the naturally occurring vegetation community within a grazed pasture. No vegetation communities present within the study area are considered to be consistent with any TECs listed under the NSW BC Act or the EPBC Act.

Fauna

Fauna habitat within the proposed disturbance footprint was found to be limited due to the area being highly disturbed due to flooding, erosion and historical clearing. However, in the broader context, the Hopping Dicks Creek and ecosystems nearby and upstream and downstream offers a diversity of vegetation communities including eucalypt open forest communities and river she-oak open forest. At the subject site, Hopping Dicks Creek is a fast-running rocky stream with few pools and many riffles. Bank undercutting was uncommon and while platypus have historically been sighted at the subject site, adequate burrowing habitat and extensive feeding habitat was absent. Diurnal field investigations did not record any threatened species at the site.

A survey was conducted from 5:30 pm (1.5 hours before sunset) to 8:00 pm. Temperature and relative humidity at the commencement of the survey were 23.2°C and 85.2% respectively. The survey was limited to a 100 m buffer of the proposed disturbance footprint.

Only common species were detected and are listed in Table C.2. No signs of significant habitat for species (burrows, hollow-bearing trees, rocky outcrops, deep litter, undercut banks, cracking soils) were found within the proposed disturbance footprint. An assessment of specific habitat attributes within the study area is provided in Table C.3 below.

Table C.2: Fauna species detected during the survey

Common name	Species name
Birds	
Australian king parrot	*Alisterus scapularis*
Pacific black duck	*Anas superciliosa*
Brush cuckoo	*Cacomantis variolosus*
Pied butcherbird	*Cracticus nigrogularis*
Laughing kookaburra	*Dacelo novaeguineae*
Common cicadabird	*Edolisoma tenuirostre*
Latham's snipe	*Gallinago hardwickii*
Bar-shouldered dove	*Geopelia humeralis*
White-throated gerygone	*Gerygone olivacea*
Red-backed fairywren	*Malurus melanocephalus*
Rainbow bee-eater	*Merops ornatus*
Little pied cormorant	*Microcarbo melanoleucos*
Rufous whistler	*Pachycephala rufiventris*
Eastern rosella	*Platycercus eximius*
Masked lapwing	*Vanellus miles*
Frogs	
Tusked frog	*Adelotus brevis*
Eastern dwarf tree frog	*Litoria fallax*
Dainty green tree frog	*Litoria gracilenta*
Peron's tree frog	*Litoria peronii*
Stony creek frog	*Litoria wilcoxii*
Cane toad	*Rhinella marina*
Mammals	
Black flying-fox	*Pteropus alecto*
Fish	
Rainbow fish	*Melanotaenia* sp.
Eel-tailed catfish	*Tandanus tandanus*

An assessment of specific habitat attributes within the study area is provided in Table C.3 below.

Table C.3: Fauna habitat attributes associated with the subject site

Fauna habitat attributes	Comments
Rock features including cracks, sheets, shelters, outcrops	None observed within the study area.
Autumn - winter - early spring flowering eucalypts	None observed within the study area. Present within the broader study area.
Summer flowering eucalypts	None observed within the study area. Present within the broader study area.
Acacia shrubs-trees	None observed within the study area.
Other flowering and fruiting resources	Present within the study area along Hopping Dicks Creek and within nearby vegetated areas.
Allocasuarina resources for Glossy Black Cockatoos	None observed within the study area. Present within the broader study area.
Koala feed trees	None observed within the study area. Present within the broader study area.

Fauna habitat attributes	Comments
Open grassy patches	The surrounding ecosystem was largely grazing paddocks cleared of trees. Exotic pasture provides limited habitat value in terms of shelter or nesting habitat, even for open land species when compared to native rank grassy areas.
Cracks, crevices, and other roosting sites (man- made or otherwise) for insectivorous bats	None observed on site. The man-made structures on the property may provide potential micro-bat roosting habitat in the form of roof cavities.
Ephemeral water bodies	None observed within the study area.
Permanent water bodies	Hopping Dicks Creek. The stream at the subject site is a fast flowing, shallow, rocky stream. Habitat appears unsuitable for the southern purple spotted gudgeon and largely unsuitable for platypus and the giant barred frog.
Drainage lines and/or soaks and/or man-made water bodies	Minor drainage lines and runoff areas exist away (>100 m) from the disturbance footprint around the bridge. Man-made dams are present within the broader surrounding area.
Understorey cover for ground dwelling mammals	This resource was generally scarce within the disturbance footprint.
Fallen fine and coarse vegetative litter	This resource was generally scarce in association with the subject site, but present in surrounding areas.
Hollows in live and dead trees	None observed on site.
Marine Vegetation	None present on site.
Riparian vegetation	Riparian vegetation is limited to a narrow stand of river she-oak and hoop pine, lomandra and young (<3 tall) revegetation. Revegetation would occur outside areas with riparian vegetation.
Flying-fox camps	[redacted]
Osprey and/or other raptor nests	[redacted]
Exposed coastal fore dunes and beaches	None present within the broader study area.
Oceanic habitats	None present within the broader study area.
Areas of Outstanding Biodiversity Value pursuant to NSW legislation	[redacted]

Of the 64 short-listed threatened fauna species, a likelihood of occurrence assessment concluded one was likely to occur within the study area– [redacted] is known to occur in the [redacted]

Impact assessment

Flora

The proposed bank stabilisation works are required to be undertaken urgently to protect the paddocks west of the creek. These paddocks are valuable to the private property as they are the drought proof paddocks. Further loss of land reduces the stock carrying capacity of for that property. The trees that are present within the subject site are all likely to remain and will be worked around. It is not expected that any trees will be removed to undertake the proposed works, however as many have roots exposed due to the flooding and subsequent erosion it is unsure of the survival of these trees.

Fauna

As previously discussed, the habitat values within the disturbance footprint are limited due to the high level of disturbance. It is likely that the stream and riparian zone in the current state provides limited potential for threatened fauna species.

The likelihood of occurrence (LOC) assessment determined there was a high LOC for one threatened fauna species within the study site [redacted] The proposed works would not remove foraging or roosting habitat for this species.

Requirement for Part 7 (BC Act) Assessments

Section 7.8 of the *Biodiversity Conservation Act 2016* (BC Act) outlines the biodiversity assessment requirements for Part 5 activities under the EP&A Act and notes a Part 5 activity is to be regarded as having a significant effect on the environment if it is likely to significantly affect a threatened species. Section 7.3 of the BC Act outlines the test for determining whether an activity is likely to result in a significant impact on threatened species or ecological communities (test of significance).

The Threatened Species Test of Significance Guidelines – The Assessment of Significance (OEH, 2018) explain that a species does not have to be considered as part of the assessment of significance if adequate surveys or studies have been carried out that clearly show that the species:

- does not occur in the study area
- will not use on-site habitats on occasion
- will not be influenced by off-site impacts of the proposal.

Otherwise, all species likely to occur in the study area (based on general species distribution information), and known to use that type of habitat, should be considered in the rationale that determines the list of threatened species, populations and ecological communities for the assessment of significance (OEH, 2018).

With the above in mind, species considered to warrant further consideration pursuant to Section 7 of the BC Act are those that have a high likelihood of occurrence within and adjacent the study area and could be either directly or indirectly impacted by the proposal. That is, these species are considered likely to interact with those habitats directly and or indirectly impacted by the development proposed. For example, species with specific lifecycle requirements such as hollow dependent species that may be impacted through loss of hollow bearing trees would be included within the Section 7.3 assessment. In contrast, those species which have broad home ranges and do not have specific habitat elements within the study area, may not be considered further. Table C.4 provides a summary of the potential impacts to threatened species considered likely to occur in the study area.

Table C.4: Summary of potential impacts on threatened species and requirement for test of significance

Threatened flora/fauna species (identified as groups 4 or 5 species)	Potential Impacts	Requirement for a Test of Significance under the EP&A Act (✓)
		X (Not warranted)

Following an assessment, it was determined that no species warranted further consideration by way of test of significance pursuant to Part 7 of the BC Act. This is based on the limited scale and extent of the disturbance footprint relative to the home ranges of each of the species. Further, the habitat provided at the site is not considered to constitute critical habitat for the species and the proposed temporary disturbance is unlikely to place any species at risk of extinction.

Flora and fauna assessment conclusion

In summary, this preliminary flora and fauna assessment suggests that the conservation values of the disturbance footprint are low given the extent of existing disturbance.

The assessment has determined that the proposed activity is unlikely to result in a significant impact upon threatened species, populations or communities and that the activity does not require referral to the Commonwealth DAWE for assessment under the EPBC Act.

Environmental safeguards to mitigate impacts on the receiving environment are proposed within Section 10 of the REF.

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Appendix D Preliminary Aboriginal Cultural Heritage Assessment

TWEED SHIRE COUNCIL

Preliminary Aboriginal Cultural Heritage Assessment (PACHA)

Hopping Dicks Creek Bank Stabilisation, Limpinwood

November 2022

Version	Title	Date
1.0	Preliminary Aboriginal Cultural Heritage Assessment (PACHA)	7/11/2022

Table of contents

Definitions

AAC:	**Aboriginal Advisory Committee**
ACH:	**Aboriginal cultural heritage**
ACHA:	**Aboriginal Cultural Heritage Assessment**
ACHAR:	**Aboriginal Cultural Heritage Assessment Report**
ACHMP:	**Tweed Shire Aboriginal Cultural Heritage Management Plan 2017**
AHIP:	**Aboriginal Heritage Impact Permit** The statutory instrument that OEH issues under section 90 of the NPW Act to manage harm or potential harm to Aboriginal objects and places.
AHIMS:	**Aboriginal Heritage Management Information System** AHIMS is a part of OEH and maintain the NSW records database of Aboriginal objects/sites, declared Aboriginal Places and archaeological reports submitted either voluntarily or as part of compliance-related submissions.
Disturbed land:	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 include ploughing, construction of rural infrastructure (such as dams and fences), construction of roads, trails and tracks (including fire trails and tracks and walking tracks), clearing vegetation, construction of buildings and the erection of other structures, 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) and construction of earthworks. Refer also to Clause 58 of the NPW Reg.
Due Diligence code:	Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (DECC&W, 2010)
EIS:	**Environmental Impact Statement**
PACHA:	**Preliminary Aboriginal Cultural Heritage Assessment** Process to assess whether Aboriginal objects will or are likely to be harmed, and whether further investigation and impact assessment is required. Determines whether an ACHA is required and, subsequently, whether an AHIP is required.
DPE:	**Department of Environment and Planning, NSW Government**
EP&A Act:	**Environmental Planning and Assessment Act, 1979**
NPW Act:	**National Parks and Wildlife Act, 1974**
NPW Reg:	**National Parks and Wildlife Regulation, 2019**
OEH:	**Office of Environment and Heritage, NSW Government**
Study area:	For the purpose of this PACHA, the study area is the spatial extent in which the proposed works could potentially directly and indirectly impacts on the ACH values of the site. For this particular assessment, the study area is defined as the lands and waters within 200 m of the subject site.
TBLALC:	**Tweed Byron Local Aboriginal Land Council**
TSC:	**Tweed Shire Council**

1.0 Introduction

The aim of this Preliminary Aboriginal Cultural Heritage Assessment (PACHA) is to ensure Council infrastructure projects minimise the risk of harm to Aboriginal places and objects of cultural heritage significance.

The objective is to identify those projects with a significant risk of harm to Aboriginal cultural heritage (ACH) and those projects for which the risk is low.

Those projects determined to have a high risk of harm to ACH require a more detailed assessment in the form of an Aboriginal Cultural Heritage Assessment Report (ACHAR) and potentially an Aboriginal Heritage Impact Permit (AHIP).

Those determined to have a low risk of harm to ACH may proceed with caution without an ACHAR or AHIP.

The PACHA is suitable for incorporation into TSC environmental planning assessments for works deemed:

- permissible with consent
- permissible without consent
- exempt activities under the EP&A Act, with the exception of projects requiring an Environmental Impact Statement (EIS) for which the assessment requirements are directed by the Secretary's Environmental Assessment Requirements (SEARs).

2.0 Planning considerations under the NPW Act/Reg

The following clauses were considered to determine whether any of the exemptions or defences identified under the NPW Act/Reg apply.

Planning consideration	Response
Are the works exempt under s87A of the NPW Act (e.g. specified emergency or conservation activities)	☐ Yes ☒ No
Are the works exempt under s87B of the NPW Act (e.g. traditional Aboriginal cultural activities)	☐ Yes ☒ No
Is the activity a low impact one for which there is a defence under Clause 58 of the NPW Reg? (e.g. maintenance of existing infrastructure on disturbed land; 'disturbed land' is defined in the definitions section) **N.B.** If yes, there is still a responsibility to not harm or desecrate an object that a person knows is an Aboriginal object; stop works procedures still apply to any unexpected finds.	☐ Yes ☒ No

3.0 Scope of work

The following questions were addressed to clarify the type and scale of works proposed.

Scope/scale of works	Response
Is the work trivial or negligible? (e.g. picking up and replacing a small stone artefact, breaking a small Aboriginal object below the surface when you are gardening, crushing a small Aboriginal object when you walk on or off a track, picnicking, camping or other similar recreational activities)	☐ Yes ☒ No
Will the works involve ground disturbance?	☒ Yes ☐ No
What is the scale of excavation works? (refer to ACHMP page 105 for definitions of minimal, moderate and major)	☐ Minimal ☒ Moderate ☐ Major
Will the works impact upon any known or suspected culturally modified trees? (e.g. scar trees)	☐ Yes ☒ No

4.0 Assessment methodology

The following desktop and site assessments were performed and used to determine the level of community consultation required, if any.

Assessment type	Response
Desktop assessment	☒ Review ACHMP mapping GIS layer ☒ Search AHIMS database Review site cards relevant to the study area: ☐ Y ☒ N/A ☒ Search NSW Heritage database for Aboriginal Places ☒ Review topographic GIS layers (e.g. contours) Review previous ACHARs relevant to the study area: ☐ Y ☒ N/A
Site assessment	☒ Walkover by TSC Environmental Scientist

5.0 Desktop results

The results of the desktop assessment are detailed below.

Desktop resource reviewed	Response
Does an Aboriginal Place (as declared under the NPW Act) apply to the study area?	[redacted] Yes No
What ACHMP mapping designations apply to the study area? (refer to TSC GIS layer under Planning Strategies and Policies)	[redacted] Known Predictive Not mapped

Desktop resource reviewed	Response
Are there any registered AHIMS site records identified within the study area?	☐ Yes (specify AHIMS reference numbers) _____ _____ _____ ☒ No
What ACH values apply or potentially apply to the study area? (refer to site cards, previous ACHARs and ACHMP mapping attribute data)	☐ Artefacts ☐ Midden ☐ Camp sites ☐ Pathways ☐ Ceremonial site ☐ Burial ☐ Story place ☐ Scar tree ☐ Grinding grooves ☐ Fish traps ☐ Charcoal deposit ☐ Other (specify) _____ ☐ Unknown ☒ None known
Do any of the following landscape features apply to the study area?	☐ Ridgelines ☐ Coastal headland ☐ Sand dunes ☐ Rock shelters (within 20 m) ☒ Waterways (within 200 m) ☐ Other (specify) _____
Are the works proposed on disturbed land? ('disturbed land' is defined in the definitions section)	☒ Yes ☐ No
Is the site in proximity to the Holocene high stand shore line? (refer to contours and AHD 1.5 m for indication)	☐ Yes ☒ No

6.0 Site inspection findings

The results of the site inspection are detailed below.

Site inspection conditions/findings	Response
How was the ground surface visibility?	☒ Good ☐ Moderate ☐ Poor
Were any Aboriginal objects/values identified during the site assessment?	☐ Yes ☒ No
Were any potential ACH objects/values identified/recorded during the site visit? (eg. artefacts, scar trees, midden material, burials, grinding grooves, charcoal deposits) Note: attach photos to plates section where appropriate – seek permission from the TBLALC for potentially sensitive matters.	☐ Yes (please specify) _____ _____ _____ _____ ☒ No
What evidence of previous ground disturbance was observed within the proposed works area?	☐ Built road ☒ Fence construction ☐ Imported fill ☐ Construction of buildings/structures ☐ Construction/installation of utilities ☐ Earthworks/reformed land ☒ Other (please specify) Historic vegetation clearing, natural realignment of creek.

7.0 Consultation outcomes

The desktop assessments and site inspections which indicate potential for harm, or a high degree of uncertainty regarding potential for harm, to ACH are required to seek further information and expertise through consultation with community members/cultural heritage experts.

Consultation outcomes	Response
Do the results of the desktop assessment and site inspection indicate potential for harm, or a high degree of uncertainty regarding potential for harm?	☐ Yes (stakeholder consultation is required, see below) ☒ No (specify why and then proceed to Section 8) Justification: Historic vegetation clearing and the natural realignment of the creek has occurred from the 1970s through to today. Major flooding has occurred numerous times over the subject site throughout the last 50 years whereby soils have been translocated. Major disturbance occurred to the creek line in 1978. Being a rural property with cattle grazing, fencing has occurred adjacent the subject site. Given the extent of disturbance previously at the site, the likelihood of encountering ACH objects is considered low.
Stakeholders consulted	☐ TBLALC ☐ AAC ☐ OEH Archaeologist ☐ Consultant Archaeologist ☒ N/A
Did any stakeholders request additional site inspections?	☐ Yes ☐ No ☒ N/A
Did representatives request to have site monitors present during construction?	☐ Yes ☐ No ☒ N/A
Did representatives recommend an Archaeologist inspect the site?	☐ Yes ☐ No ☒ N/A
Did representatives recommend an ACHAR be prepared and an AHIP be applied for?	☐ Yes ☐ No ☒ N/A

Consultation outcomes	Response
Did representatives request any project-specific mitigation measures?	☐ Yes (list recommendations) _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ ☐ No ☒ N/A

8.0 Recommendations and conclusion

Recommendations and conclusion	Response
Does a desktop and site assessment confirm that there are Aboriginal objects or that they are likely?	☐ Yes ☒ No ☐ Uncertain
Does consultation confirm that there are Aboriginal objects or that they are likely?	☐ Yes ☐ No ☐ Uncertain ☒ N/A
Can harm to Aboriginal places and objects be avoided?	☒ Yes ☐ No ☐ Uncertain
Are site monitors required during construction?	☐ Yes ☒ No
Is an ACHAR and AHIP required?	☐ Yes. Engage a consultant Archaeologist to undertake ACHA and, if deemed necessary, apply for an AHIP. Refer to OEH Guidelines. ☒ No. The project is to proceed with caution. If any potential Aboriginal objects are found, work is to stop and the stop works procedure provided in the ACHMP – Appendix 7 is to be applied. N.B. If human remains are found, work is to stop, the site secured and the NSW Police notified. All staff and contractors on site are to be notified that it is an offence under the Coroners Act to interfere with the materials/remains.

9.0 Figures and plates

Figure 1. Aerial photograph showing study area (pink polygon)

Figure 2. ACHMP mapping within the study area (blue polygon represent predictive ACH sites)

Appendix A – ACHMP Stop works procedure

7. Stop Work Procedure

It is an offence to harm an Aboriginal object or place under the NPW Act. Immediate Stop Work procedures are to be implemented when an activity or works reveal any Aboriginal object or remains so as to avoid harm (see definition of harm in Section 7). The following outlines the Stop Work Procedures:

Inadvertent discovery of an object

On discovery of any surface or buried sub-surface cultural material (other than human remains, which is addressed following) the following actions should occur as soon as practicable:

- All work should cease at the location and if necessary, an appropriately qualified Aboriginal sites officer or experienced archaeologist, with expertise in Aboriginal cultural heritage is to be notified, if not already present at the location. The area is to be made safe and cordoned off to prevent access and to protect the object. Construction workers and operational personnel will comply with the instructions of the qualified Aboriginal Sites Officer and/or experienced cultural professional (archaeologist).
- The TBLALC and OEH North East Region Planning Unit are to be notified.
- An Aboriginal cultural heritage assessment of the object and surrounding locality is to be undertaken. A written report of the archaeologist's findings and recommendations is to be provided to registered Aboriginal parties and the OEH for their consideration.
- No further works or development may be undertaken at the location until the required investigations have been completed and permits or approvals obtained as required by the NPW Act and receipt of written authorisation by the OEH North East Region Planning Unit. Upon further advice, construction may be able to continue at an agreed distance away from the site.
- Aboriginal cultural heritage objects are to be registered to the AHIMS.

Inadvertent discovery of a burial or human remains

Burials or human remains are controlled by the following legislation:

- Coroners Act 2009 (NSW)
- Crimes Act 1900 (NSW) and Federal Crimes Act 1914
- National Parks and Wildlife Act 1974 (NSW) covers Aboriginal human remains
- Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW, 2010 by OEH

Should human remains be found during the activity or works, the following procedure should be followed. On discovery of the remains the following actions should occur as soon as practicable:

- All work should cease at the location. The Police must be notified, and all personnel and contractors on site should be advised that it is an offence under the Coroners Act to interfere with the material/remains.
- If necessary, an appropriately qualified Aboriginal or experienced archaeologist, with expertise in Aboriginal cultural heritage is to be notified, if not already present at the location. The area is to be cordoned off to access and to protect the remains. Construction workers and operational personnel will comply with the instructions of the qualified Aboriginal sites officer or archaeologist.
- The TBLALC and the OEH North East Region Planning Unit are to be notified.
- No further works or development may be undertaken until the required investigations have been completed and permits or approvals obtained where required in accordance with the NPW Act. Upon further advice, construction may be able to continue at an agreed distance away from the site.
- Burial remains are to be registered to the AHIMS if found to be Aboriginal cultural remains.

Note: A Stop Work Order or Interim Protection Order may also be directed by the Chief Executive under S91AA of the NPW Act.

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Appendix E Field Guide for Waste Disposal

TWEED SHIRE COUNCIL

Procedure

Field Guide for Waste Disposal

Version 1 - 2021

Adopted by Director Engineering on 12 March 2021

Division:	Engineering
Section:	Infrastructure Delivery
File Reference:	Council Policies/Protocols/Procedures

Contents

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1. Management of excavated materials from Tweed Shire Council Operations

As material is excavated or removed from a project site or as part of daily operations it must be classified prior to its relocation or transport to an approved site for disposal or re-use.

Projects that have undergone an approval process will have a dedicated Waste Management Plan. If there is an operational requirement to store waste materials for any period of time for later reuse or disposal, a Stockpile Management Plan is to be prepared.

Where surplus material has not undergone a documented formal classification process in accordance with the NSW Waste Classification Guideline (2014), the procedures described in Table 1 below shall be followed prior to off-site transport.

Table 2 provides an overview of some typical Tweed Shire Council (TSC) activities that generate waste or surplus material, the classification of the surplus material, and the likely disposal or storage options for the surplus material (waste).

Definitions for various waste types and permissible disposal methods are provided in Appendix A.

A list of approved waste disposal sites is managed by Council's Infrastructure Delivery Unit (Contact Technical Officer – Quarry Operations and Quality Control 02 6670 2716) and can be found at the following address: **N:\ShareInfrastructureDelivery\Approved Fill Sites**

2. Process of classifying waste

Waste classification can be completed in the field by the Project Manager, Construction Supervisor or Site Supervisor / Ganger in accordance with Table 1.

Table 1 - Waste Classification - Process Awareness

Item	Query	Decision	Process
1	Does the surplus material have a dedicated waste management plan (WMP)?	**YES**	Refer to dedicated project WMP as included in the Construction Management Plan (CMP) to manage surplus waste materials.
		NO	**Refer to Item 2.**
2	**Does the material contain Acid Sulfate Soil (ASS) or Potential Acid Sulfate Soil (PASS)?** Special Note: • The supervisor must confirm whether material is ASS/PASS prior to moving to step 3 below. • Confirmation would be achieved via testing as part of project environmental assessment & approvals or alternatively via Councils Weave GIS to determine the ASS mapping class.	**YES**	1. Supervisor documents why material is ASS or PASS and 2. Confirms this classification with Councils Environmental Scientist and amends CMP. 3. Determines course of action in accordance with Table 2
		NO	**Refer to Item 3.**

Item	Query	Decision	Process
3	All surplus material excavated or collected will be classified under the NSW EPA Waste Classification Guidelines, Part 1: Classifying Waste (2014) or the Resource Recovery orders and exemptions for commonly recovered and reused wastes. See Table 2 for waste classification types and Appendix A for descriptions of waste classification types **Are you sure the waste is correctly classified?** *As an example, does the material qualify as general solid waste (non-putrescible), which includes the following:* • *glass, plastic, rubber, plasterboard, ceramics, bricks, concrete or metal* • *paper or cardboard* • *household waste from municipal clean-up that does not contain food waste* • *waste collected by, or on behalf of, local councils from street sweepings* • *grit, sediment, litter and gross pollutants collected in, and removed from, stormwater treatment devices and/or stormwater management systems, that has been dewatered so that they do not contain free liquids* • *garden waste and wood waste* • *virgin excavated natural material* • *building and demolition waste (road construction waste)*	**YES**	1. Supervisor documents the classification of the waste, and 2. Confirms this classification with Engineering Division Environmental Scientist and 3. Determines course of action in accordance with Table 2.
		NO	**Works would cease in relation to management of waste material until advice or direction from the engineer/project manager is provided.** **Further investigations may be required.**

3. Unexpected Find Procedure

If during the course of works an unexpected find takes place in the form of the discovery of potentially contaminated material, or material that appears to be different from the waste material (e.g. soils, wood waste, and construction waste) described in previous reports, the following procedures will apply:

- Further **excavation works at that part of the site** where the suspicious material / soil was encountered **will cease** until investigations can determine classification of material and determine suitable management options.
- Supervisor will notify TSC Environmental Scientist, engineer/ project manager ASAP so that investigations can be undertaken to determine a suitable course of action including workplace health and safety (WHS) concerns for workers, soil classification and storage or disposal requirements.
- Suspicious material/soil which has already been excavated should be bunded and separately stockpiled on a minimum of two layers of polythene or low density polyethylene sheet of at least 0.25mm thickness, protected from erosion and any seepage or leachate retained.

Examples of unexpected finds include:

- Discovery of metal drums within excavated material
- Odour or soil stains within excavated material
- Fragments of asbestos containing material (ACM) (e.g. fibro)
- An indication that material classified as virgin excavated natural material (VENM) is actually imported fill
- Discovery of heritage relicts (other than aboriginal cultural heritage items)
- Discovery of aboriginal cultural heritage artefacts or human remains
  (Refer to Tweed shire Council “Aboriginal Cultural Heritage Management Plan 2018 – Appendix 7” and can be found using the following Tweed Shire Council Intranet link:

4. Options for reuse or disposal

The following classification of waste streams and disposal options are in accordance with the NSW Waste Classification Guidelines (2014) and relevant current NSW EPA resource recovery (RR) orders exemptions.

In some cases waste such as surplus soil can be reused on-site (eg. filling or land applied to hollows or spread thinly across disturbed area); however, it is likely that most waste generated from a project would be surplus, and would therefore be removed from the project site. Where this is undertaken the following options for individual waste streams are listed within Table 2. Ideally, the disposal of waste to a licenced landfill is the least preferred option, in accordance with the waste avoidance hierarchy (avoid, reduce, reuse, recycle, dispose), however many reuse/recycle options are also available for selected waste at the Stotts Creek Resource Recovery Centre.

Table 2 - Typical waste generation activities, material classification and options for reuse or disposal

ACTIVITY	DESCRIPTION	OPTIONS	OPERATION	MATERIAL CLASSIFICATION (See Appendix A)	DISPOSAL OPTIONS* (See also Appendix B and Appendix C)
Excavated soil material **(e.g. from trenching works, road box outs etc)**	Excavated natural soil **NOT** from within a mapped ASS area (e.g. natural insitu material)	Sorting of overlying material from natural soil.	Separate and remove asphalt, seal, gravel, concrete, road base etc that overlies natural material.	General Solid Waste Non-Putrescible **Virgin Excavated Natural Material (VENM)** (Refer to Appendix A for definition of VENM)	1. Re-use within the project site 2. Re-use on council land 3. Re-use on private property subject to DA approval. 4. Stockpile at approved stockpile location for future use (no stockpile volume restrictions apply for VENM) 5. Dispose to licensed landfill

ACTIVITY	DESCRIPTION	OPTIONS	OPERATION	MATERIAL CLASSIFICATION (See Appendix A)	DISPOSAL OPTIONS* (See also Appendix B and Appendix C)
				General Solid Waste Non-Putrescible **Excavated Natural Material (ENM) *** Material that does not meet the classification of VENM can be classified as Excavated Natural Material (ENM) once validated by laboratory analysis. (Refer to Appendix A for definition of ENM)	**Once verified as ENM by laboratory analysis**: 1. Re-use within the project site 2. Re-use on council land 3. Re-use on private property subject to DA approval and in accordance with resource recovery exemption and order (i.e. ENM 2014) 4. Stockpile at approved stockpile location for future use (stockpile volume restrictions apply for ENM) 5. Dispose to licensed landfill no validation testing required. *Note: reduced tipping charges would be available for material classified as ENM.*
	Excavated Soil Material (imported materials within road reserve)	Material to be sorted or stockpiled separately from material classified as VENM or ENM	Separate and sort into like materials such as asphalt pavement, gravel, concrete, road base etc for further reuse options or disposal.	General Solid Waste Non-Putrescible **Excavated Public Road Material (EPRM) *** (Refer to Appendix A for definition of EPRM)	1. Re-use within the Council road reserve. 2. Stockpile at approved EPRM stockpile location for future reuse (stockpile volume restrictions apply for EPRM) 3. Reuse at an approved site with a valid NSW EPA Resource Recovery Order and Exemption for land application of waste. 4. Dispose to licensed landfill with no validation testing required. *Note: reduced tipping charges would be available for sorted material (e.g. concrete) rather than unsorted.*

ACTIVITY	DESCRIPTION	OPTIONS	OPERATION	MATERIAL CLASSIFICATION (See Appendix A)	DISPOSAL OPTIONS* (See also Appendix B and Appendix C)
	Acid Sulfate Soil Excavated natural soil from within a mapped ASS Class area (e.g. natural insitu material)	Environmental Assessment has determined that material is considered as ASS or PASS. (e.g. ASS is natural soil potentially below EPRM).	Excavated material would be managed in accordance with site specific ASS management plan or Councils ASS management plan for minor works.	**Acid Sulfate Soil** (Refer to Appendix A for definition of ASS)	1. Re-use within the project site/excavation (e.g. backfill or reburial as a priority at depth prior to end of days shift without treatment/neutralisation) 2. Dispose to licensed facility that accepts ASS (e.g. By arrangement to Eco Earth Resources, 1732 Staplyton Jacobs Well Rd, Jacobs Well, QLD, 4208. Mobile: 0407 736 351 *If material is to be disposed to the Jacobs Well facility it will have the following characteristics:* • *No soil samples have a field pH of <2.5 (i.e. with prior arrangement no neutralisation or treatment is required as material would be managed at the site via a below water burial.* • *A contaminated land use assessment found that the material is uncontaminated and does not exhibit any of the characteristics identified in Table 1 and Table 2 of Waste that needs to Tracked document (https://www.epa.nsw.gov.au/your-environment/waste/tracking-transporting-hazardous-waste/waste-must-tracked)* 3. Undergo neutralization/ treatment and validation by laboratory analysis in accordance with the project's ASS management plan, then dispose to licensed landfill.

		Works within a mapped ASS area with **NO** previous environmental investigation	Refer to ASS Mapping layer on Councils Weave GIS to determine ASS mapping class. (Refer to Appendix A for ASS Mapping classes and constraints)	**Acid Sulfate Soil** (Refer to Appendix A for definition of ASS)	Where ASS mapping indicates the project site is located within a: 1. Class 1 or 2 ASS area, seek advice from Council's environmental scientist prior to works commencing. 2. Class 3 area, works can proceed to a depth of ≤ 1.0 m below ground level (bgl). Any surplus material would not require treatment/ neutralisation and would be classified in accordance with Waste Classification Guidelines (e.g. VENM or ENM). Seek advice from Council's Environmental Scientist if works are likely to intercepted soils at a depth of > 1.0 m bgl. 3. Class 4 ASS area, works can proceed to a depth of ≤ 2.0 m bgl. Any surplus material would not require treatment/ neutralisation and would be classified in accordance with Waste Classification Guidelines (e.g. VENM or ENM). Seek advice from Council's Environmental Scientist if works are likely to intercepted soils at a depth of > 2.0 m bgl. 4. Class 5 ASS area works can proceed to any depth as long as there are no dewatering operations (seek advice from Council's environmental scientist if dewatering is required). Any surplus material would not require treatment/ neutralisation and would be classified in accordance with Waste Classification Guidelines (e.g. VENM or ENM).

ACTIVITY	DESCRIPTION	OPTIONS	OPERATION	MATERIAL CLASSIFICATION (See Appendix A)	DISPOSAL OPTIONS* (See also Appendix B and Appendix C)
SHOULDER GRADING AND CLEANING TABLE DRAINS	Removal of accumulated gravel, soil and organic matter from table drains	1. Sort materials	Sort material (e.g. litter) into waste streams (e.g. recyclables and landfill)	General Solid Waste Non-Putrescible	1. Dispose sorted waste to licensed landfill for recycling or disposal (e.g. Recycle material that includes glass, metal, paper, hard plastics and cardboard or dispose general waste that includes coffee cups, soft plastics, foam, household items etc)
			Separate /stockpile vegetation	Vegetation pre-classified as garden waste (e.g. branches, grass, leaves, trunks etc) **Mulch** * (Refer to Appendix A for definition of Mulch)	1. Mulch and reuse on-site or transport off-site for mulching and reuse in accordance with council operations [a] 2. Reuse in accordance with Mulch exemption for application to land 3. Dispose to a licensed landfill for recycling or disposal
			Scrape out and remove remaining soil material by grader and / or loader.	**Excavated Public Road Material (EPRM) *** (Refer to Appendix A for definition of EPRM)	For remaining material classified as EPRM: 1. Re-use within the project site (i.e. the Council road reserve) 2. Stockpile at approved EPRM stockpile location for future reuse (stockpile volume restrictions apply for EPRM) 3. Reuse at an approved site with a valid NSW EPA Resource Recovery Order and Exemption for land application of waste (i.e. the Environ haul road). 4. Dispose to licenced landfill

ACTIVITY	DESCRIPTION	OPTIONS	OPERATION	MATERIAL CLASSIFICATION (See Appendix A)	DISPOSAL OPTIONS* (See also Appendix B and Appendix C)
		2. Unsorted material	Removal of all material from table drains	General solid waste Non-Putrescible	1. Dispose to licenced landfill
HEAVY PATCHING AND PROFILE PATCHING	Repair of road pavement failures	1. Sorted material 2. Unsorted material	Excavate and remove failed pavement material and seal. Replace with new gravel pavement and seal.	General Solid Waste Non-Putrescible **Excavated Public Road Material (EPRM)** (Refer to Appendix A for definition of EPRM)	1. Re-use within the project site (i.e. the Council road reserve) 2. Stockpile at approved EPRM stockpile location for future reuse (stockpile volume restrictions apply for EPRM) 3. Reuse at an approved site with a valid NSW EPA Resource Recovery Order and Exemption for land application of waste (i.e. the Environ haul road). 4. Dispose to licenced landfill
ROAD SLIP REMOVAL	Slip failure of road cutting or embankment	1. Top side slip	Sort vegetation /green waste from natural soil & rock material	General Solid Waste Non-Putrescible Vegetation pre-classified as garden waste (e.g. branches, grass, leaves, trunks etc) **Mulch** * (Refer to Appendix A for definition of Mulch)	1. Mulch and reuse in accordance with council operations [a] 2. Reuse in accordance with Mulch exemption for application to land 3. Dispose to a licensed landfill for recycling or disposal.

ACTIVITY	DESCRIPTION	OPTIONS	OPERATION	MATERIAL CLASSIFICATION (See Appendix A)	DISPOSAL OPTIONS* (See also Appendix B and Appendix C)
				General Solid Waste Non-Putrescible **Excavated Natural Virgin Material (VENM)** (Refer to Appendix A for definition of VENM)	1. Re-use within the project site 2. Re-use on council land 3. Re-use on private property subject to DA approval. 4. Stockpile at approved stockpile location for future reuse (no stockpile volume restrictions apply for VENM) 5. Dispose to licensed landfill for recycling or disposal
		2. Bottom side slip (if removal of material is necessary)	Similar to option 1 with the likely addition of imported material from road pavement and subgrade (e.g. road making material).	General Solid Waste Non-Putrescible Waste would likely be as per option 1 (Top side slip) with the addition of EPRM. **Excavated Public Road Material (EPRM) *** (Refer to Appendix A for definition of EPRM)	As for option 1 for Mulch and VENM, plus the following options for EPRM: 1. Re-use within the project site (i.e. the Council road reserve 2. Stockpile at approved EPRM stockpile location for future reuse (stockpile volume restrictions apply for EPRM) 3. Reuse at an approved site with a valid NSW EPA Resource Recovery Order and Exemption for land application of waste (i.e. the Environ haul road). 4. Dispose to licensed landfill for recycling or disposal

ACTIVITY	DESCRIPTION	OPTIONS	OPERATION	MATERIAL CLASSIFICATION (See Appendix A)	DISPOSAL OPTIONS* (See also Appendix B and Appendix C)
TREE LOPPING OR REMOVAL	Lopping or removal of woody vegetation	1. Chip/mulch on-site or 2. Transport off-site	Woody material is chipped/ on-site for use.	General Solid Waste Non-Putrescible Vegetation pre-classified as **garden waste** (e.g. branches, grass, leaves, trunks etc) **Mulch *** (Refer to Appendix A for definition of Mulch)	1. Mulch and reuse on-site or transport off-site for mulching and reuse in accordance with council operations [a] 2. Reuse in accordance with Mulch exemption for application to land 3. Dispose to a licensed landfill for recycling or disposal
ASPHALT PROFILING	Removal of asphalt road surfacing by profiling (may contain minority of road gravel)		Asphalt is profiled from existing road surface and loaded into truck for removal/disposal	General Solid Waste Non-Putrescible **Reclaimed Asphalt Pavement (RAP) or Excavated Public Road Material (EPRM) *** (Refer to Appendix A for definition of RAP and EPRM)	1. Reuse as re-sheeting material or construction material for Council roads and private roads (e.g. road base or sub base or sheeting gravel roads) 2. Stockpile at approved EPRM or RAP stockpile location for future reuse (stockpile volume restrictions apply) 3. Reuse at an approved site with a valid NSW EPA Resource Recovery Order and Exemption for land application of waste (i.e. the Environ haul road). 4. Dispose to licensed landfill

ACTIVITY	DESCRIPTION	OPTIONS	OPERATION	MATERIAL CLASSIFICATION (See Appendix A)	DISPOSAL OPTIONS* (See also Appendix B and Appendix C)
CLEANING OF STORMWATER DRAINAGE PIPES, PITS AND GROSS POLLUTANT TRAPS	Removal of accumulated materials in pipelines & water quality devices	Remove material and transport off-site.	Pits, pipes and GPT cleaned either manually, by excavator, vacuum truck, etc	May contain General solid waste (non-putrescible) and General Solid waste (putrescible).	1. Dispose to licensed landfill
				Liquid Waste (refer to Appendix A for definition of liquid waste)	1. Dispose to council drying beds to remove liquid component. Once classified as non-liquid waste it can be disposed to licensed landfill
LITTER & ILLEGAL DUMPING	Removal of roadside material & general litter	1. Sort mixed waste where feasible. Be alert for asbestos, chemicals or other hazards.	Transport off-site	General solid waste (putrescible and non-putrescible) (Refer to Appendix A for definition of putrescible and non-putrescible waste)	1. Dispose to licenced landfill for recycling or disposal 2. Where asbestos, chemicals or other contaminants are present seek advice from supervisor prior to removal.
		2. Recyclable goods that can be sorted	Transport off-site or refer to Waste Management Unit to contact a licensed recycler.	General solid waste (non-putrescible)	1. Licenced recycler to arrange removal 2. Dispose to Licenced landfill for recycling or disposal

ACTIVITY	DESCRIPTION	OPTIONS	OPERATION	MATERIAL CLASSIFICATION (See Appendix A)	DISPOSAL OPTIONS* (See also Appendix B and Appendix C)
AQUATIC WEEDS	Harvesting of weeds from ponds & waterways	Harvest vegetation and transport off-site	Weeds are harvested from water body by floating harvester or excavator. Vegetation is temporarily stockpiled to dry out (e.g dewater) and transported off-site for disposal	General solid waste (non-putrescible) Vegetation pre-classified as garden waste (e.g. branches, grass, leaves, trunks etc)	1. Dispose to licenced Landfill for recycling or disposal
STREET SWEEPING	Removal of accumulated materials on road and footpaths	Remove material and transport off-site	Accumulated material is swept from roads and footpaths by mechanical sweeper and transported off-site for disposal.	General solid waste (non-putrescible)	1. Dispose to licenced Landfill
				Liquid Waste (refer to Appendix A for definition of liquid waste)	1.Dispose to council drying beds to remove liquid component. Once classified as non-liquid waste it can be disposed to licensed landfill as General Solid waste (non-putrescible).

ACTIVITY	DESCRIPTION	OPTIONS	OPERATION	MATERIAL CLASSIFICATION (See Appendix A)	DISPOSAL OPTIONS* (See also Appendix B and Appendix C)
FOOTPATH REPAIRS	Replacement of damaged sections of concrete cycle ways and footpaths	Sorting of path material from gravel, soil or vegetation. Remove sorted material and transport off-site	Separate and sort into like materials. Damaged sections of path are broken up and loaded into truck for removal/disposal. Other materials managed as per relevant sections in this table (e.g. VENM or ENM)	General solid waste (non-putrescible) Pre-classified as Building and demolition waste (B&D) (refer to Appendix A for definition)	1. Re-use within the project site 2. Dispose of concrete to licenced landfill for recycling or disposal.
TIMBER BRIDGE REPAIRS	Replacement of deteriorated timber members	Remove material and transport off-site	Deteriorated timber members are removed from bridge	General solid waste (non putrescible) Pre-classified as Building and demolition waste (B&D) (refer to Appendix A for definition)	1. Dispose to licenced landfill for recycling or disposal.
				Excavated Public Road Material (EPRM) *	1. Re-use within the project site (i.e. the Council road reserve 2. Stockpile at approved EPRM stockpile location for future reuse (stockpile volume restrictions apply for EPRM) 3. Dispose to licensed landfill

ACTIVITY	DESCRIPTION	OPTIONS	OPERATION	MATERIAL CLASSIFICATION (See Appendix A)	DISPOSAL OPTIONS* (See also Appendix B and Appendix C)
GRAVE BURIAL	Excavate and backfill grave	Reuse material on-site.	Surplus soil after backfilling of grave.	Excavated Natural Material (ENM) Material that does not meet the classification of VENM can be classified as Excavated Natural Material (ENM) once validated by laboratory analysis. (Refer to Appendix A for definition of ENM)	1. Spread / land apply within cemetery grounds **Once verified as ENM by laboratory analysis**: 1. Re-use on council land 2. Re-use on private property subject to DA approval and in accordance with resource recovery exemption and order (i.e. ENM 2014) 3. Stockpile at approved stockpile location for future use (stockpile volume restrictions apply for ENM) 4. Dispose to licensed landfill no validation testing required. *Note: reduced tipping charges would be available for material classified as ENM.*

Table Notes:
Preference order for disposal of fill is based on maximum recycling of waste products and minimising the use of new raw products.

* Refers to a current Resource Recovery order and exemption (link to orders and exemptions here: https://www.epa.nsw.gov.au/your-environment/recycling-and-reuse/resource-recovery-framework/current-orders-and-exemption

a- Regarding whether the Mulch Order and Exemption (2016) applies to local councils:

- Council Engineering Division operates on the basis that as long as vegetation material is collected only from our Council projects (not residential kerbside collection) and the generated mulch is only supplied and used for Council's own needs (e.g. as soil amendment for Council parks and gardens etc) and not supplying to the public, then the resource recovery Mulch (2016) Order and Exemption does not apply.
- However, if the collection of vegetation material includes non-Council vegetation, the material would be managed in accordance with the Mulch (2016) order and exemption.

Appendix A: Waste Classification and Permissible Disposal Methods

The typical cross-section of a pavement and the waste associated can be noted in Figure 1 below.

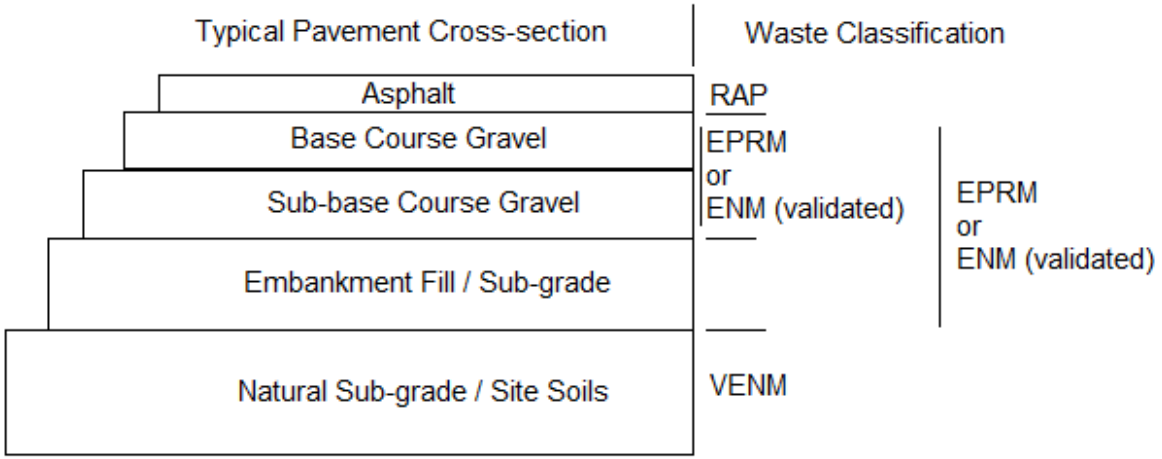

Figure 1.

Table A1- Typical Council Waste Stream and Definitions

WASTE STREAM	DEFINITION	NOTES / EXEMPTIONS
Virgin Excavated Natural Material - VENM	The POEO Act (1997) defines **VENM** as: 'natural material (such as clay, gravel, sand, soil or rock fines): that has been excavated or quarried from areas that are **not** contaminated with manufactured chemicals or process residues, as a result of industrial, commercial, mining or agricultural activities, and that does not contain any sulfidic ores (ASS/PASS) or soils or any other waste.' No other criteria for **VENM** have been approved. By definition, **VENM** cannot be 'made' from processed soils. Excavated material that has been stored or processed in any way cannot be classified as **VENM**. Classification as **VENM** requires certainty that the material concerned is not contaminated. **Where it is uncertain whether an excavated material can be classified as VENM, it should be treated as ENM.**	The disposal of VENM by application to land is exempt from licensing and the payment of the Waste Levy provided only virgin excavated natural material is received at the site. (POEO Act (1997), Schedule 1, Clause 39 (2) (e)). There is no limit on the quantity of VENM that can be placed at such sites. The generator of VENM must supply to transporter and receiver, documented proof of VENM in the form of a section 143 certificate stating volume supplied and that it is free of contamination. Application or apply to land means applying to land by: • spraying, spreading or depositing on the land; or • ploughing, injecting or mixing into the land; or • filling, raising, reclaiming or contouring the land.
Excavated Natural Material – ENM	**ENM** is naturally occurring rock and soil (including but not limited to materials such as sandstone, shale, clay and soil) that has: • been excavated from the ground, and • contains at least 98% (by weight) natural material, and • does not meet the definition of Virgin Excavated Natural Material (VENM) in the Act. **ENM** does not include material located in a hotspot; that has been processed; or that contains asbestos, Acid Sulfate Soils (ASS), Potential Acid Sulfate soils (PASS) or sulfidic ores.	**Excavated Natural Material Order and Exemption 2014** The disposal of ENM by application to land is exempt from licensing and the payment of the Waste Levy. The excavated natural material can only be applied to land as engineering fill or for use in earthworks. There is no limit on the quantity of ENM that can be placed at such sites. Records of the source and disposal sites, testing plan and test results, and quantities of ENM used for filling must be prepared and kept for 6 years.

WASTE STREAM	DEFINITION	NOTES / EXEMPTIONS
Excavated Natural Material – ENM (cont.)	To be classified as **ENM**, material **must** satisfy the testing requirements of Table 2 and 3 of ENM Exemption 2014. Please contact the Engineering Division Environmental Scientist for advice regarding ENM laboratory analysis.	
Excavated Public Road Material – EPRM	**Excavated public road material** means any of the following waste materials, being rock, soil, sand, bitumen, reclaimed asphalt pavement, gravel, slag from iron and steel manufacturing, fly and bottom ash, concrete, brick, ceramics and any materials that hold a resource recovery exemption for use in road making activities and that have been excavated during the construction and maintenance of council and RMS public roads and public road infrastructure facilities. This does not include any waste that contains coal tar or asbestos, or any waste that is classified as hazardous, restricted solid, special or liquid waste as defined in the Act.	Excavated Public Road Material Order and Exemption 2014 The use of EPRM on roads is subject to the following conditions: The excavated public road material can only be stored within the road corridor at the site where it is to be applied to land. The excavated public road material can only be applied to land within the road corridor for public road related activities including road construction, maintenance and installation of road infrastructure facilities. This exemption does not apply to the land application of excavated public road material on any land outside the road corridor. The excavated public road material cannot be applied on private land. The consumer must land apply the relevant waste within a reasonable period of time. The use of EPRM for road construction and maintenance does not attract the waste levy. Records of disposal of EPRM as above do not have to be prepared.
Reclaimed Asphalt Pavement – RAP	**Reclaimed asphalt pavement** means an asphalt matrix which was previously used as an engineering material and which **must not contain a detectable quantity of coal tar or asbestos.**	**Reclaimed Asphalt Pavement Order and Exemption 2014** The reclaimed asphalt pavement can only be:- 7.1.1. Applied to land for road related activities including road construction or road maintenance activities, being: (a) use as a road base and sub base, (b) applied as a surface layer on road shoulders and unsealed roads, and (c) use as an engineering fill material.

WASTE STREAM	DEFINITION	NOTES / EXEMPTIONS
Reclaimed Asphalt Pavement – RAP (cont.)		7.1.2. Used as an alternative raw material in the manufacture of asphalt. Records of disposal of RAP as per 7.1.1 above do not have to be prepared
Acid Sulfate Soils (ASS) and Potential Acid Sulfate Soils (PASS)	Acid sulfate soils (ASS) are those naturally occurring sediments and soils which contain sulfides, mainly iron sulfide and iron disulfide or their precursors. Exposure of these sulfides in the soil to oxygen – often as a result of drainage or excavation – can produce sulfuric acid, which may have a significant impact on the environment. Leaching of sulfuric acid into waterways can cause serious water quality problems, resulting in fish kills and damage to infrastructure, such as floodgates and bridges	There are no reuse options available for ASS Any surplus material than cannot be reburied on-site will be managed in accordance with an acid sulfate soil management plan (e.g. treated/neutralised with agricultural lime) and disposed off-site to a licenced landfill or licensed premises to accept ASS.
General Solid Waste	**General solid waste (putrescible)** The following wastes (other than special waste, liquid waste, hazardous waste or restricted solid waste) have been pre-classified by the EPA as 'general solid waste (putrescible)': • household waste that contains putrescible organics • waste from litter bins collected by or on behalf of local councils • manure and night soil • disposable nappies, incontinence pads or sanitary napkins • food waste • animal waste • grit or screenings from sewage treatment systems that have been dewatered so that the • grit or screenings do not contain free liquids • any mixture of the wastes referred to above.	

WASTE STREAM	DEFINITION	NOTES / EXEMPTIONS
General Solid Waste (cont.)	**General solid waste (non-putrescible*)*** means waste (other than special waste, hazardous waste, restricted solid waste, general solid waste (putrescible) or liquid waste) that includes any of the following: • glass, plastic, rubber, plasterboard, ceramics, bricks, concrete or metal, • paper or cardboard, • household waste from municipal clean-up that does not contain food waste, • waste collected by or on behalf of local councils from street sweeping, • grit, sediment, litter and gross pollutants collected in, and removed from, stormwater treatment devices or stormwater management systems, that has been dewatered so that it does not contain free liquids, • grit and screenings from potable water and water reticulation plants that has been dewatered so that it does not contain free liquids, • garden waste, • wood waste, • virgin excavated natural material, • building and demolition waste, • asphalt waste (including asphalt resulting from road construction and waterproofing works), • cured concrete waste from a batch plant, • anything that is general solid waste (non-putrescible) within the meaning of the *Waste Classification Guidelines*, • any mixture of wastes referred to above	

WASTE STREAM	DEFINITION	NOTES / EXEMPTIONS
Building and Demolition Waste	***Building and demolition waste*** means unsegregated material **(other than material containing asbestos waste)** that results from: (a) the demolition, erection, construction, refurbishment or alteration of buildings other than: (i) chemical works, or (ii) mineral processing works, or (iii) container reconditioning works, or (iv) waste treatment facilities, or (b) **the construction, replacement, repair or alteration of infrastructure** development such as roads, tunnels, sewage, water, electricity, telecommunications and airports, and includes materials such as: (c) bricks, concrete, paper, plastics, glass and metal, and (d) timber, including unsegregated timber, that may contain timber treated with chemicals such as copper chrome arsenate (CCA), high temperature creosote (HTC), pigmented emulsified creosote (PEC) and light organic solvent preservative (LOSP), **but does not include excavated soil** (for example, soil excavated to level off a site prior to construction or to enable foundations to be laid or infrastructure to be constructed).	The disposal of Building and Demolition Waste by filling land is exempt from licencing and the payment of the Waste Levy provided:- The fill sites, over any period of time, receive a total of **no more than 200 tonnes** of the following waste (and no other waste):- (i) building and demolition waste only, (ii) building and demolition waste mixed with virgin excavated natural material,
TSC Mulch	Vegetation material is collected only from our Council projects (not residential kerbside collection) and the generated mulch is only supplied and used for Council's own needs (e.g. as soil amendment for Council parks and gardens etc).	However, if the collection of vegetation material includes non-Council vegetation the material would be managed in accordance with the Mulch (2016) order and exemption.

WASTE STREAM	DEFINITION	NOTES / EXEMPTIONS
Raw Mulch	**Raw mulch** means any compostable organic plant material that is applied to land as a recycled organic product without having been subjected to an effective pasteurisation or composting process. Such materials may be shredded and/or screened to a preferred particle size grading for particular applications. Raw mulches include materials such as horticultural barks, leaf mulch and wood chip mulch produced from source separated garden organics, forestry and sawmill residues and urban wood residues.	**Raw Mulch Order and Exemption 2016** The disposal of Raw Mulch by application to land is exempt from licencing and the payment of the Waste Levy. Specific Conditions apply, refer to Mulch Order and Exemption 2016.
Asbestos Waste Asbestos Containing Material (ACM)	**Asbestos** means the fibrous form of those mineral silicates that belong to the serpentine or amphibole groups of rock-forming minerals including; actinolite, amosite (brown asbestos), anthophyllite, chrysotile (white asbestos), crocidolite (blue asbestos) and tremolite and includes any items made from or containing asbestos such as sheeting, roofing, lagging or pipes. Asbestos waste means any waste that contains asbestos.	Asbestos is classified as Special Waste. Refer to Council guidelines and protocols for managing and transporting ACM. Asbestos transporters and facilities receiving asbestos waste in NSW weighing more than 100 kilograms, or consisting or more than 10 square metres of asbestos sheeting in one load must track and report this waste to the EPA using Waste Locate. (https://wastelocate.epa.nsw.gov.au/) Refer to Appendix C for additional information on the NSW EPA's WasteLocate.
Liquid Waste	Liquid waste means any waste (other than special waste) that: • has an angle of repose of less than 5 degrees above horizontal • becomes free-flowing at or below 60 degrees Celsius or when it is transported • is generally not capable of being picked up by a spade or shovel • is classified as liquid waste under an EPA gazettal notice. If the waste meets the criteria outlined above, it is classified as liquid waste, and no further assessment for classification is required.	Liquid Waste is current transported to the drying beds at Councils West Tweed Depot. Once dewatered to a stage that it does not meet the definition of liquid waste it shall be disposed to licensed landfill.

Appendix B: Waste Disposal Sites and Site Constraints

Table B1: Waste Disposal Sites (valid as at 11.02.2021)

CLASSIFICATION	SITES	NOTES / EXEMPTION
Licenced Land Fill	Stotts Creek Landfill Facility (Tweed Shire) Or to alternate licensed landfill as directed	
Road Reserve sites	1. Quarry Hill, Tweed Valley Way, Fernvale	1. Status to be confirmed 2.Swift's Road is a temporary stockpile site and subject to maximum volume thresholds (i.e. no more than 1,000m^3 or 1,000 tonnes at any one time and no greater than 6,000 tonnes received in a year) 3. Temporary stockpiling of Excavated Public Road Material is subject to Resource Recovery Exemption; final landform to be remediated in accordance with Part 5 Planning Approval (in prep.).
Specific Disposal Site	Haul road from Stotts Creek Landfill to Eviron Quarry	This site is subject to the conditions prescribed in the EPA Tweed Shire Council Excavated Public Road Material Order 2020 and Tweed Shire Council Excavated Public Road Material Exemption 2020 **This site has additional requirements relating to -** • Recording of the source and quantity of all material placed • Maximum of 14,040m^3 • Exclusion of any ASS, PASS, or treated (neutralised) ASS For full details refer to the Project Management Plan for this site

CLASSIFICATION	SITES	NOTES / EXEMPTION
Resource Recovery sites # **and** **Waste Storage sites**	TSC Murwillumbah Depot 2, South Murwillumbah TSC Tweed Depot, Tweed Heads West	Note: Temporary stockpiling at Council depots is subject to maximum volume thresholds (i.e. no more than 1,000m^3 or 1,000 tonnes at any one time and no greater than 6,000 tonnes received in a year) **Waste storage volumes do not apply to landscaping material, VENM or waste that meets the conditions of a Resource Recovery Order (e.g. ENM)**
Approved Fill Site on private property	For current list refer to – **N:\ShareInfrastructureDelivery\Approved Fill Sites**	Check with Technical Officer – Quarry Operations and Quality Control 02 6670 2716 regarding sites and respective constraints

Appendix C: EPA Document – "WasteLocate Handout"

Waste facilities

All drivers delivering asbestos to your facility need to scan a QR2id code to confirm delivery. All waste facilities in NSW that accept asbestos waste must display a *WasteLocate* plate with a unique QR2id code for that facility.

Your QR2id plate should be displayed in a prominent location where drivers can easily access it for scanning to complete deliveries.

You must report to the EPA the registration numbers of vehicles that deliver asbestos without using *WasteLocate*. More information is provided in the *Asbestos and Waste Tyres Guidelines* available at **epa.nsw.gov.au**.

Weather resistant unique QR2id plates can be ordered from **WasteLocate.epa.nsw.gov.au** or by calling **1800 420 380**.

Order plates for your facility now.

GPS Location required

At the point of collection and delivery of asbestos waste, GPS location details from the smartphone or tablet computer must be recorded by *WasteLocate*. Please tap 'allow' when prompted for your location.

Why is WasteLocate needed?

Airborne asbestos is a health hazard. Illegal dumping of asbestos may lead to increased exposure of individuals to asbestos fibres.

Waste transporters are required to report the movement of more than 100kg of asbestos waste of more than 10 square metres of asbestos sheeting within NSW.

WasteLocate has been developed in consultation with industry to facilitate compliance with the new requirements. By working together we will create a level playing field for industry participants and a healthier environment for us all.

Heavy penalties apply for not using *WasteLocate*.

If you are involved with transporting, or arranging the transport of asbestos waste in NSW you need to register for *WasteLocate*.

Register now at **WasteLocate.epa.nsw.gov.au**

NSW EPA

WasteLocate support:
Phone: 1800 420 380
Email: **WasteLocate@QR2id.com**
Web: **WasteLocate.epa.nsw.gov.au**

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Environment Protection Authority

WasteLocate

Important information for the building industry, transporters and waste facilities

To make sure that asbestos waste ends up in the right place, new monitoring requirements are now in force.

Asbestos transporters and facilities receiving asbestos waste must report the movement of this waste to the EPA. To help industry meet their legal obligations the EPA has developed an easy to use online tool, ***WasteLocate***. If you are involved with the transport or disposal of asbestos waste in NSW, this brochure will help you meet your obligations.

WasteLocate makes it easy to comply and it can be accessed from tablets, smartphones and computers by visiting **WasteLocate.epa.nsw.gov.au** or by scanning a QR2id code.

WasteLocate generates a unique EPA consignment ID that will allow each load to be monitored from the place of generation to the site of disposal.

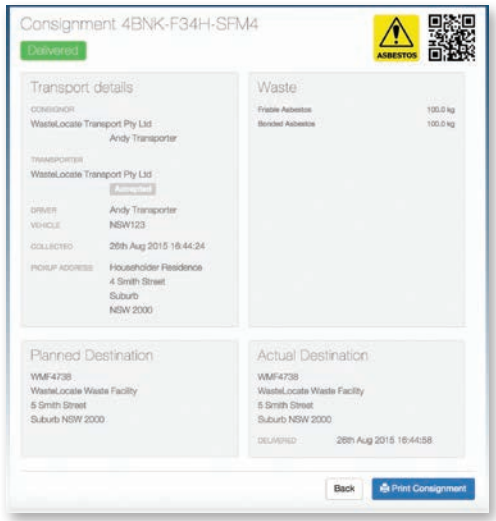
What is a QR2id code?

WasteLocate uses QR2id codes, similar to standard QR codes. These two dimensional bar codes can be scanned with smart phones or tablet computers by using any QR scanning app.

New consignments

Each load of asbestos waste needs to have a unique EPA consignment ID, which you must generate using *WasteLocate*.

To create a new consignment, log into *WasteLocate* and follow the on-screen prompts to record the details. You can create consignments to be collected immediately or scheduled for pick up at a later time.



Transport

When you collect a consignment you need to check the details in *WasteLocate* and make sure they accurately reflect the load you are moving.

Once you are satisfied the details are correct, follow the on-screen prompts.

When you arrive at the waste facility, you must scan the QR2id plate displayed at the gate or weighbridge and log into *WasteLocate* to confirm the delivery of the load.

If there is more than one consignment on board, the *WasteLocate* application makes it easy to choose one or more loads being delivered.

WasteLocate is designed for use on devices running the latest versions of Chrome, Firefox, Internet Explorer or Safari. For best results please check you are using the latest version of your browser.

Clause 79 of the *Protection of the Environment Operations (waste) Regulation* 2014 now requires waste transporters to provide information to the EPA regarding the movement of any load in NSW of more than 10 square meters of asbestos sheeting, or 100 kilograms of asbestos waste. To fulfil these legal obligations, asbestos waste transporters must use *WasteLocate*.

Appendix F NSW DPI Fisheries Dredge and Reclamation Permit

Department of Primary Industries (Fisheries)
Department of Regional NSW

OUR REF: PN22/519

25 January 2023

The General Manager
Tweed Shire Council
PO Box 816
MURWILLUMBAH NSW 2484
Via email: [redacted]

Attention: [redacted]

Dear [redacted]

Re: Permit # PN22/519 for dredging and reclamation work associated with banks stabilisation works within Hopping Dicks Creek, [redacted] Limpinwood, Tweed Shire LGA.

I refer to your application dated 25 November 2022 and additional information received 16 January 2023 for a permit under Part 7 of the *Fisheries Management Act 1994* (FM Act). DPI Fisheries, a division within the Department of Primary Industries, assesses applications for dredging and reclamation works, harm marine vegetation and obstruction of fish passage in accordance with Part 7 of the FM Act and the *Policy and Guidelines for Fish Habitat Conservation and Management (2013 Update).*

An invoice has been prepared and sent to Council for the statutory minimum initial assessment fee of $358. The quality of the application enabled the assessment to be undertaken without additional charges being required.

DPI Fisheries has considered the test of significance provided in the Review of Environmental Factors document titled *Hoppping Dicks Creek bank stabilisation, Limpinwood* dated November 2022 for the proposed works. The Department has determined that the proposed works are not likely to significantly affect aquatic threatened species, populations or ecological communities listed under Federal and State legislation (EPBC Act, BC Act, FM Act) or their habitats, and consequently the proposed works do not require a referral to the Commonwealth or a licence to harm.

Please find enclosed a permit under Part 7 of the FM Act for dredging and reclamation work associated with banks stabilisation works within Hopping Dicks Creek [redacted] Limpinwood, Tweed Shire LGA.

Please note that the attached permit providing authorisation under the FM Act to undertake dredging and reclamation (s200does not provide authorisation under any other Act or planning instrument. It is Council's responsibility to ensure they possess all appropriate approvals and land owners consent before works occur. This may include, but is not restricted to, development consent under the *Environmental Planning & Assessment Act 1979* and *Biodiversity Conservation Act 2016* in relation to impacts on terrestrial species and threatened species not covered by the *Fisheries Management Act 1994*; land owners consent and/or licences under the *Crown Land Management Act 2016*; and controlled activity approvals under the *Water Management Act 2000*.

Please carefully read and note the conditions included in the permit. **If you agree that all the conditions are reasonable, appropriate and achievable, you must sign and date the attached sheet (Acceptance of Conditions) and return it to the Contact Officer as soon as possible. If you believe that you cannot comply with all the conditions then you must not commence work.** Instead, you should contact the Contact Officer listed on the first page of the permit so that your concerns can be considered.

If you intend to have the work undertaken by a contractor, please ensure that the contractor receives a full copy of the permit and understands the importance of abiding by the conditions. As the permit holder and proponent of the works, Council is responsible for ensuring that all conditions are fully adhered to. **Breaching a condition of a permit can incur an on-the-spot fine of up to $500 or up to $11,000 through the local court pursuant to clause 225 of the *Fisheries Management (General) Regulation 2019*.**

The extent of work is to be restricted to that outlined in the application and plans submitted to DPI Fisheries. **If for any reason, other works are required, or the works need to be extended to other areas, you must seek specific approval beforehand.** DPI Fisheries will require justification for these variations and may charge additional assessment fees as outlined in the permit application. Similarly, **please note the expiry date on the permit**. If the works are not completed by the expiry date you will need to obtain an extension. **Requests to renew a permit before the expiry date will not incur a fee. Requests to renew a permit that has expired within the last 3 months will incur a $179 fee. Permits that have expired more than 3 months previously will need to be reapplied for.**

DPI Fisheries places particular importance upon the need to minimise the harm to the natural environment both at the worksite and downstream waters. We expect implementation of Best Management Practice with respect to erosion and sediment control and aquatic vegetation management. This includes:

- Work scheduling (e.g. installation of protective measures before earthworks commence, suspension of works during rain etc.);
- Deployment of protective measures (e.g. silt curtains, site drainage, separation of "clean" and "dirty" water, silt stop fencing, check dams, sediment traps etc.); and
- Constant maintenance of protective measures (e.g. replacing torn silt-stop fencing, replacing silt-stop fencing which has fallen down or been knocked over, removing accumulated sediment etc.).

Please refer to the publication Landcom (2004), *Managing Urban Stormwater: Soils and Construction* (4th Edition), commonly referred to as "The Blue Book" for guidance (www.environment.nsw.gov.au/research-and-publications/managing-urban-stormwater-soils-and-construction-volume-1-4th-editon).

DPI Fisheries highlight that the State Environmental Planning Policy (Transport and Infrastructure) 2021 requires that exempt developments, complying developments and emergency works are carried out in accordance with all applicable requirements of The Blue Book.

In addition to complying with the conditions of the permit, DPI Fisheries recommends that laminated copies of the permit be included on the site security signage and/or other high visibility areas of the works compound.

If you have any queries, please contact me on [redacted].

Yours sincerely

[redacted]

Senior Fisheries Manager, Coastal Systems (North Coast)
Aboriginal Fishing and Marine and Coastal Environments, Primary Industries NSW
Authorised delegate of the Minister for Primary Industries

Cc: [redacted]

Permit under Part 7 of the

FISHERIES MANAGEMENT ACT 1994

Permit	Permit Number	**PN22/519**
	Expiry Date	Unless cancelled or suspended sooner, this permit or updated variations shall remain in force until **1 February 2024**
Permit Holder:	Tweed Shire Council PO Box 816 MURWILLUMBAH NSW 2484 **Responsible Officer:** [redacted] Phone: [redacted] Email: [redacted]	
Permit Area:	Within an approximately 210m long section on the right bank of Hopping Dicks Creek, [redacted] Limpinwood, Tweed Shire LGA **(Refer to Attachment 1)**	
Permit Activity:	Dredging and reclamation works, specifically, the construction of an approximately 210m long x 2m wide x 2m high rock revetment for the purpose of stabilising the bank against further erosion as proposed in your application of 25 November 2022 and additional information received 16 January 2023. **(Refer to Attachment 2)**	
Departmental Contact Officer:	[redacted] Senior Fisheries Manager, Coastal Systems (North Coast) 1243 Bruxner Hwy WOLLONGBAR NSW 2477 Ph[redacted]	

This permit is subject to the following conditions:

ADMINISTRATIVE CONDITIONS

1. The attached **Acceptance of Conditions** form must be completed and returned to ahp.central@dpi.nsw.gov.au before any works authorised by this permit commence.
   Reason – To remove any doubt that the Permit Holder understands and accepts the Conditions before work commences.
2. The attached **Commence Works Notification** form must be completed and sent to ahp.central@dpi.nsw.gov.au **and** fisheries.compliance@dpi.nsw.gov.au at least three (3) days BEFORE the commencement of works authorised by this permit.
   Reason - To ensure that local DPI Fisheries staff are aware that works authorised by this permit are about to commence.

3. The attached **Post Works Notification** form, including clearly labelled site photographs of the completed works, must be completed and sent to ahp.central@dpi.nsw.gov.au, fisheries.compliance@dpi.nsw.gov.au within 21 days of completion of works at the site.
Reason - To provide an opportunity for local DPI Fisheries staff to inspect the site to ensure that riparian restoration works have been adequately completed consistent with the authority of this permit.
4. The permit holder must ensure that all works authorised by this permit are restricted to the permit area and are undertaken in a manner consistent with those described in the application made to DPI Fisheries dated 25 November 2022 and additional information received 16 January 2023. In particular, all the actions and recommendations outlined in [List various documents] the Review of Environmental Factors document titled *Hoppping Dicks Creek bank stabilisation, Limpinwood* dated November 2022 and the CEMP are to be followed. Other works which have not been described, excepting those activities required by this permit, are not to be undertaken.
Reason – This permit has been granted following an assessment of the potential impacts of the described works upon the aquatic and neighbouring environments. Other works, which were not described in the application have not been assessed and may have significant adverse impacts.
5. This permit (or a true copy), a copy of the determined Part V Assessment, CEMP and other approvals such as landholder's consent must be carried by the permit holder or sub-contractor operating on-site at all times during work activity in the permit area.
Reason – A DPI Fisheries Compliance Officer may wish to check compliance of works with imposed conditions.

SEDIMENT AND EROSION CONTROL PLAN

6. Erosion and sediment mitigation devices are to be erected in a manner consistent with the accepted Best Management Practice (i.e. Landcom [2004], *Managing Urban Stormwater: Soils and Construction* [4th Edition]) to prevent the entry of sediment into the waterway, or mobilisation of sediment within the waterway, **prior to** any earthworks being undertaken. **These erosion and sediment devices are to be maintained in good working order for the whole duration of the bank stabilisation works and subsequently until the worksite has been stabilised and the risk of erosion and sediment movement from the site is minimal.**
Reason – To ensure that sediment generated by the exposure of soil is not transported into the main water body.

DEWATERING PLAN

7. Dewatering at the worksite is to be undertaken consistent with accepted Best Management Practice (i.e. Landcom [2004], *Managing Urban Stormwater: Soils and Construction* [4th Edition]). In addition, mitigation controls such as a sediment fence between the sump water release outlet and the waterway are to be employed to ensure that downstream water quality is not adversely affected.
Reason – Minimise turbidity impacts from the site on downstream waters.

WORK IN WATERS

8. Machinery is not to enter or work from the waterway unless in accordance with works proposed in your application for the permit and the requirements of this permit.
Reason – To ensure minimal risk of water pollution from oil or petroleum products and to minimise disturbance to the streambed substrate.

9. Only clean rock is to be used in construction of works authorised by this permit.
Reason – To avoid fines, clay and other sediment un-necessarily entering the waterway and potentially impacting on aquatic habitats.

10. Geotextile fabric is to be used to underlay the rock used to armour the bank.
Reason – Consistent with best management practice and reduce the potential for the bank to continue to erode behind the rock armouring.

11. Prior to use at the site, machinery is to be appropriately cleaned, degreased and serviced. Emergency Spill Kits appropriate for containing and cleaning up petroleum and solvent product spills within waterways are to be available on site at all times during works.
Reason – To reduce the threat of an unintended pollution incident impacting upon the aquatic environment.

12. A floating hydrocarbon boom and silt curtain that extends for the full depth of the water column is to be used to isolate instream works and minimise the impacts of turbidity and mobilised sediment during the construction. The floating boom and attached silt curtain are to be deployed consistent with currently accepted Best Management Practice (i.e. Landcom [2004], *Managing Urban Stormwater: Soils and Construction* [4th Edition])[1]. The curtain and boom are to be installed, prior to commencement of any instream works and retained until after the completion of works that risk mobilising sediment. The curtain is to be maintained to ensure it operates effectively.
Reason – Minimise the impact of turbidity generated from the works upon the aquatic environment.

TIMING OF WORKS FOR LOW FLOWS

13. Works are to be undertaken during low flows in Hopping Dicks Creek and when Bureau of Meteorology forecast for the Northern Rivers district forecast region (available at: www.bom.gov.au/nsw/forecasts/map.shtml) indicates several days of clear, dry weather.
Reason – Timing the works for appropriate conditions can reduce delays and minimise impacts on the aquatic environments.

[1] Available at: www.environment.nsw.gov.au/research-and-publications/managing-urban-stormwater-soils-and-construction-volume-1-4th-editon

AVOIDING MOVING OR HARMING SNAGS, RIPARIAN AND AQUATIC VEGETATION

14. When working near aquatic vegetation[2] (phragmites and other aquatic vegetation) on water land[3], these areas are to be identified and appropriately delineated as "No Go" areas (with the aim of avoiding harm to these areas). Harm to aquatic including removing or moving vegetation on water land outside the permit area approved under the authority of this permit is not permitted. Such removal, harm or movement caused to aquatic vegetation is to be documented and reported to the contact officer who may direct that the removed, harmed or damaged aquatic vegetation on water land be restored.
Reason – To ensure that impacts on aquatic habitats and the riparian zone are minimised.

15. Material storage and stockpiling is not to be undertaken on water land or riparian or aquatic vegetation. Stockpiling must be undertaken in a manner to avoid harm to these types of vegetation or water land. Stockpiles should also be located away from adjacent water land. Stockpiles and/or dewatering areas should be appropriately controlled by sediment fencing or other materials prescribed in the "Blue Book" (i.e. Landcom 2004, *Managing Urban Stormwater: Soils and Construction* [4th Edition]) to ensure sediments do not enter the waterway.
Reason – To ensure that impacts on aquatic habitats and the riparian zone are minimised. "Degradation of native riparian vegetation along NSW water courses" is listed as a Key Threatening Process under the provisions of the Fisheries Management Act 1994.

16. No snags[4] outside of the works area described in the permit application are to be removed, realigned or relocated without first obtaining the authority of the Senior Fisheries Manager, Coastal Systems.
Reason – "Removal of large woody debris from NSW rivers and streams" is listed as a Key Threatening Process under the provisions of the Fisheries Management Act 1994. This approval has been granted on the basis that snags are not to be removed.

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[2] "***Aquatic vegetation***" is defined in the *Fisheries Management (General) Regulation* 2019 as 'native vegetation that inhabits freshwater but does not include noxious weeds within the meaning of the *Noxious Weeds Act 1993*.'

[3] "***Water land***" is defined in the *Fisheries Management Act 1994* and means land submerged by water:

a) whether permanently or intermittently, or
b) whether forming an artificial or natural body of water,

and includes wetlands and any other land prescribed by the regulations.

Wetlands include marshes, mangroves, swamps, or other areas that form a shallow body of water when inundated intermittently or permanently with fresh, brackish or salt water, and where the inundation determines the type and productivity of the soils and the plant and animal communities.

[4] "***Snags***" is a term used to describe **large woody debris** from trees and shrubs, including whole fallen trees, broken branches and exposed roots that have fallen or washed into a waterway and are now wholly or partially submerged by water. Snags also includes submerged large rocks (of greater than 500 mm in two dimensions).

17. On completion of the works, the worksite is to be rehabilitated and stabilised including:
- Removal of surplus construction materials and temporary structures (other than silt fences and other erosion and sediment control devices) installed during the course of the works.
- Installing stock-proof fencing along the length of the bank stabilisation works at least 5m landward of the creek bank.
- Undertaking plantings of *Lomandra sp.* or other suitable native species along the bank of the waterway landward of the permitted bank stabilisation works and within all temporarily disturbed areas of works. Lomandra plantings should consist of at least six (6) *Lomandra sp.* tubestock per square metre.
- Appropriate maintenance of erosion and sediment control devices until the vegetation has successfully established and the site has stabilised.
Reason – To ensure that habitats are restored as quickly as possible, public safety is not compromised, aesthetic values are not degraded and sediment inputs into the waterway are reduced.

FISH KILL CONTINGENCY

18. A visual inspection of the waterway for dead or distressed fish (indicated by fish gasping at the water surface, fish crowding in pools or at the creek's banks) is to be undertaken twice daily during the works. **Observations of dead or distressed fish are to be immediately reported to the Contact Officer by the Permit Holder.** In such a case all works are to cease until the issue is rectified and approval is given to proceed. If requested, the Permit Holder is to commit resources to the satisfaction of the Contact Officer for an effective fish rescue, if in the view of that officer, a fish kill event is imminent and likely to occur within or adjacent to the works area due to conditions associated with weather, water quality and other parameters.
Reason – DPI Fisheries needs to be aware of fish kills so that it can assess the cause and mitigate further incidents in consultation with relevant authorities. They are also potentially contentious incidents from the public perspective. Work practices may need to be modified to reduce the impacts upon the aquatic environment.

IMPORTANT NOTE:

INCONSISTENCY BETWEEN DOCUMENTS

In the event of any inconsistency between the conditions of this approval and:
- the drawings / documents referred to above, the conditions of this approval prevail to the extent of the inconsistency;
- any Government publication referred in this permit, the most recent document, shall prevail to the extent of the inconsistency; and
- the proponent's mitigation measures outlined in the application, the conditions of this approval prevail to the extent of the inconsistency.

STOP WORK ORDERS

A Fisheries Officer or other appropriate delegate who has reasonable cause to suspect that the conditions of this permit have not been complied with, **may order the work to stop immediately**. The order may be given to the permit holder or any person who informs the officer that they are acting in any capacity on behalf of the permit holder. Any damage caused to the habitat outside the specified permit area, or the carrying out of works not in accordance with the conditions specified in this permit and/or the application and that were accepted by the permit holder, could result in a breach of the *Fisheries Management Act 1994* or *Regulations*, and penalties of up to $220,000 may apply. Orders may also be made requiring work to rectify any damage caused by unauthorised works. Failure to abide by permit conditions may incur a $500 on-the-spot fine per breach pursuant to clause 225 of the *Fisheries Management (General) Regulations 2019*.

Authorised:

[redacted]

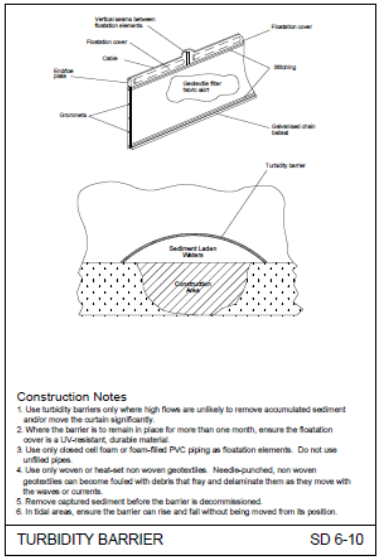
[redacted]
Senior Fisheries Manager, Coastal Systems (North Coast)
Authorised delegate of the Minister for Primary Industries

25 January 2023

Attachment 1

Figure 1: Plan showing location of works in purple as described within the *Permit Area* section above. The yellow outline indicates where previous bank stabilisation works have occurred.

Attachment 2



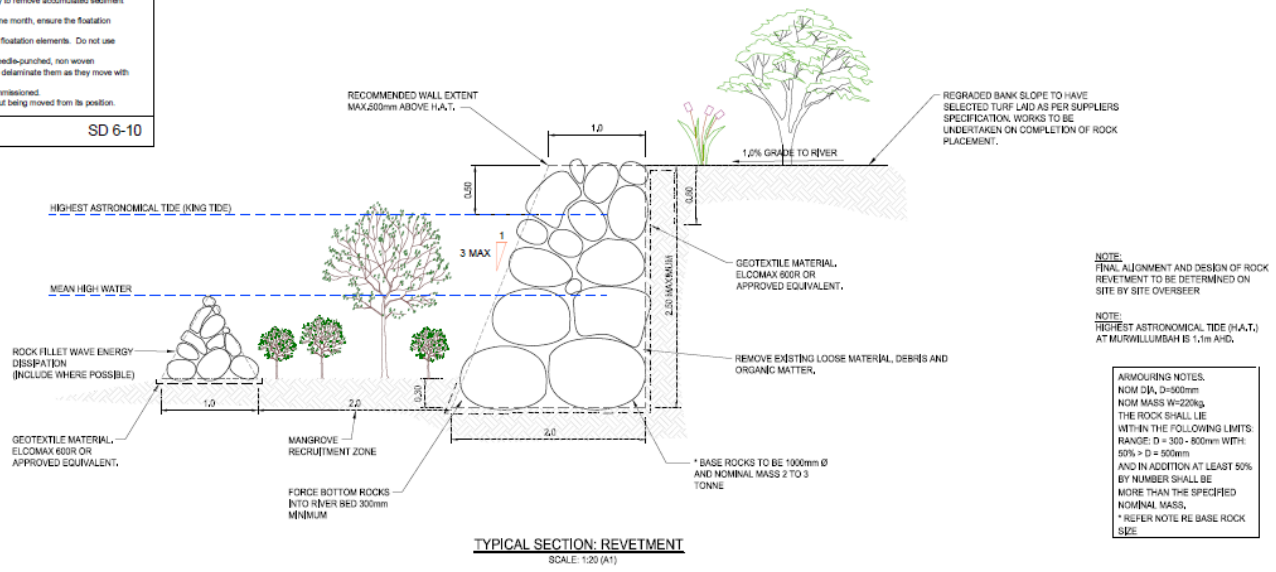


Figure 1: Plan showing final design of bank stabilisation works as described within the *Permit Activity* section above.

Acceptance of Conditions Form specified in Permit No. PN22/519 issued under Part 7 of the *Fisheries Management Act 1994*

PLEASE COPY THIS PAGE AND RETURN TO DPI FISHERIES

In reference to Permit No. PN22/519 for dredging and reclamation work associated with banks stabilisation works within Hopping Dicks Creek, Lot 1 DP 709676, 698 Limpinwood Road, Limpinwood, Tweed Shire LGA:

I the undersigned, acknowledge that I have read and understood and agree to comply with the conditions specified. I understand that penalties can be imposed for non-compliance with conditions.

Permit Holder's name: _____

Permit Holder's signature: _____

Date: _____

Please COPY AND SIGN this page and email to:

ahp.central@dpi.nsw.gov.au

Commence Works Notification Form specified in Permit No. PN22/519 issued under Part 7 of the *Fisheries Management Act 1994*

PLEASE COPY THIS PAGE AND RETURN TO DPI FISHERIES

In reference to Permit No. PN22/519 for dredging and reclamation work associated with banks stabilisation works within Hopping Dicks Creek, Lot 1 DP 709676, 698 Limpinwood Road, Limpinwood, Tweed Shire LGA:

Commence Works Notification Form

(Note: to be completed and returned 3 days before commencement of works)

Permit Holder's Name: _____

Site Location: _____

Works _____
_____

Commencement Date: _____

Comments:

Project Manager: _____Date:_____

Please COPY AND SIGN this page and email to:

ahp.central@dpi.nsw.gov.au
fisheries.compliance@dpi.nsw.gov.au

Post Works Notification Form specified in Permit No. PN22/519 issued under Part 7 of the *Fisheries Management Act 1994*

PLEASE COPY THIS PAGE AND RETURN TO DPI FISHERIES

In reference to Permit No. PN22/519 for dredging and reclamation work associated with banks stabilisation works within Hopping Dicks Creek, Lot 1 DP 709676, 698 Limpinwood Road, Limpinwood, Tweed Shire LGA:

Post Works Notification Form

(Note: to be completed and returned within 21 days of completion of works associated with this permit, including rehabilitation of riparian areas)

Permit Holder's Name _____

Site Location _____

Works _____

Date Completed _____ _____

Assessment of works:
(e.g. Were there any complications that made it difficult to comply with permit conditions i.e. weather, unforeseen geological conditions etc.)

Project Manager: _____Date:_____

Please COPY AND SIGN this page and return with clearly labelled photographs via email to:

ahp.central@dpi.nsw.gov.au
fisheries.compliance@dpi.nsw.gov.au

TWEED
SHIRE COUNCIL

Customer Service | 1300 292 872 | (02) 6670 2400

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