Development Application Form

Portal Application number: PAN-193944

Council Application number: 10.2022.83.1

Applicant contact details

tion?

Title	Mr
First given name	Sam
Other given name/s	
Family name	Wales
Contact number	[redacted]
Email	
Address	
Application on behalf of a company, business or body corporate	Yes
ABN	24637343983
ACN	637343983
Name	TASMAN TOURISM PTY LTD
Trading name	
Is the nominated company the applicant for this applica	
ABN	24637343983
ACN	637343983
Name	TASMAN TOURISM PTY LTD
Trading name	
Is the nominated company the applicant for this application?	No
No	

Owner/s of the development site

Owner/s of the development site	A company, business, government entity or other similar body owns the development site
Owner #	1
Company, business or body corporate name	Tasman Tourism Pty Ltd
ABN / ACN	24 637 343 983

I declare that I have shown this document, including all attached drawings, to the owner(s) of the land, and that I have obtained their consent to submit this application. - Yes

Note: It is an offence under Section 10.6 of the Environmental Planning and Assessment Act 1979 to provide false or misleading information in relation to this application.

Developer details

ABN	
ACN	
Name	
Trading name	
Address	
Email Address	

Development details

Application type	Development Application
Site address #	1
Street address	131 MEROOL ROAD MOAMA 2731
Local government area	MURRAY RIVER

Lot / Section Number / Plan	4/-/DP560393 ☑ 5/-/DP560393 ☑
Primary address?	Yes
Planning controls affecting property	Land Application LEP Murray Local Environmental Plan 2011 Land Zoning C3: Environmental Management R1: General Residential Height of Building NA Floor Space Ratio (n:1) NA Minimum Lot Size 120 ha 2000 m² Heritage NA Land Reservation Acquisition NA Foreshore Building Line NA Flood Planning Flood Planning Area Riparian Lands and Watercourses Watercourse Terrestrial Biodiversity Key Fish Habitat Terrestrial Biodiversity Urban Release Area Urban Release Area Wetlands Wetlands Freshwater Lakes

Proposed development

Proposed type of development	Retaining walls, protection of trees
Description of development	The proposal involves the rehabilitation of approximately 190m of Murray Riverbank within Merool Holiday Park to reduce the impacts of erosion on existing park infrastructure. The rehabilitation works include reshaping of the riverbank to provide a steady batter which will be lined with geotextile fabric and rock beaching. No native vegetation will be removed.
Dwelling count details	
Number of dwellings / units proposed	0
Number of storeys proposed	
Number of pre-existing dwellings on site	
Number of dwellings to be demolished	
Number of existing floor area	
Number of existing site area	
Cost of development	
Estimated cost of work / development (including GST)	$307,059.50
Do you have one or more BASIX certificates?	No
Subdivision	
Number of existing lots	2
Is subdivison proposed?	No

Proposed operating details	
Number of staff/employees on the site	
Number of parking spaces	
Number of loading bays	
Is a new road proposed?	No
Concept development	
Is the development to be staged?	No, this application is not for concept or staged development.
Crown development	
Is this a proposed Crown development?	No

Related planning information

Is the application for integrated development?	Yes
Acts under which licences or approvals are required	Fisheries Management Act 1994 Water Management Act 2000
Is your proposal categorised as designated development?	No
Is your proposal likely to significantly impact on threatened species, populations, ecological communities or their habitats, or is it located on land identified as critical habitat?	No
Does the application propose a variation to a development standard in an environmental planning instrument (eg LEP or SEPP)?	No
Is the application accompanied by a voluntary planning agreement (VPA) ?	No
Section 68 of the Local Government Act	
Is approval under s68 of the Local Government Act 1993 required?	No
10.7 Certificate	
Have you already obtained a 10.7 certificate?	No
Tree works	
Is tree removal and/or pruning work proposed?	No
Local heritage	
Does the development site include an item of environmental heritage or sit within a heritage conservation area.	No
Are works proposed to any heritage listed buildings?	No
Is heritage tree removal proposed?	No
Affiliations and Pecuniary interests	
Is the applicant or owner a staff member or councillor of the council assessing the application?	No
Does the applicant or owner have a relationship with any staff or councillor of the council assessing the application?	No
Political Donations	
Are you aware of any person who has financial interest in the application who has made a political donation or gift in the last two years?	No

Please provide details of each donation/gift which has been made within the last 2 years	

Payer details

Provide the details of the person / entity that will make the fee payment for the assessment.

The Environmental Planning and Assessment Regulation 2000 and Council's adopted fees and charges establish how to calculate the fee payable for your development application. For development that involves building or other works, the fee for your application is based on the estimated cost of the development.

If your application is for integrated development or requires concurrence from a state agency, additional fees will be required. Other charges may be payable based on the Council's adopted fees and charges. If your development needs to be advertised, the Council may charge additional advertising fees. Once this application form is completed, it and the supporting documents will be submitted to the Council for lodgement, at which time the fees will be calculated. The Council will contact you to obtain payment. Note: When submitting documents via the NSW Planning Portal, credit card information should not be displayed on documents attached to your development application. The relevant consent authority will contact you to seek payment.

The application may be cancelled if the fees are not paid:

Company Name	Tasman Tourism Pty Ltd
ABN	24 637 343 983
ACN	637 343 983
Trading Name	Tasman Tourism Pty Ltd
Email address	[redacted]
Billing address	

Application documents

The following documents support the application.

Document type	Document file name
Aboriginal Cultural Heritage Report	Appendix D - 21128_Merool Holiday Park_ACHDDA Appendix E - 2021 November Cultural Heritage Site Survey Report Merool Holdiay Park Appendix B AHIMS Merool - Site 1 Appendix B AHIMS Merool - Site 2
Biodiversity Assessment Report	Merool_Biodiversity Assessment and Approvals Navigator
Civil Engineering Plan	Appendix A - Merool_preliminary design_RevB_20220118
Cost estimate report	Merool_Construction estimate_v1
Council DA Checklist	DA Checklist_complete
Elevations and sections	Appendix A - Merool_preliminary design_RevB_20220118
Fee estimate	Application Invoice 9430 - 10.2022.83.1 - PAN-193944
Generated Pre-DA form	Pre-DA form_1644497566.pdf
Other	21091 Riverbank Rehabilitation RFI Response RFI for the proposed Environmental Protection works at Merool Caravan Park NSW Plan - Deposited Plan 560393 NSW Title Search - 5_560393 - 17.11.20 (post settlement)
Owner's consent	NSW Crown Lands Letter - Presumptive Title exists Lots 4 5 DP560393 Merool_owners consent_executed
Species impact statement	Appendix F - Test of significance
Statement of environmental effects	21091 Statement of Environmental Effects_v2 Appendix C - bionet atlas search results Appendix C - EPBC Act Protected Matters Report - both Sites Merool_Statement of Environmental Effects_merged_v1.1_20220209
Survey plan	M7650 Feature2 v1-site 1 M7650 Feature v1-site 2

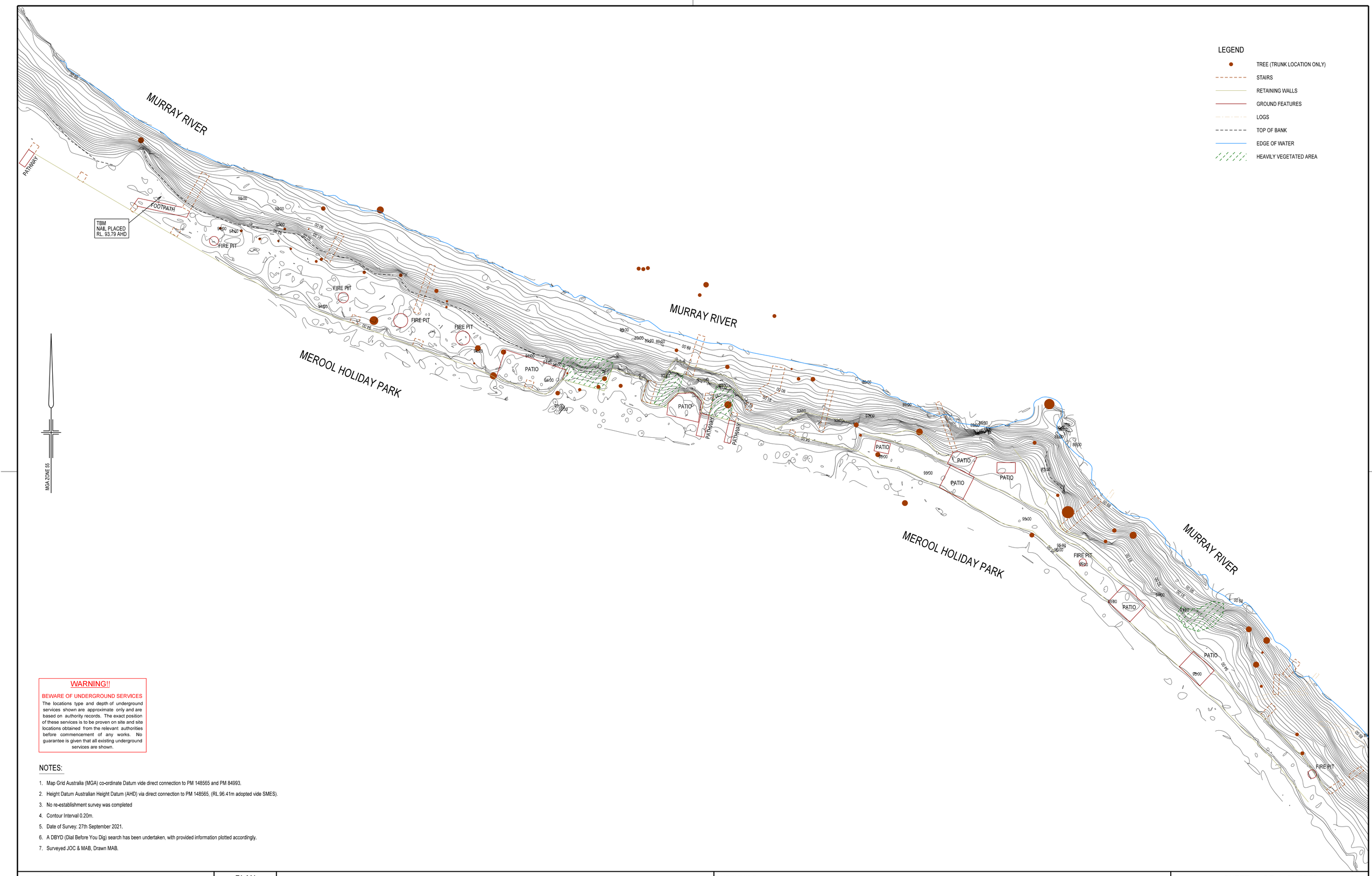
Applicant declarations

I declare that all the information in my application and accompanying documents is , to the best of my knowledge, true and correct.	Yes
I understand that the development application and the accompanying information will be provided to the appropriate consent authority for the purposes of the assessment and determination of this development application.	Yes

I understand that if incomplete, the consent authority may request more information, which will result in delays to the application.	Yes
I understand that the consent authority may use the information and materials provided for notification and advertising purposes, and materials provided may be made available to the public for inspection at its Offices and on its website and/or the NSW Planning Portal	Yes
I acknowledge that copies of this application and supporting documentation may be provided to interested persons in accordance with the Government Information (Public Access) 2009 (NSW) (GIPA Act) under which it may be required to release information which you provide to it.	Yes
I have read and agree to the collection and use of my personal information as outlined in the Privacy Notice	Yes
I agree to appropriately delegated assessment officers attending the site for the purpose of inspection.	Yes
I confirm that the change(s) entered is/are made with appropriate authority from the applicant(s).	

Lodgement details

Outcome of the pre-lodgement review	Application was lodged
Applicant paid the fees?	Yes
Total fee paid	$1,717.05
Council unique identification number	10.2022.83.1
Date on which the application was lodged into Council's system	11/04/2022



WARNING!!

BEWARE OF UNDERGROUND SERVICES

The locations type and depth of underground services shown are approximate only and are based on authority records. The exact position of these services is to be proven on site and site locations obtained from the relevant authorities before commencement of any works. No guarantee is given that all existing underground services are shown.

NOTES:

1. Map Grid Australia (MGA) co-ordinate Datum vide direct connection to PM 148565 and PM 84993.
2. Height Datum Australian Height Datum (AHD) via direct connection to PM 148565, (RL 96.41m adopted vide SMES).
3. No re-establishment survey was completed
4. Contour Interval 0.20m.
5. Date of Survey: 27th September 2021.
6. A DBYD (Dial Before You Dig) search has been undertaken, with provided information plotted accordingly.
7. Surveyed JOC & MAB, Drawn MAB.

NORTH EAST SURVEY DESIGN
ABN 83 127 459 367
PO Box 882
Wangaratta VIC 3676
Mobile 0407 216 710
Fax 03 5721 6701
matt@nesd.com.au
www.nesd.com.au

PLAN REFERENCE: M7650
VERSION 1
21-10-21
M7650 Feature v1.dgn

FEATURE SURVEY

MEROOL HOLIDAY PARK, MOAMA
FIFTEEN 50 CONSULTING

NOTATIONS:

SHEET 1 OF 1 SHEETS

SCALE
5 0 5 10
LENGTHS ARE IN METRES

ORIGINAL SCALE 1:250
ORIGINAL SHEET SIZE A1

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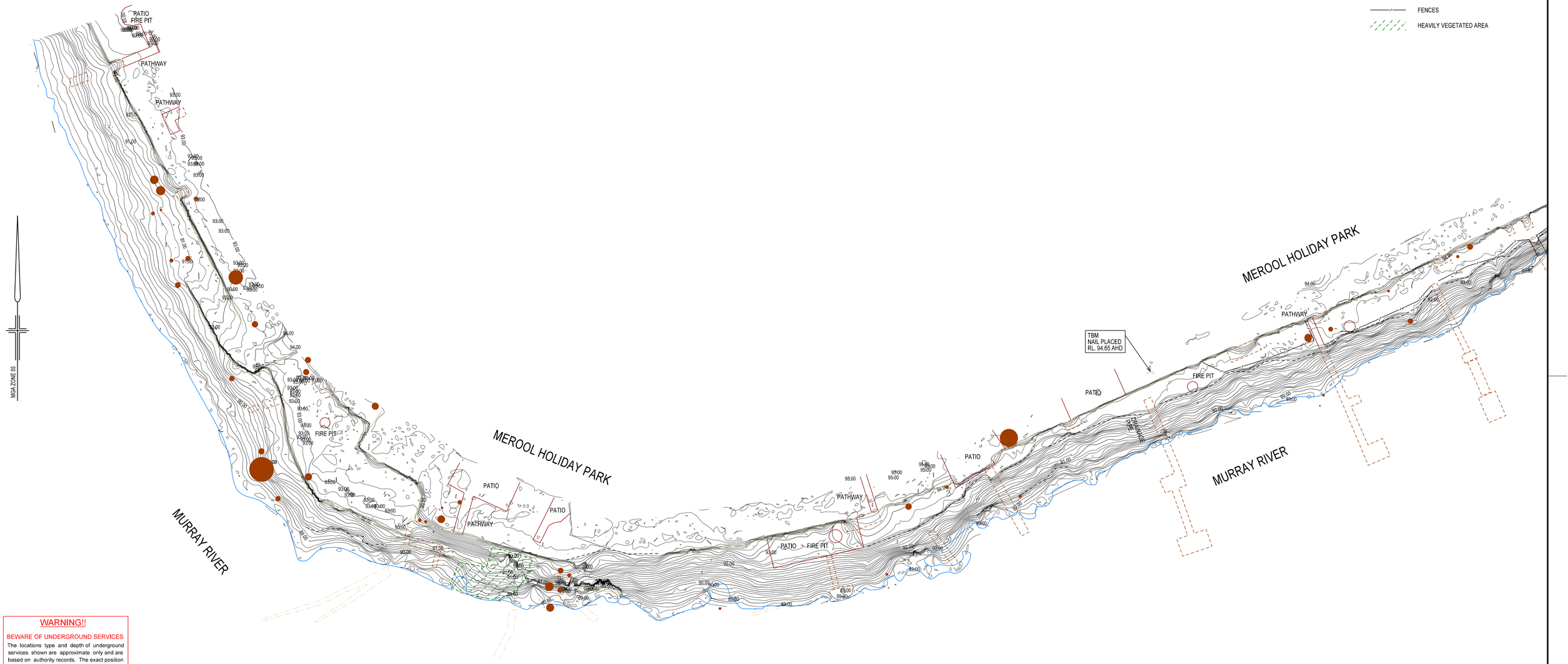

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M7650 Feature2 v1.dgn

FEATURE SURVEY

MEROOL HOLIDAY PARK, MOAMA
FIFTEEN 50 CONSULTING

NOTATIONS:

SHEET 1 OF 3 SHEETS

SCALE 5 0 5 10 LENGTHS ARE IN METRES

ORIGINAL SCALE 1:250 SHEET SIZE A1

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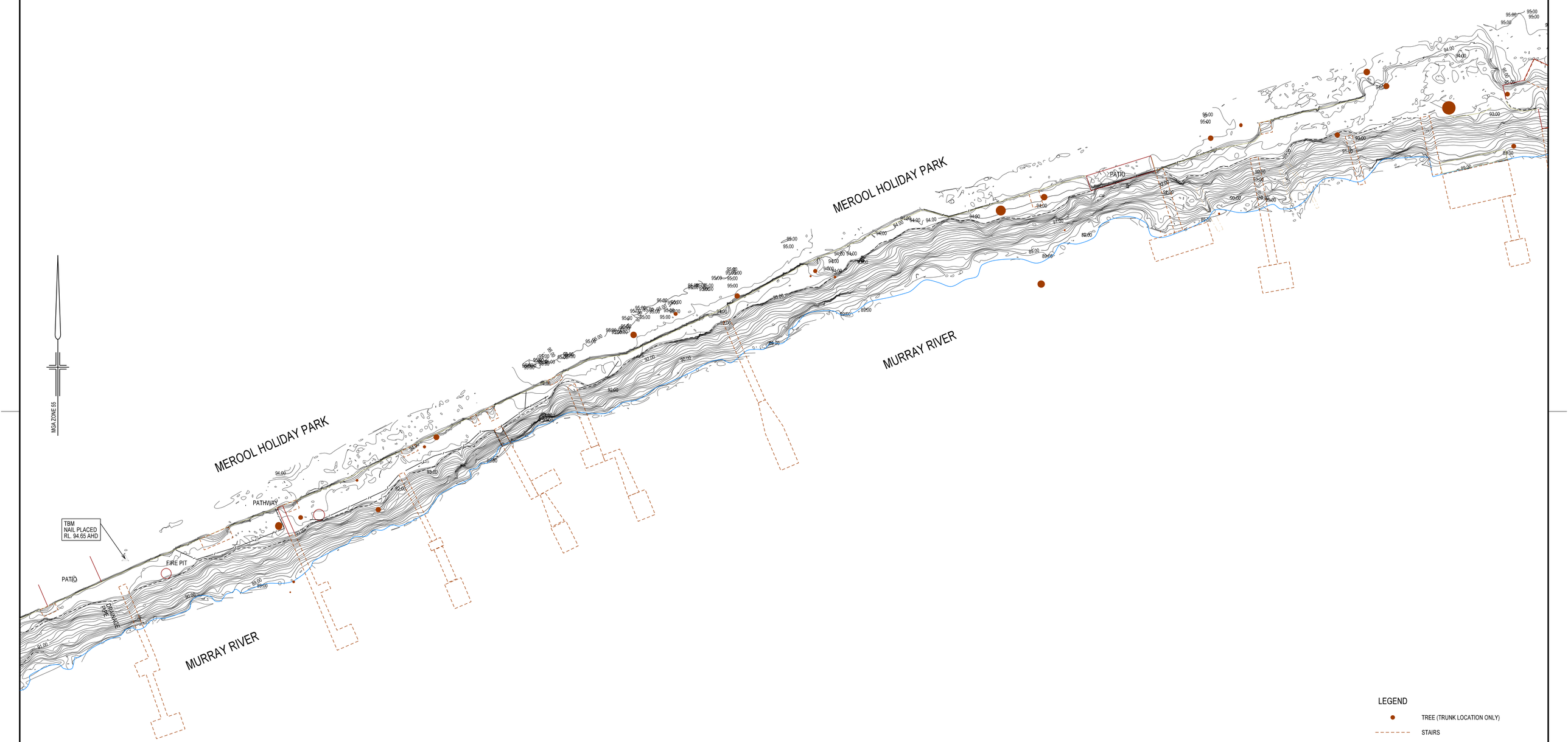

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LEGEND

- TREE (TRUNK LOCATION ONLY)
- STAIRS
- RETAINING WALLS
- GROUND FEATURES
- LOGS
- TOP OF BANK
- EDGE OF WATER
- FENCES
- HEAVILY VEGETATED AREA

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FEATURE SURVEY

MEROOL HOLIDAY PARK, MOAMA
FIFTEEN 50 CONSULTING

NOTATIONS:

SHEET 2 OF 3 SHEETS

SCALE
5 0 5 10
LENGTHS ARE IN METRES

ORIGINAL SCALE: 1:250
SHEET SIZE: A1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

MGA ZONE 55

LEGEND

- TREE (TRUNK LOCATION ONLY)
- STAIRS
- RETAINING WALLS
- GROUND FEATURES
- LOGS
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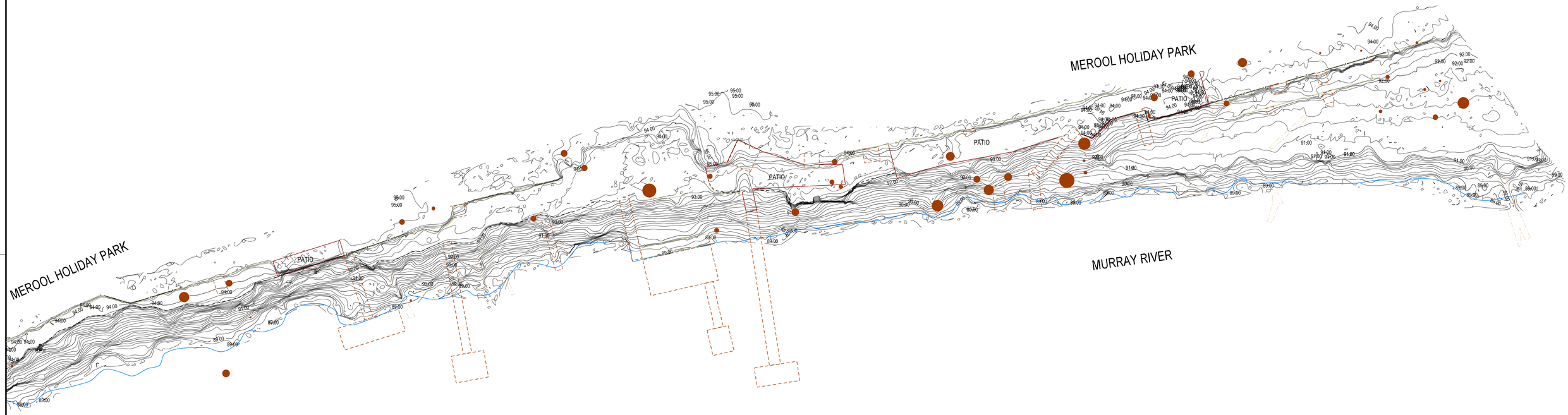

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FEATURE SURVEY

MEROOL HOLIDAY PARK, MOAMA
FIFTEEN 50 CONSULTING

NOTATIONS:

SHEET 3 OF 3 SHEETS

SCALE
5 0 5 10
LENGTHS ARE IN METRES

ORIGINAL SCALE: 1:250
SHEET SIZE: A1

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150mm

From: Office of Local Government NSW
To: Chris Alderton
Subject: Biodiversity Assessment and Approvals Navigator
Date: Saturday, 18 December 2021 7:51:26 AM

Hi,

Thank you for using the Biodiversity Assessment and Approvals Navigator. The Biodiversity Assessment and Approvals Decision Support tool assists in navigating the land management and biodiversity conservation framework to figure out which approvals apply to your vegetation clearing.

Please find, below, a copy of the information supplied using the navigator from the OLG website.

Question 1 – Are you carrying out a development that requires development consent from a council (under Part 4 of the Environmental Planning and Assessment Act 1979)?
Yes
Question 6a – Is your proposed development fulfilling the purpose of a subdivision that was approved prior to 25 August 2017 in a R1 to R4, RU5, B1 to B8 or IN1 to IN3 zone?
No
Question 6b – Will any part of your proposed development take place on land included on the Biodiversity Values Map? Note: The "parts" of a proposed development includes any land required for buildings, landscaping, access roads, bushfire asset protection zones, fencing and any associated infrastructure whether temporary or permanent.
Yes
Note
You will likely need to engage an accredited assessor to obtain a Biodiversity Development Assessment Report and provide this with your development application if your proposed development involves clearing native vegetation or certain other impacts.
Consent
Would you like to receive a copy of the information you have supplied by email?
Email
chris@geenvironmental.com.au

If you would like to use the tool again, please use the following link: https://www.olg.nsw.gov.au/councils/land-management/biodiversity/biodiversity-assessment-and-approvals-navigator/

Regards,

Office of Local Government | Department of Planning, Industry and Environment
Locked Bag 3015, Nowra NSW 2541
e: olg@olg.nsw.gov.au | p: 02 4428 4100 | http://www.olg.nsw.gov.au

NSW Office of Local Government

Planning, Industry & Environment

Our reference: 17/02004#08

Contact: Peter Bisset
Phone: 02 6990 1801
Email: peter.bisset@crownland.nsw.gov.au

Chris O'Brien
Murray River Council
P.O. Box 21
Mathoura NSW 2710

Dear Chris,

RE: PRESUMPTIVE TITLE – LOTS 4 & 5 DP 560393 – MEROOL CARAVAN PARK

I refer to proposed bank stabisation & erosion control works on the Murray River adjoining Lots 4 & 5 DP560393 at the Merool Caravan Park.

A historical search has determined that the title boundary to Lots 4 & 5 Deposited Plan (DP) 560393 currently held by Tasman Tourism Property Pty Ltd where it fronts the Murray River extends to the middle thread of the river by means of presumption title (via the '*Ad Medium Filum Aquae*' rule).

The original freehold title for this land was Vol 10 Folio 245 and was granted on 31 December 1863.

As a general rule where a freehold title of land bounded by a non-tidal stream issued prior to the gazettal date of 3 May 1918 (being the date the beds of creeks and rivers etc. in the Central and Eastern Divisions of NSW were reserved to the Crown) or 31 May 1935 (being the date the beds of creeks and rivers etc. in the Western Division of NSW were reserved to the Crown) and the plan of survey on which the freehold title is based shows the bank as the boundary, then the "ad medium filum aquae" rule (under Common Law) applies in that the riparian owner would enjoy presumptive title to the middle thread of the respective creek or river.

The presumption applies unless it has been rebutted by a statement in the freehold title or subsequent dealing in the land. In the case of this land there is no evidence of rebuttal and the chances of a rebuttal is considered highly unlikely.

The current title plan (DP560393) and historical title plan Crown plan C3-1817 clearly shows the bank of the river as the allotment boundary, and the freehold title was issued prior to the Reservation on 3 May 1918.

From this information, I am confident that Lots 4 & 5 DP 560393 enjoys presumptive title to the middle thread of the Murray River under the provisions of Section 45A of the *Real Property Act 1900*. On that basis, I do not consider the bed of the Murray River between the documentary title boundary and the middle thread to be Crown land.

Please note:
(1) The physical location of the bed and centre thread of the creek or river can only be determined by survey. Formal claims to the centre line of the must be made in all cases to NSW Land Registry Services, Legal Division. As such, this letter does not constitute legal advice.
(2) This advice is only in relation to Lots 4 & 5 DP 560393. Each freehold adjoining parcel of land adjoining a non-tidal creek or river is unique and a thorough examination of the history of the original grant of the title to the land is required as evidence to necessitate the existence of presumptive title.
(3) The proposed works/activities are subject to the requirements of various other pieces of legislation. It is the responsibility of the holder to obtain any appropriate information and to

observe any requirements of these other laws. These include (but are not necessarily limited to) the:

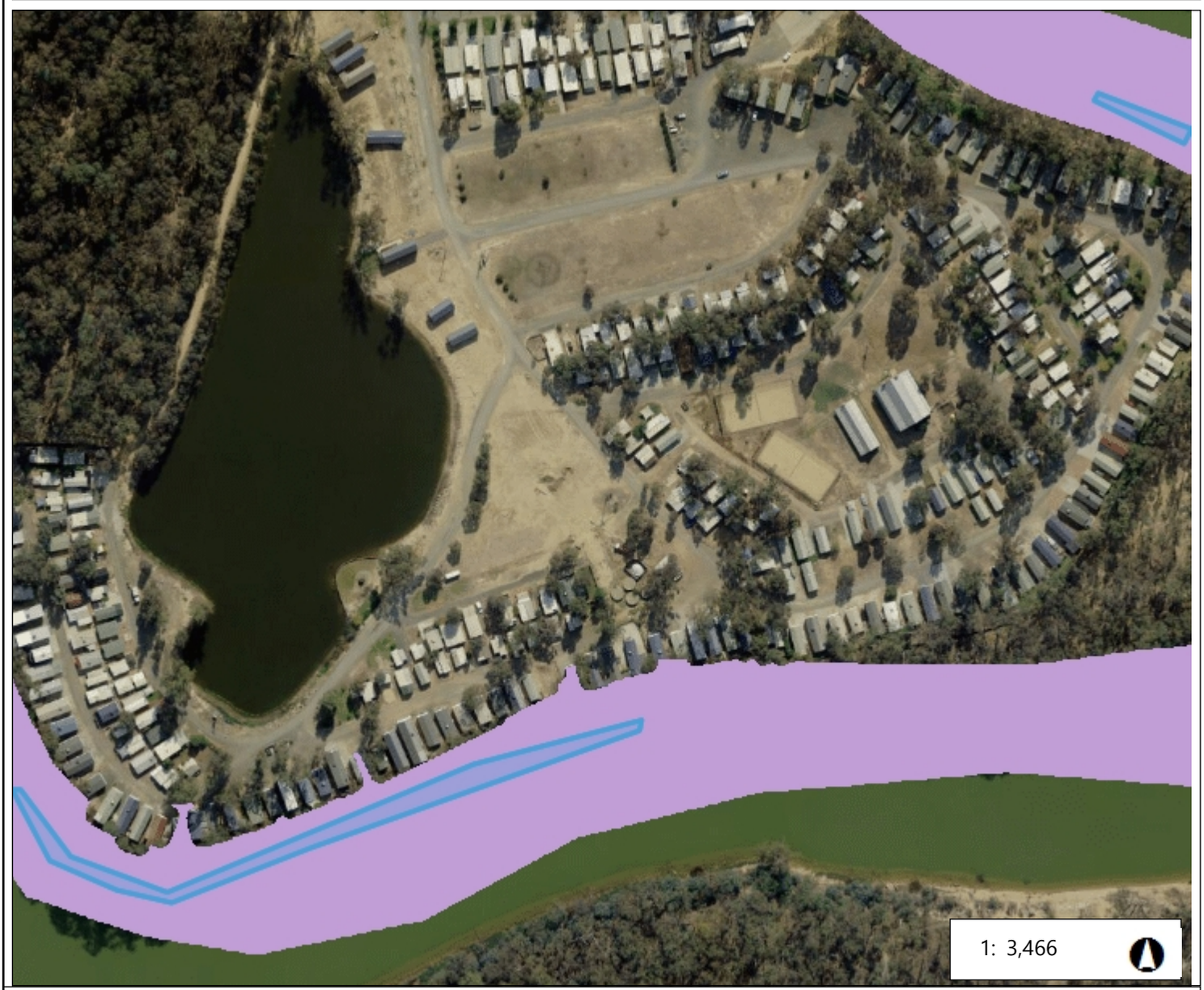
a. *Water Management Act 2000*- authorisation for water supply and works approvals from the WaterNSW; and
b. *Environmental Planning and Assessment Act 1979 / Local Environment Plans*- development consent from your local Council.

If you have questions regarding this letter, please contact Peter Bisset, Natural Resource Management Project Officer on (phone) 02 6990 1801 or (email) peter.bisset@crownland.nsw.gov.au.

Yours sincerely,

Peter Bisset
For Area Manager- South West
Date: 15/7/2021

Biodiversity Offset Scheme (BOS) Entry Threshold Map



176.1 0 88.03 176.1 Metres

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

Legend

- Biodiversity Values that have been mapped for more than 90 days
- Biodiversity Values added within last 90 days

Notes

Biodiversity Values Map and Threshold Report

Results Summary

Date of Calculation	12/03/2022 9:35 AM		**BDAR Required***
Total Digitised Area	0.26	ha	
Minimum Lot Size Method	LEP		
Minimum Lot Size	120	ha	
Area Clearing Threshold	1	ha	
Area clearing trigger Area of native vegetation cleared	no		no
Biodiversity values map trigger Impact on biodiversity values map(not including values added within the last 90 days)?	yes		yes
Date of the 90 day Expiry	N/A		

*If BDAR required has:

- at least one 'Yes': you have exceeded the BOS threshold. You are now required to submit a Biodiversity Development Assessment Report with your development application. Go to https://customer.lmbc.nsw.gov.au/assessment/AccreditedAssessor to access a list of assessors who are accredited to apply the Biodiversity Assessment Method and write a Biodiversity Development Assessment Report
- 'No': you have not exceeded the BOS threshold. You may still require a permit from local council. Review the development control plan and consult with council. You may still be required to assess whether the development is '"likely to significantly affect threatened species' as determined under the test in s. 7.3 of the Biodiversity Conservation Act 2016. You may still be required to review the area where no vegetation mapping is available.

Where the area of impact occurs on land with no vegetation mapping available, the tool cannot determine the area of native vegetation cleared and if this exceeds the Area Threshold. You will need to work out the area of native vegetation cleared - refer to the BOSET user guide for how to do this.

On and after the 90 day expiry date a BDAR will be required.

Disclaimer

This results summary and map can be used as guidance material only. This results summary and map is not guaranteed to be free from error or omission. The State of NSW and Office of Environment and Heritage and its employees disclaim liability for any act done on the information in the results summary or map and any consequences of such acts or omissions. It remains the responsibility of the proponent to ensure that their development application complies will all aspects of the *Biodiversity Conservation Act 2016.*

The mapping provided in this tool has been done with the best available mapping and knowledge of species habitat requirements. This map is valid for a period of 30 days from the date of calculation (above).

Acknowledgement

I as the applicant for this development, submit that I have correctly depicted the area that will be impacted or likely to be impacted as a result of the proposed development.

Signature_____ Date:12/03/2022 09:35 AM

Shop 5, 210 Pakenham Street
Echuca Vic 3564
PO Box 155 Moama NSW 2731
www.fifteen50.com.au

30 March 2022

Gayan Wickramasinghe
PO Box 906
Moama, NSW 2731

Our Reference: 21091 Riverbank Rehabilitation approval and design
Via: Email & NSW planning portal

Request for Additional Information
DA Online Reference Number: PAN-193944
Environmental protection works – proposed rock rip rap and associated revegetation works along the Murray Riverbank
Lot 4&5 of DP560393, 131 Merool Road Moama NSW 2731

Dear Gayan,

Thank you for your request for additional information regarding the proposed riverbank rehabilitation for Merool on the Murray (131 Merool Rd, Moama NSW 2731). Our response to each request is included below.

1. Proposed site plan
   - Amended proposed site plans are required
     - Site 1- Plan and Cross Section; Drawing No 21091-02; Sheet 02 of 07 – total length of the proposed rock rip rap has been added. Please refer to updated drawing attached.
     - Site2- Plan; Drawing No 21091-03; Sheet 03 of 07 – total length of the proposed rock rip rap and the scale has been added. Please refer to updated drawing attached.
2. A Biodiversity Offsets Scheme Entry Threshold Tool (BOSET) Report
   - As no vegetation will be removed to make way for the proposed works, a BOSET is not required. We have updated Section 3.3.7 *Biodiversity Conservation Regulations 2017* of the Statement of Environmental Effects to address this (v2 attached).
3. Additional information is required in relation to the earthworks proposed
   - The works do not include export of in-situ material and are generally above the existing natural surface level as shown in the drawings. Minor embankment shaping is required, limited to that which provides a working surface for the placement of the erosion protection works. Accordingly, depths of cut / fill shaping

earthworks are minor and are generally less than 300 mm. No fill is required to be imported to site, with rock beaching to be imported and placed as described in the drawings.

4. Site rehabilitation/environmental management plan

   - Site preparation, revegetation and maintenance details have been addressed within the attached Site Rehabilitation Management Plan.

5. Erosion and sedimentation control plan

   - Erosion and sediment control details have been included within the attached Site Rehabilitation Management Plan.

Yours Sincerely,

Nathan Heinrich
DIRECTOR / PRINCIPAL ENGINEER
0427 328 010
Nathan.Heinrich@fifteen50.com.au

PROJECT SCOPE

1. PROPOSED WORK INCLUDE:
   - 1.1. RE-GRADING THE BANK INFILLING ERODED AREAS
   - 1.2. ROCK ARMORING OF RIVERBANK FOR SITE 1 AND SITE 2
   - 1.3. RE-VEGETATION OF DISTURBED LANDS

GENERAL SPECIFICATIONS

2. ALL OH&S REQUIREMENTS ARE TO BE MET AS PER AS2865 (2009).
3. SITE ACCESS IS TO BE DETERMINED BY THE SUPERINTENDENT AND IS TO BE AGREED UPON WITH COUNCIL
4. ALL WORKMANSHIP AND MATERIALS SHALL COMPLY WITH THESE DRAWINGS AND RELEVANT AUSTRALIAN STANDARDS
5. THE CROSS SECTIONS SHOWN SHALL REFEREED AS INDICATOR OF EXTENT OF WORK AND THE AREAS IN-BETWEEN CROSS SECTIONS NEED SIMILAR OR FLATTER ROCK ARMOR BATTER. IDEALLY BATTER SHALL NOT BE LESS THAN 1H:1V AND MORE THAN 1H:2V. ANY DEVIATION BETWEEN DRAWINGS NOTES AND TECHNICAL SPECIFICATION IS TO BE RAISED WITH THE SUPERINTENDENT PRIOR TO CONSTRUCTION.
6. MINIMUM THICKNESS OF ROCK ARMORING SHALL 400mm AND NOT TO BE MEASURED FROM CROSS SECTIONS.
7. SITE TO BE EXCAVATED ONLY TO ESTABLISH FIRM BASE FOR ROCK PLACEMENT AND PRIOR APPROVAL FROM SUPERINTENDENT SHALL BE TAKEN BEFORE EXCAVATION.
8. TOPSOIL TO BE KEPT SEPARATE AND SPREAD OVER DISTURBED AREAS AT COMPLETION OF WORKS.
9. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM THE LOCATION AND DEPTH OF ALL OBSTRUCTIONS AND UNDERGROUND SERVICES IN THE VICINITY OF THE PROPOSED WORKS PRIOR TO THE COMMENCEMENT OF ANY WORKS.
7. ALL SURFACES TO BE COMPLETED TO FINISHED SURFACE LEVEL.
8. ALL TRUCKS TRANSPORTING DEBRIS FROM THE SITE MUST BE COVERED.
9. CONSTRUCTION WORK IS PERMITTED ON THE SITE BETWEEN THE HOURS OF 7am-5pm MONDAY TO SATURDAY INCLUSIVE. NO WORK IS PERMITTED ON SUNDAYS OR PUBLIC HOLIDAYS. NOISE CONTROLS SET OUT IN COUNCIL CONSENT MUST BE ADHERED TO. WORK OUTSIDE OF THE HOURS SPECIFIED SHALL NOT BE UNDERTAKEN WITHOUT THE WRITTEN APPROVAL OF COUNCIL'S SUPERINTENDENT.
10. ALL CONSTRUCTION MATERIALS AND MACHINERY MUST BE KEPT WITHIN WORKSITE.
11. ALL ASSETS MODIFIED OR DAMAGED BY THE PROPOSED WORKS SHALL BE REINSTATED TO THE SATISFACTION OF THE SUPERINTENDENT.

ROCK MATERIALS

12. ROCK SHOULD NOT BE ADVERSELY AFFECTED BY REPEATED WETTING AND DRYING AND SHALL HAVE A CRUSHING STRENGTH OF NOT LESS THAT 25 MPa
13. GRANULAR FILTER TO BE CRUSHED ROCK NDCR 20 mm
14. D50 ROCK MUST MEET THE FOLLOWING SPECIFICATION:

Equivalent Spherical Diameter	Percent (By weight) of rock of smaller size
1.5 - 2.0 D_{50}	100%
D_{50}	50%
0.3 - 0.4 D_{50}	10-20%
0.1 - D_{50}	< 5 %

ROCK SUPPLY AND PLACEMENT

11. SUPPLY AND PLACEMENT OF ROCK TO BE IN ACCORDANCE WITH THESE DRAWINGS AND ONSITE DIRECTION BY DESIGN ENGINEER OR SITE SUPERINTENDENT.
12. ROCK SHALL BE CAREFULLY PLACED BY BUCKET FROM A LOADER OR EXCAVATOR FROM NO GREATER THAN 1.0 m ABOVE THE MATERIAL ONTO WHICH IT IS TO BE PLACED.
13. ROCK SHALL BE WORKED INTO PLACE SO AS TO PRODUCE A BLANKET OF INTERLOCKING ROCK THAT HAS NO SIGNIFICANT VOIDS.
14. BIDIM A44 SHALL BE USED AS GEOFABRIC.
15. GEOFABRIC TO BE LAYERED IN SECTIONS PERPENDICULAR TO FLOW DIRECTION FROM DOWNSTREAM TO UPSTREAM WITH 500mm OVERLAP.
16. GRADING SHALL PRODUCE A CONSISTENT MIX OF ROCK SIZES.
17. FINISHED SURFACE OF ROCK IS TO BE ROUGH AND ON DESIGN GRADE.
18. EXCESS SOIL FROM EARTHWORKS SHOULD BE SPREAD OVER ROCK PROTECTION WORKS FOLLOWING FINAL ROCK PLACEMENT.

EXCAVATION

19. ALL EARTHWORKS SHALL COMPLY AS3798 - GUIDLINES ON EARTHWORKS FOR COMMERCIAL AND RESIDENTIAL DEVELOPMENTS.
20. ALL FILL MATERIAL SHALL BE PLACED IN LAYERS NOT EXCEEDING 200mm WHEN MEASURED LOOSE. EACH LAYER SHALL BE COMPACTED TO A OPTIMUM MOISTURE CONTENTS (-1% TO +3%) TO ACHIEVE A DRY DENSITY IN ACCORDINACE WITH AS 1289.5.1.1 AT THE SURFACE LEVEL AND AT 200mm BELOW SURFACE LEVEL.
21. ALL DISTURBED SURFACES ARE TO BE TOP SOILED AND RE-VEGETATED WITH COUNCIL APPROVED SPECIES.
22. EXCAVATION SHALL BE UNDERTAKEN IN A MANNER THAT MINIMIZES DISTURBANCE TO MATERIAL OUTSIDE THE LIMITS OF THE BATTERS.

REHABLITATION OF DISTURBED AREAS

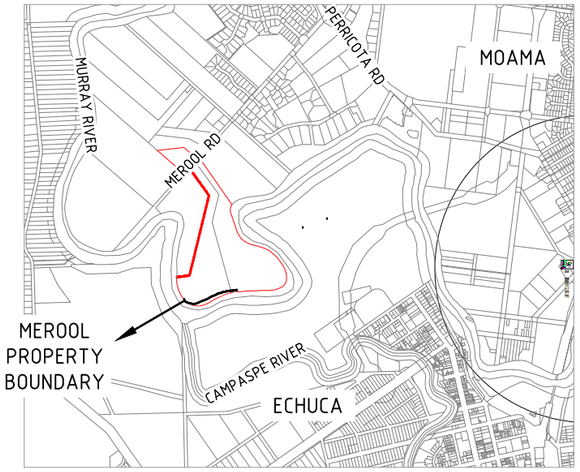
23. REHABILITATION OF DISTURBED AREAS SHALL NOT BE UNDERTAKEN UNTIL THE PREPARED AREA HAS BEEN CONSTRUCTED IN ACCORDANCE WITH THE DESIGN AND BEEN APPROVED BY THE SUPERINTENDENT.
24. ALL STRUCTURES INCLUDING PONTOONS TO BE REINSTATED AFTER COMPLETION OF CONSTRUCTION
25. RE-VEGETATION AREA IS GENERALLY IN VICINITY OF 5m ABOVE STAR PICKET EXPECT RETAINING WALLS. IN CASE OF RETAINING WALLS VEGETATION AREA IS UP-TO TOE OF THE WALL.

ENVIRONMENTAL

26. THE CONTRACTOR SHALL ENSURE THAT NOISE AND AIR EMISSIONS DURING CONSTRUCTION ARE WITHIN EPA AND LOCAL GOVERNMENT LIMITS.
27. CONTRACTOR TO COMPLETE WORKS IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENT CONTROL PLAN. ADEQUATE EROSION AND SEDIMENT CONTROLS MUST BE IN PLACE FOR THE DURATION OF CONSTRUCTION AND BE MAINTAINED BY THE CONTRACTOR.
28. NO FIRES ARE TO BE LIT OR WASTE MATERIALS BURNT ON THE SITE.
29. CONTRACTOR TO MINIMISE DUST GENERATION AT ALL TIMES THROUGHOUT CONSTRUCTION BY WATER APPLICATION ON AS-NEEDS BASIS.
30. ALL MACHINERY AND MATERIALS TO BE LOADED/UNLOADED WITHIN WORKSITE.
31. CONTRACTOR TO DEMONSTRATE ADHERENCE TO 'COME CLEAN, GO CLEAN' PRINCIPLE BY PROVIDING EVIDENCE OF PLANT WASHDOWN RECORDS TO THE SUPERINTENDENT, PRIOR TO PLANT MOVEMENT ON/OFF SITE. THE 'SITE' INCLUDES THE LOCATION OF THE BORROW PIT EXCAVATION.

SURVEY

32. ALL LEVELS ARE TO A.H.D.
33. ALL CHAINAGES AND LEVELS ARE IN METRES, DIMENSIONS FOR DETAILS AS SHOWN.



LOCALITY PLAN
SCALE 1:20,000

DRAWING INDEX

WARNING

BEWARE OF UNSTABLE BANK

THE STATE OF BANK AT SOME LOCATIONS ARE HIGHLY UNSTABLE AND HIGHLY UNSUITABLE FOR CONSTRUCTION EQUIPMENT. CONSTRUCTION EQUIPMENT MOVEMENT PATHS FOR WORK PURPOSE SHALL BE REVIEWED FOR SUITABILITY BY SUPERINTENDENT BEFORE MOBILIZATION

Rev.	Description	Drn	Ckd	App	Date
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Scale: VARIES | Sheet: A1

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Drawn	H. SINGH	28/10/21
Design	H. SINGH	28/10/21
Checked	S. WALES	28/10/21
Discipline Head	N. HEINRICH	29/10/21
Job Manager	S. WALES	29/10/21

Client: tasman HOLIDAY PARKS

FIFTEEN50

Project: MEROOL RIVER BANK REHABILITATION

Title: COVER SHEET

Drawing Status: FOR REVIEW

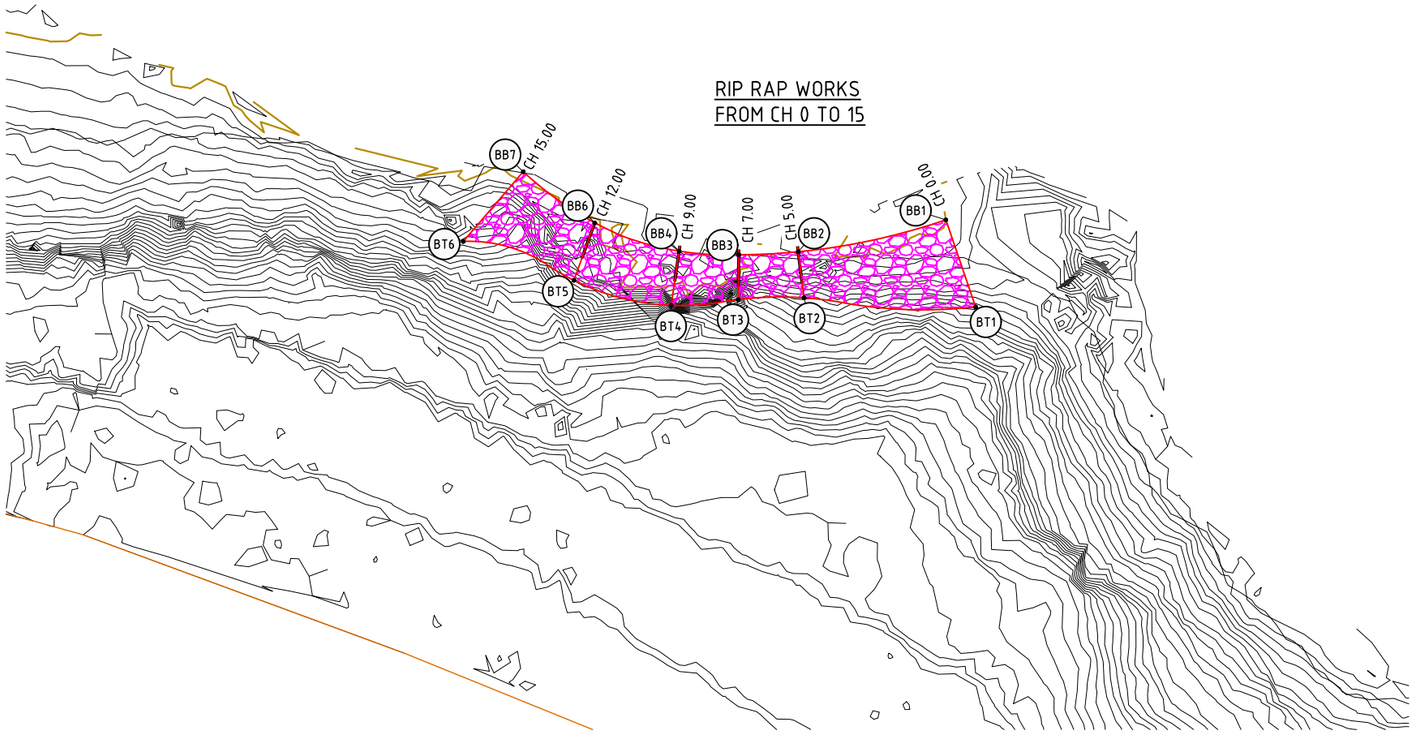
Drawing No. 21091-01 | Sheet. 01/06 | Rev. B

N

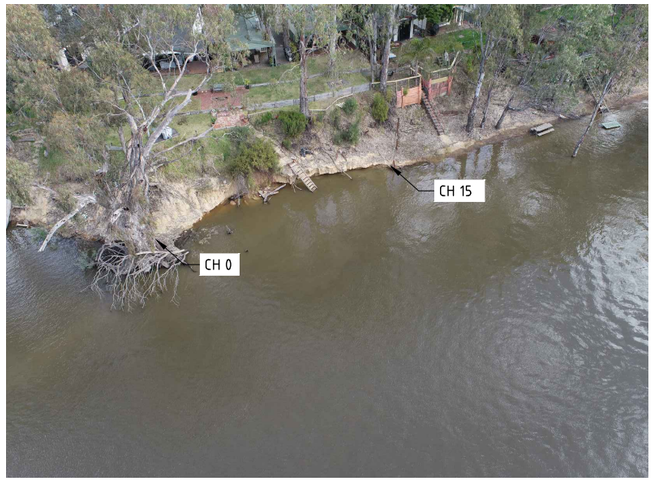
LEGEND:

- D_{50} 450 mm ANGULAR ROCK ON 2H:1V
- D_{50} 450 mm ANGULAR ROCK ON 2H:1V TO 1H:1V
- D_{50} 450 mm ANGULAR ROCK ON 1H:1V
- (BTX) ROCK BEACHING TOP SET OUT POINTS
- (BBX) ROCK BEACHING BOTTOM SET OUT POINTS

RIP RAP WORKS
FROM CH 0 TO 15



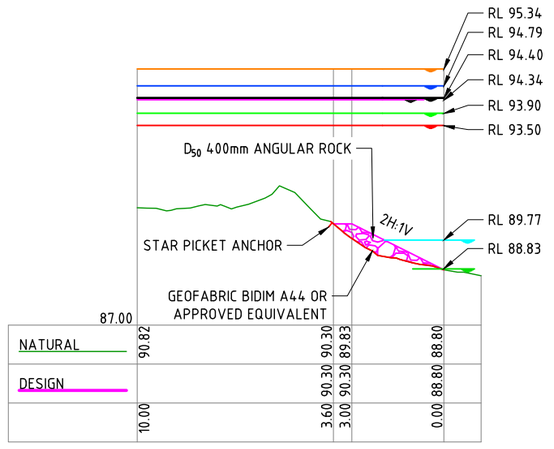
SITE 1
SCALE 1:200



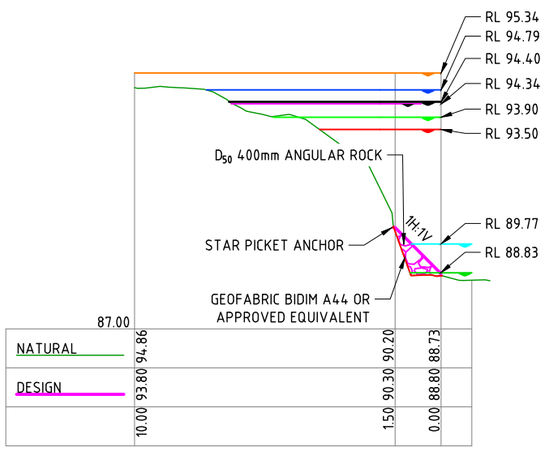
SITE 1 - PHOTO

QUANTITIES			
ROCK COMPOSITION	ROCK SIZE	VOLUME	WEIGHT
	(mm)	(m^3)	TONNES
D_{50}	400.0	50.0	130.0
GEOTEXTILE AREA = 50 m^2			

FLOOD LEVELS	
FLOOD TYPE	RL mAHD
DESIGN FLOOD (1 in 100 YEAR)	95.34
DESIGN FLOOD (1 in 20 YEAR)	94.79
BOM MAJOR FLOOD EVENT	94.40
DESIGN FLOOD (1 in 10 YEAR)	94.34
BOM MODERATE FLOOD EVENT	93.90
BOM MINOR FLOOD EVENT	93.50
PEAK WATER LEVEL (18/10/2021)	89.77
SURVEY WATER LEVEL (27/09/2021)	88.83



SECTION AT CH. 0.00
SCALE 1:100



SECTION AT CH. 12.00
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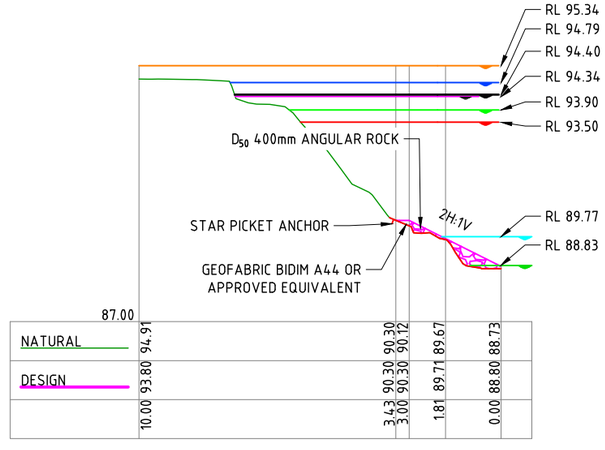

SECTION AT CH. 15.00
SCALE 1:100

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Job Manager	S. WALES	29/10/21

Client: tasman HOLIDAY PARKS

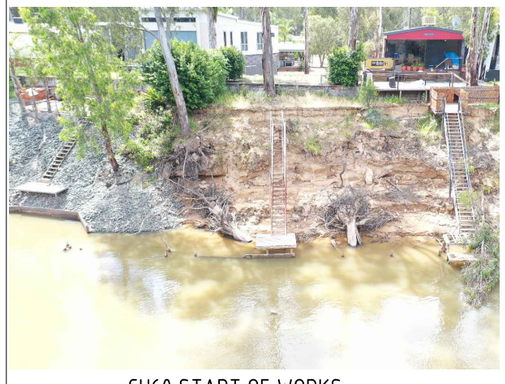
FIFTEE50

Project: MEROOL RIVER BANK REHABILITATION

Title: SITE 1 - PLAN AND CROSS-SECTION

Drawing Status: FOR REVIEW

Drawing No. 21091-02 | Sheet. 02/06 | Rev. B

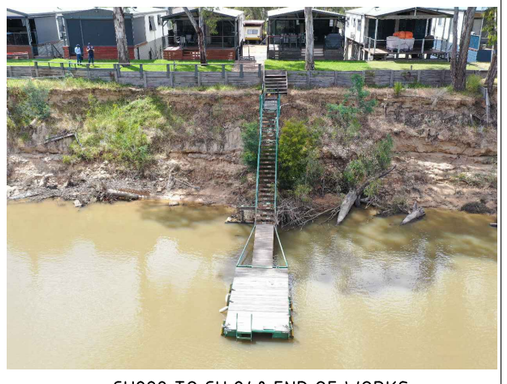


CH60 START OF WORKS

CH110 TO 130

CH185 TO CH 195

CH195 TO 210



CH228 TO CH 240 END OF WORKS

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Job Manager	S. WALES	29/10/21

Client: tasman HOLIDAY PARKS

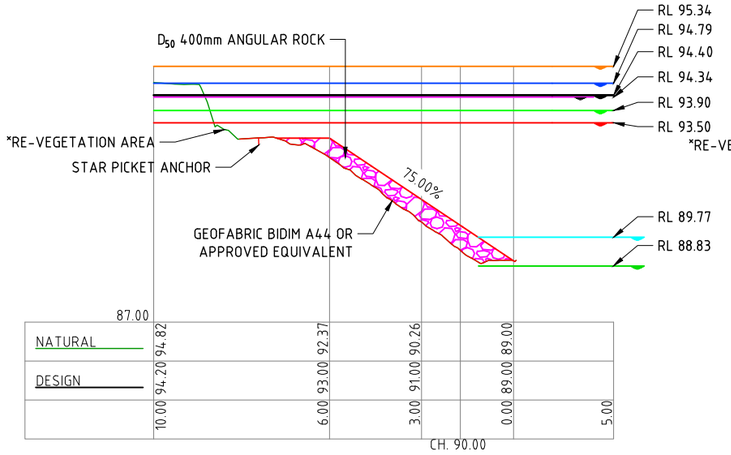
FIFTEE50

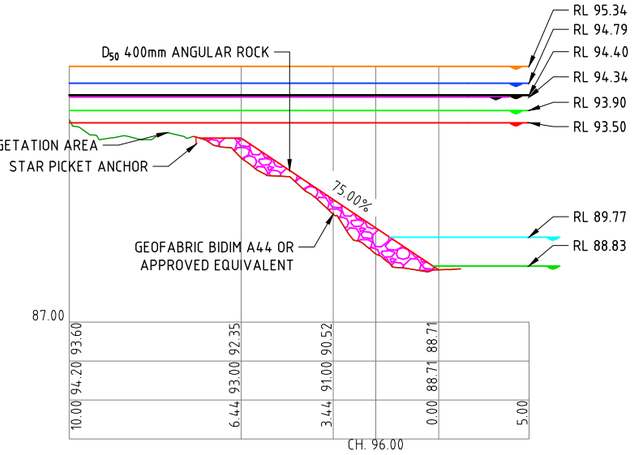
Project: MEROOL RIVER BANK REHABILITATION

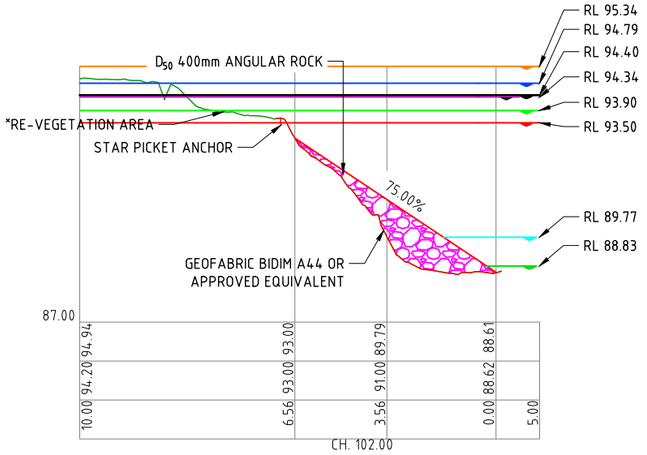
Title: SITE 2- PLAN

Drawing Status: FOR REVIEW

Drawing No. 21091-03 | Sheet. 03/06 | Rev. B







*REFER NOTE 25 SHEET 1 FOR RE-VEGETATION AREA DETAILS

FLOOD LEVELS	
FLOOD TYPE	RL mAHD
DESIGN FLOOD (1 in 100 YEAR)	95.34
DESIGN FLOOD (1 in 20 YEAR)	94.79
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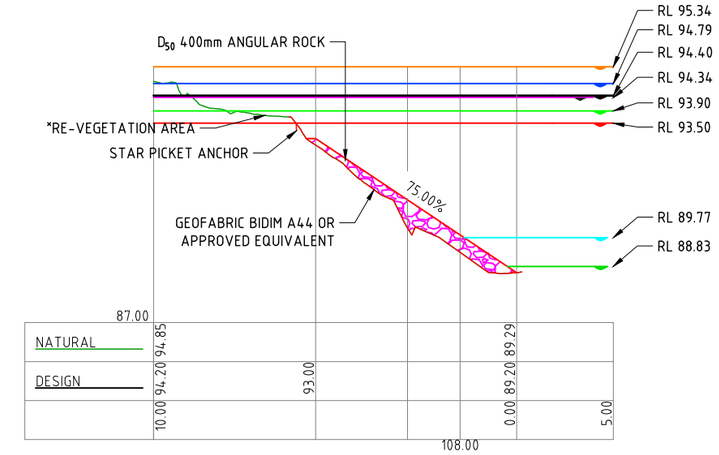

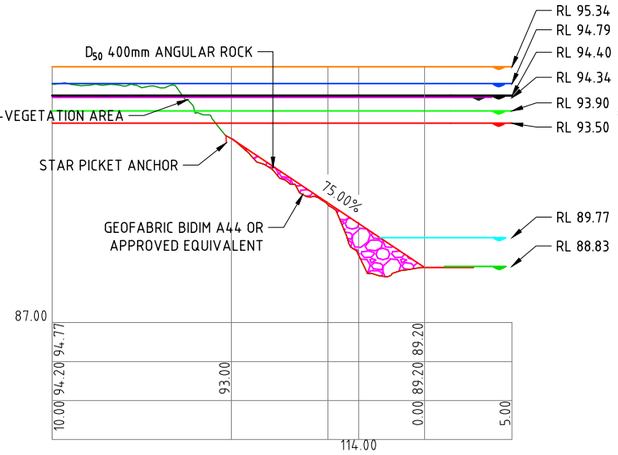

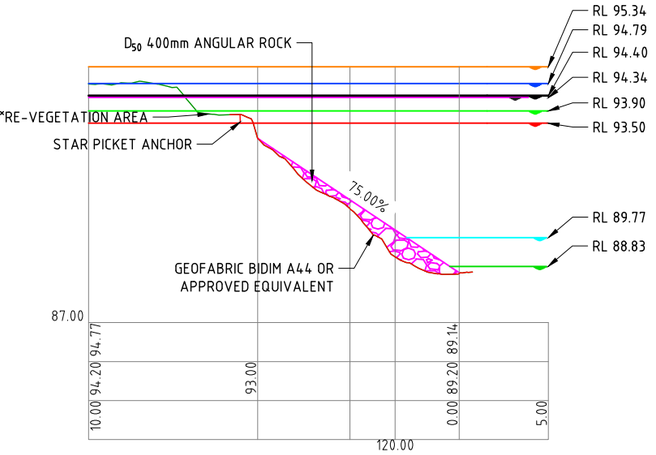

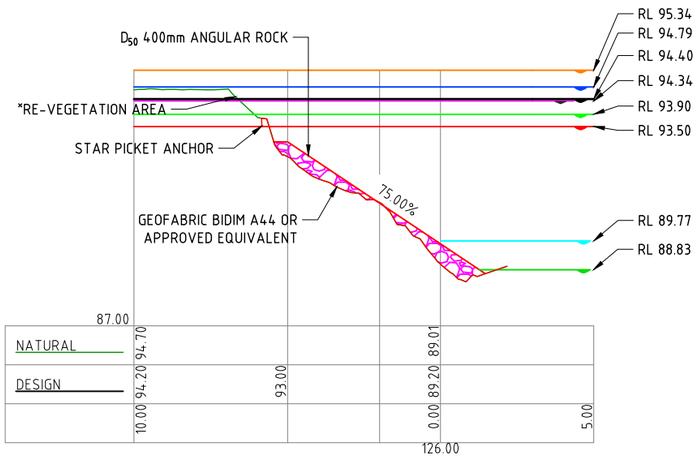

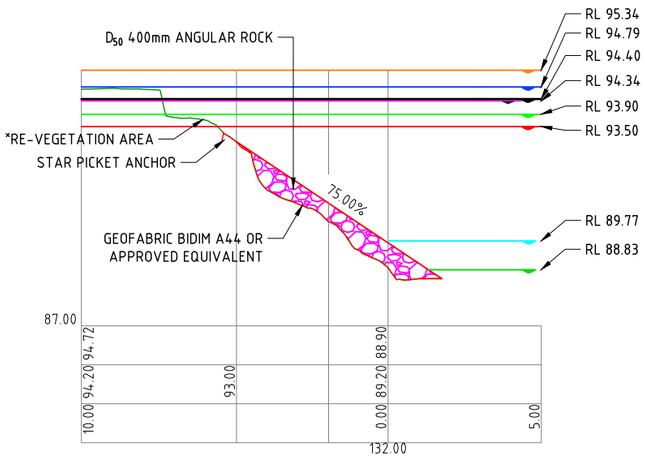

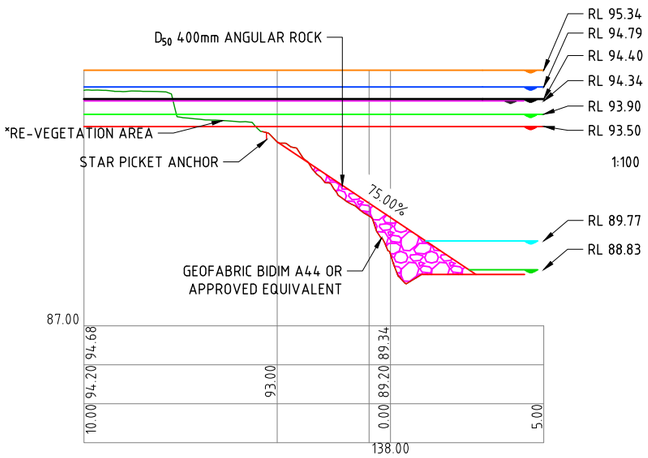

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0 2 4 6 8 10m
2 1 AT A1

WARNING

BEWARE OF UNDERGROUND SERVICES

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Job Manager	S. WALES	29/10/21

Client: tasman HOLIDAY PARKS

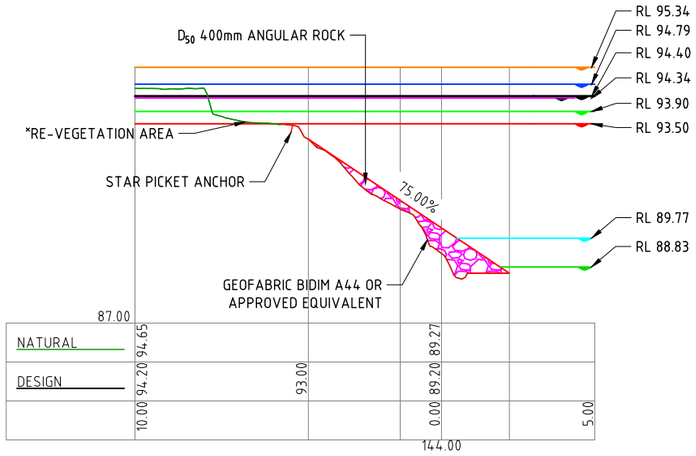
FIFTEE50

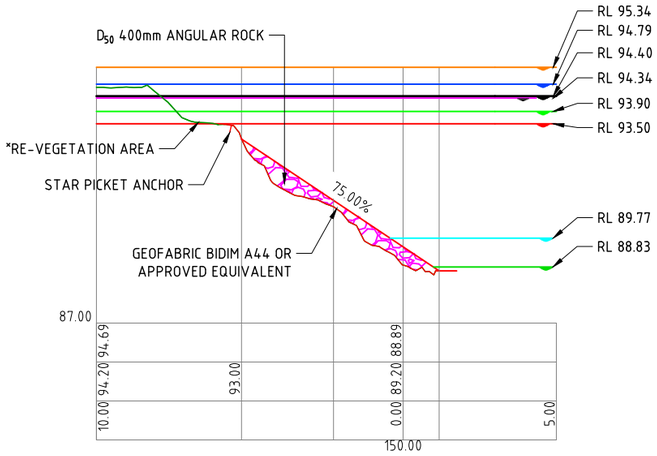
Project: MEROOL RIVER BANK REHABILITATION

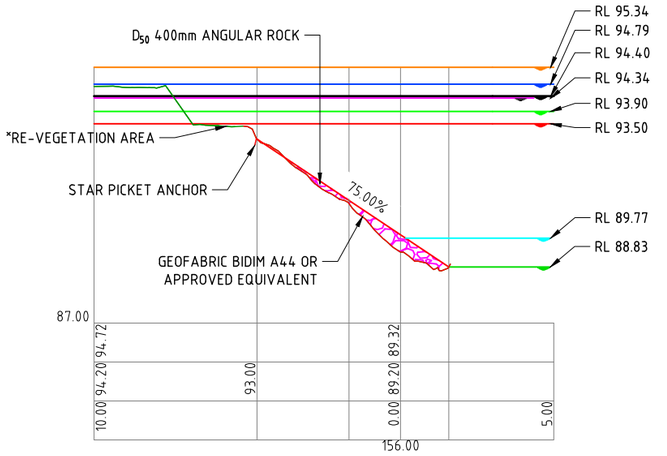
Title: SITE 2- CROSS-SECTIONS SHEET 1 OF 3

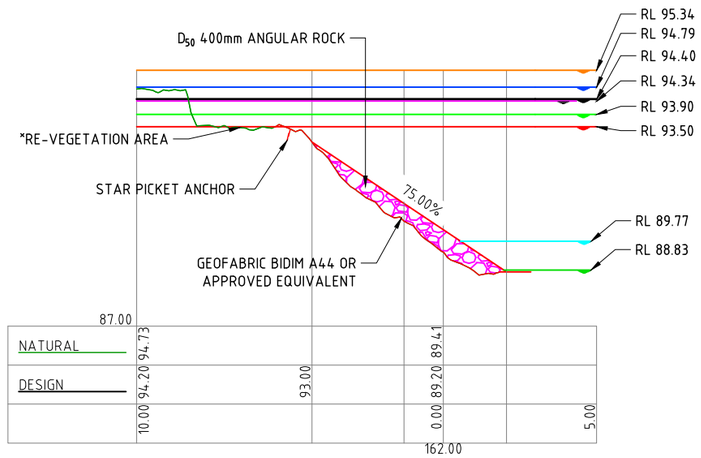
Drawing Status: FOR REVIEW

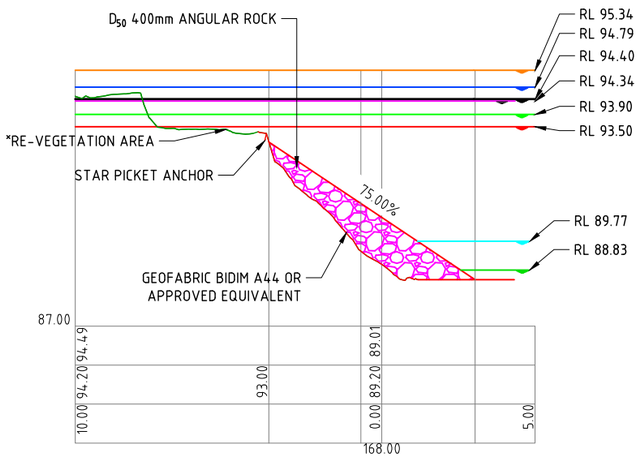
Drawing No. 21091-04 | Sheet. 04/06 | Rev. B

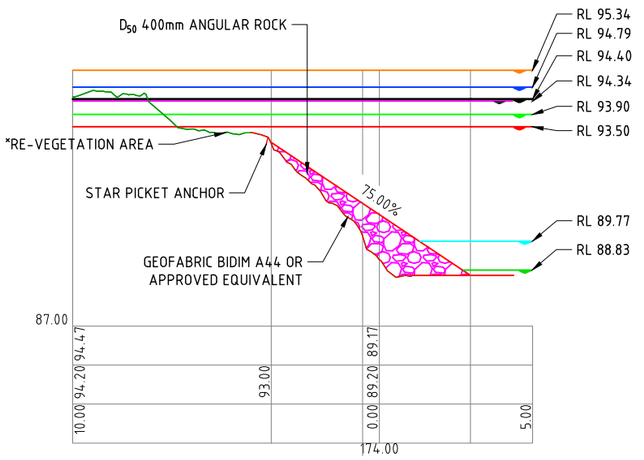


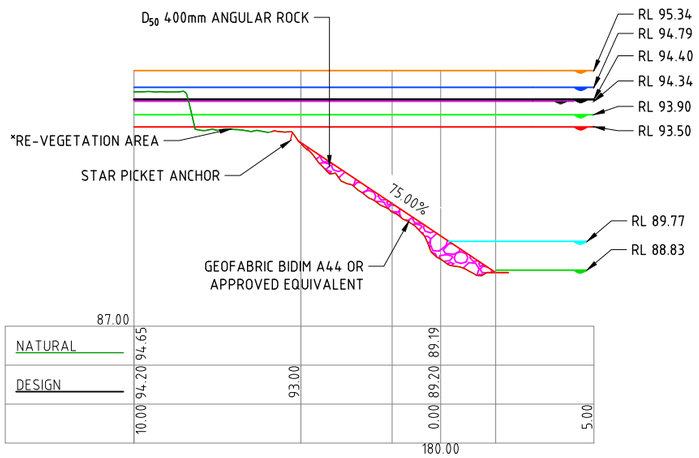


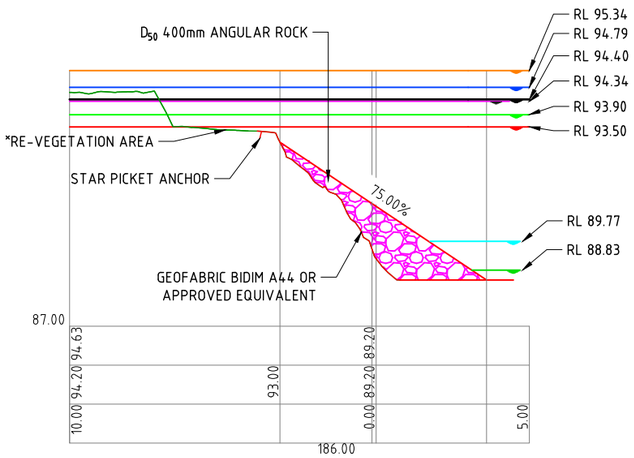


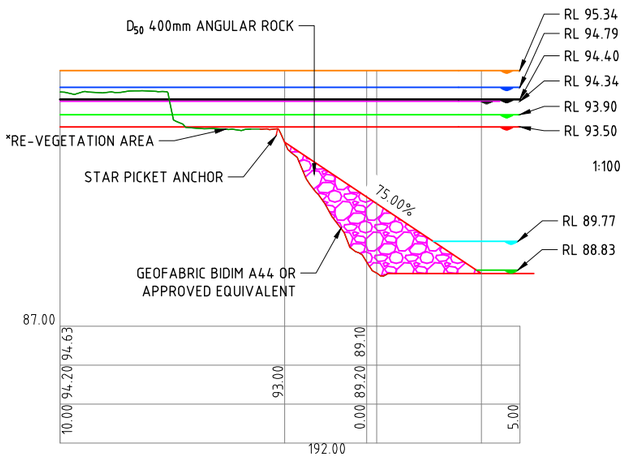












*REFER NOTE 25 SHEET 1 FOR RE-VEGETATION AREA DETAILS

FLOOD LEVELS	
FLOOD TYPE	RL mAHD
DESIGN FLOOD (1 in 100 YEAR)	95.34
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1:100

2 1 0 2 4 6 8 10m AT A1

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Design	H. SINGH	28/10/21
Checked	S. WALES	28/10/21
Discipline Head	N. HEINRICH	29/10/21
Job Manager	S. WALES	29/10/21

Client: tasman HOLIDAY PARKS

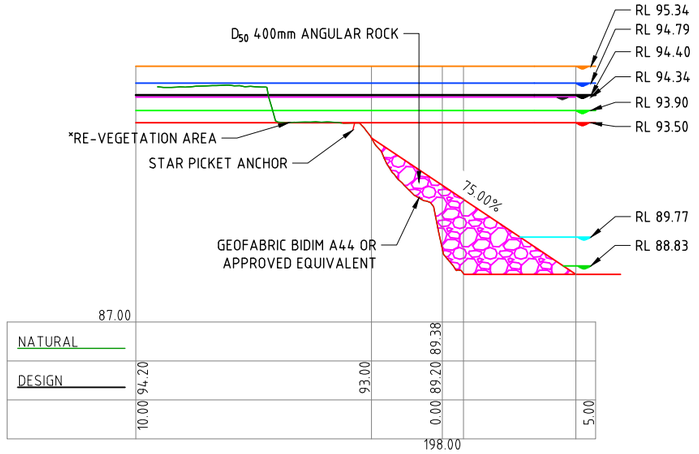
FIFTEEN50

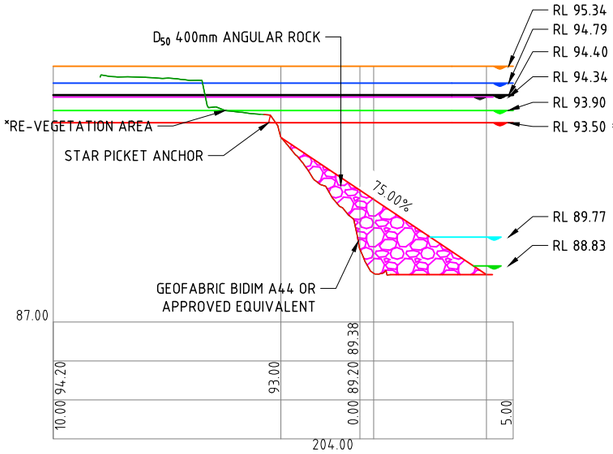
Project: MEROOL RIVER BANK REHABILITATION

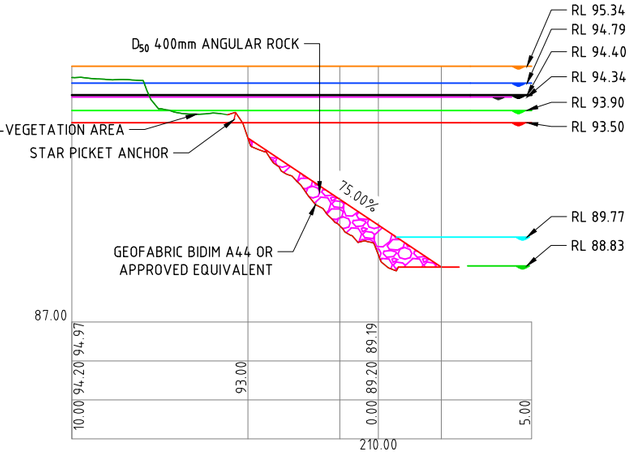
Title: SITE 2- CROSS-SECTIONS SHEET 2 OF 3

Drawing Status: FOR REVIEW

Drawing No. 21091-05 | Sheet. 05/06 | Rev. B







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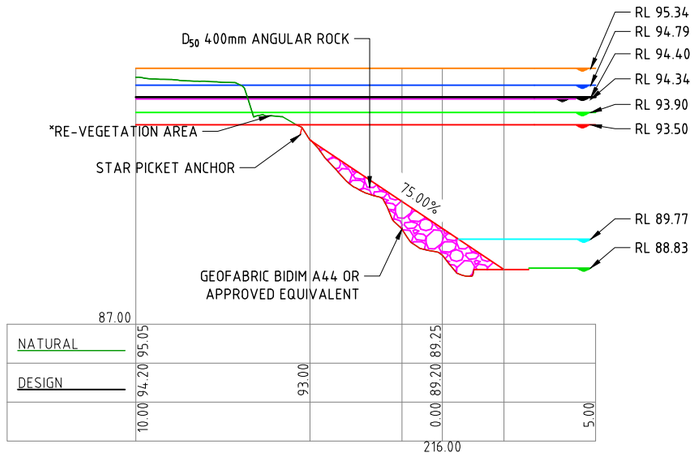
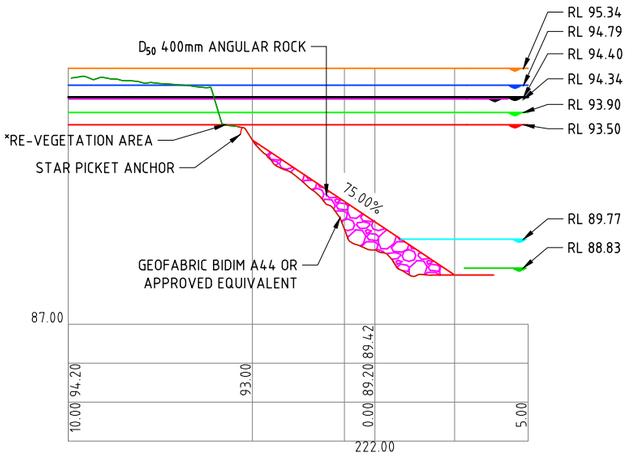
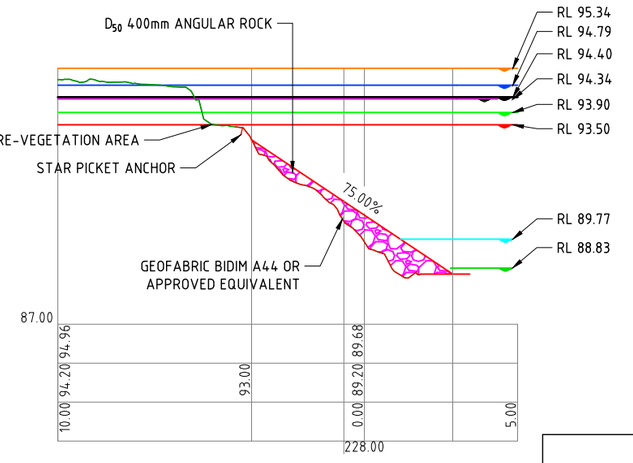
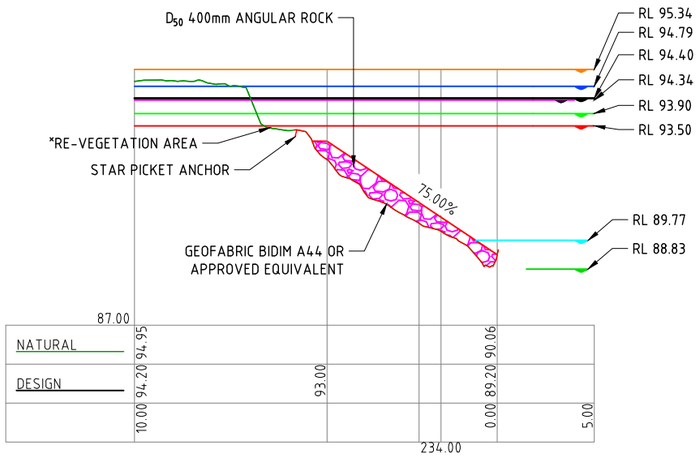
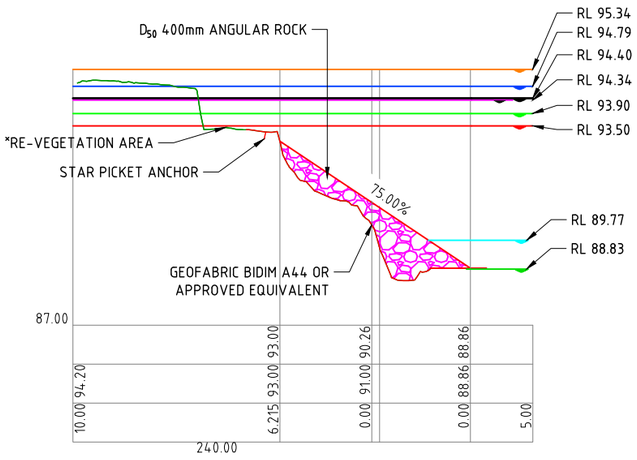
PEAK WATER LEVEL (18/10/2021)	89.77
SURVEY WATER LEVEL (27/09/2021)	88.83











QUANTITIES			
ROCK COMPOSITION	ROCK SIZE	VOLUME	WEIGHT
	(mm)	(m^3)	TONNES
D_{50}	400.0	750.0	1950.0
GEOTEXTILE AREA = 1150 m^2			

1:100 0 2 4 6 8 10m
2 1 AT A1

WARNING

BEWARE OF UNDERGROUND SERVICES

THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL SERVICES ARE SHOWN.

DIAL BEFORE YOU DIG www.1100.com.au

Rev.	Description	Drn	Ckd	App	Date
B	ISSUED FOR CLIENT REVIEW	H.S	H.S	N.H	29/03/2022
A	ISSUED FOR CLIENT REVIEW	H.S	S.W	N.H	18/11/2021

DOCUMENTS ISSUED DO NOT BEAR ORIGINAL SIGNATURES. EVIDENCE OF VERIFICATION AND APPROVAL MAY BE OBTAINED FROM THE COMPANY.

Scale: VARIES | Sheet: A1

	Name	Date
Drawn	H. SINGH	28/10/21
Design	H. SINGH	28/10/21
Checked	S. WALES	28/10/21
Discipline Head	N. HEINRICH	29/10/21
Job Manager	S. WALES	29/10/21

Client: tasman HOLIDAY PARKS

FIFTEEN50

Project: MEROOL RIVER BANK REHABILITATION

Title: SITE 2- CROSS-SECTIONS SHEET 3 OF 3

Drawing Status: FOR REVIEW

Drawing No. 21091-06 | Sheet. 06/06 | Rev. B

FIFTEEN50

Site Rehabilitation Management Plan

Lot 4 DP560393 and Lot 5 DP560393, 131 Merool Road, Moama NSW, 2731.

Introduction

This site rehabilitation management plant has been developed to reduce impacts of the development and to stabilise the site.

The area in which the rock beaching is proposed is highly modified from its natural state with high levels of river traffic and high-water events within the Murray River with associated impacts. This has washed away a large portion of the riverbank causing river red gums (*Eucalyptus camaldulensis*) to lose their footing and fall into the river, and greater risk for embankment collapse. The proposed sites contain the species commonly found in riverine environments near landscaped residential areas, including river red gums and maintained grasses. Large river red gums are scattered both along the edge of the Murray River and at varying distances back from the river's edge throughout the proposed site. Closer to the cabin's, maintained lawns are found along with some other introduced common garden plants.

Other species located along the river's edge including silver wattle (*Acacia dealbata*), *Junctus and Elocharis sp*. Exotic species dominate, including box thorn (Weed of national significance), pepper tree, lilly pilly, wild oat, mallows and mown kikuyu grass.

Site stabilisation / topsoil management

The rehabilitation works will be undertaken during dry periods to minimise risk of rainfall and runoff erosion from exposed soils. Nevertheless, erosion and sediment controls are to be implemented as described in the site plans. Works will occur progressively, with minor embankment shaping and geotextile and rock beaching placement to occur in a way that minimises the exposure time.

The works do not include export of in-situ material, with minor embankment shaping limited to that which provides a working surface for the erosion protection works. Existing mid-storey and dominant canopy vegetation will be retained, with works to occur within and around these trees.

Plant Community Type

The plant community type (PCT) at the project is a modified *River Red Gum - Silver Wattle - grassy very tall open forest of the inner floodplains of the lower NSW Southwest Slopes and Riverina Bioregions* (Benson 5 or PCT MU582). The table below outlines the plant species that make up the PCT.

Dominant canopy spp	Landscape position	Characteristic mid-storey spp	Characteristic ground cover spp	Other diagnostic features
River Red Gum (*Eucalyptus camaldulensis*)	Occurs on silty-sandy loam-clay soils on levees or other raised landform elements adjacent to rivers and wetlands.	Silver Wattle (*Acacia dealbata*), *Exocarpos strictus, Amyema miquelii*	Tussock Grass or River Tussock *(Poa labillardierei var. labillardierei), Lachnagrostis filiformis, Hemarthria uncinata var. uncinata, Carex tereticaulis, Juncus amabilis, Juncus flavidus, Cynodon dactylon, Carex appressa, Carex inversa, Eleocharis acuta, Eleocharis pusilla*	Very tall open forest with a sparse shrublayer and mid-dense to dense ground cover. Distributed along the Murray and Murrumbidgee Rivers in the temperate (hot summer) and semiarid (warm) climate regions of southwestern NSW.

Planting vision

As mentioned above, the site has been highly disturbed through past land uses, with the dominant canopy and characteristic mid-storey species still being present. The rehabilitation works aim to work within and complement the existing vegetation and encourage further establishment by stabilising the embankment. Therefore, the aim of revegetation at the site is to maintain the view to the river by adding the groundcover species that are lacking and improve visual amenity. The species chosen should also add to the stability of the site, be located within and throughout the proposed rock beaching erosion controls, be low maintenance and not require watering after establishment.

Plant selection and numbers

The following table identifies the species that are proposed to be planted (or very similar if the local nurseries cannot provide). They will be planted at the optimum seasonal opportunity within 12 months of the completion of the erosion protection works, with the aim that they will set seed and additional individuals will infill between the original plants.

Species name	Common name	Numbers/density (%)
Poa labillardierei var. labillardierei	Common tussock grass	25
Lachnagrostis filiformis	Blown grass	25
Hemarthria uncinata var. uncinata	Mat grass	25
Carex tereticaulis	Rush sedge	25

Planting arrangement

The plants will be planted in a mixed clumping manner, within, below and above the proposed rock beaching works.

Maintenance

Plant survival is to be monitored with replacement as required to maintain density. The plants should be protected from herbivores (rabbits and kangaroos) to allow them to set seed. Weed control should be undertaken to reduce competition and watering in the first 12 months (as required) to maximise establishment.

LEGEND

- Proposed works
- Site access
- Merool boundary
- Laydown area
- Contours (1m)
- Cadastre
- Merool_Roads

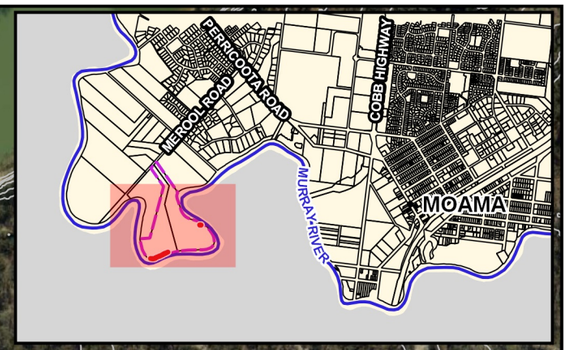
← To Merool Rd

Site 1

Lot 4 DP560393

Lot 5 DP560393

Site 2



0 100 200 m

MEROOL RIVERBANK REHABILITATION: SITE LOCATION AND ACCESS - SHEET 1 OF 4
EROSION CONTROLS AND SITE REHABILITATION MANAGEMENT PLAN

REVISION NO.: A

CLIENT: TASMAN TOURISM
JOB NO.: 21091
CREATED BY: E CLARK ON 29/03/2022

LOCATION: MOAMA, NSW
CRS: GDA2020 / MGA ZONE 55
DATA SOURCES: CLIENT, SPATIAL SERVICES NSW

FIFTEEN50
FIFTEEN50 CONSULTING PTY LTD (ABN 21 630 372 208)
SHOP 5, 210 PAKENHAM STREET, ECHUCA VIC 3564

LEGEND

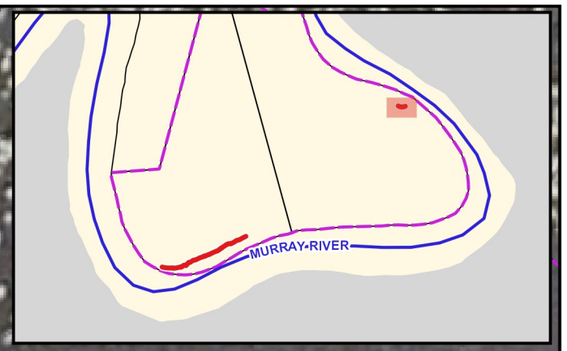
- Water run-off flowpath
- Access
- Contours (1m)
- Merool boundary
- Proposed rock beaching
- Cabins

Sediment and erosion controls

- Sediment fence

Vegetation

- No vegetation to be removed: Existing vegetation/ oriental lawn
- No vegetation to be removed: Additional vegetation planting (as per VMP)



MEROOL RIVERBANK REHABILITATION: SITE 1 - SHEET 2 OF 4
EROSION CONTROLS AND SITE REHABILITATION MANAGEMENT PLAN

REVISION NO.: A

CLIENT: TASMAN TOURISM
JOB NO.: 21091
CREATED BY: E CLARK ON 29/03/2022

LOCATION: MOAMA, NSW
CRS: GDA2020 / MGA ZONE 55
DATA SOURCES: CLIENT, SPATIAL SERVICES NSW

FIFTEEN50
FIFTEEN50 CONSULTING PTY LTD (ABN 21 630 372 208)
SHOP 5, 210 PAKENHAM STREET, ECHUCA VIC 3564

LEGEND

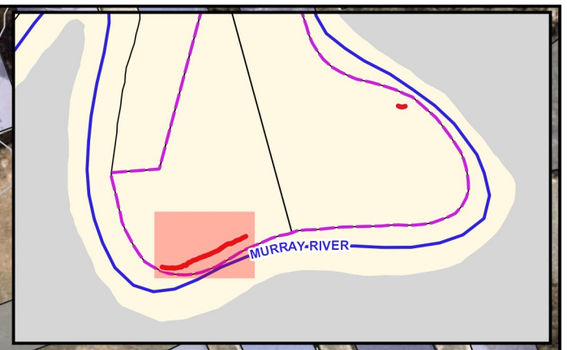
- Run-off flowpath
- Access
- Contours (1m)
- Merool boundary
- Proposed rock beaching
- Cadastre
- Cabins
- Merool internal road

Sediment and erosion control

- Sediment fence

Vegetation

- No vegetation to be removed: Existing vegetation/ oriental lawn
- No vegetation to be removed: Additional vegetation planting (as per VMP)



0 10 20 m

MEROOL RIVERBANK REHABILITATION: SITE 2 - SHEET 3 OF 4
EROSION CONTROLS AND SITE REHABILITATION MANAGEMENT PLAN

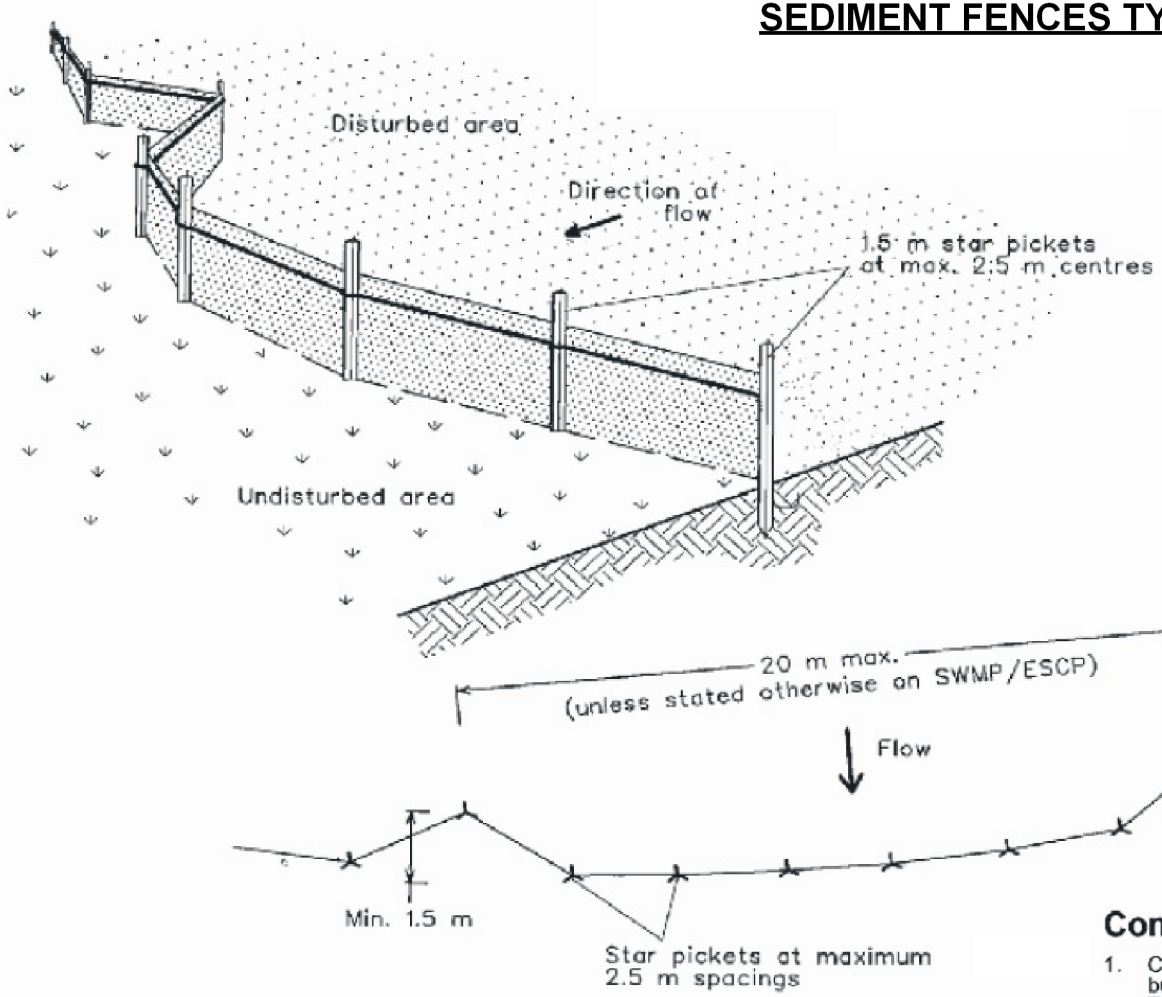
REVISION NO.: A

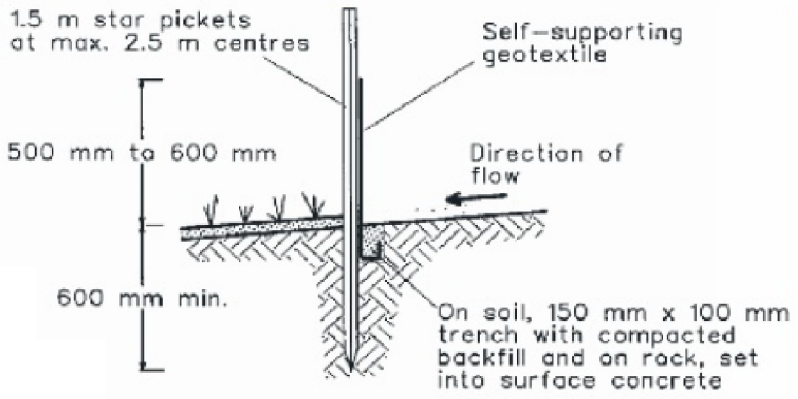
CLIENT: TASMAN TOURISM
JOB NO.: 21091
CREATED BY: E CLARK ON 29/03/2022

LOCATION: MOAMA, NSW
CRS: GDA2020 / MGA ZONE 55
DATA SOURCES: CLIENT, SPATIAL SERVICES NSW

FIFTEEN50
FIFTEEN50 CONSULTING PTY LTD (ABN 21 630 372 208)
SHOP 5, 210 PAKENHAM STREET, ECHUCA VIC 3564

SEDIMENT FENCES TYPICAL DETAIL





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.

EROSION AND SEDIMENTATION CONTROL PLAN: SHEET 4 OF 4

CLIENT: TASMAN TOURISM
JOB NO.: 21091
CREATED BY: E CLARK ON 29/03/2022

LOCATION: MOAMA, NSW
CRS: GDA2020 / MGA ZONE 55
DATA SOURCES: NSW GOVT

FIFTEEN50
FIFTEEN50 CONSULTING PTY LTD (ABN 21 630 372 208)
5/210 PAKENHAM ST, ECHUCA VIC 3564

GENERAL NOTES

1. SITE LOCATION: MURRAY RIVER, MOAMA, NSW
2. THESE NOTES SHALL APPLY TO ALL DRAWINGS AND BE READ IN CONJUNCTION WITH THE REFERENCE DRAWINGS, CONTRACT DOCUMENTS, CONSTRUCTION SPECIFICATION, CEMP AND WITH SUCH OTHER WRITTEN INSTRUCTIONS AS MAY BE ISSUED BY THE SUPERINTENDENT DURING THE COURSE OF THE CONTRACT.
3. ALL LEVELS ARE IN METRES TO AUSTRALIAN HEIGHT DATUM (AHD).
4. ALL COORDINATES ARE IN METRES TO MGA ZONE 55 (GDA 94).
5. ALL RUNNING DISTANCES ARE IN METRES.
6. ALL DIMENSIONS IN MILLIMETRES UNO.
7. DIMENSIONS SHOULD NOT BE SCALED OFF DRAWINGS.
8. BEFORE PROCEEDING WITH THE WORK ANY DISCREPANCIES IN THE CONTRACT DOCUMENTS SHALL BE REFERRED TO THE SUPERINTENDENT.
9. ANY SETTING OUT DIMENSIONS SHALL BE CHECKED AND CONFIRMED BY THE CONTRACTOR OR BEFORE CONSTRUCTION COMMENCES.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CORRECT SETTING OUT OF WORKS AS DETAILED IN THE DRAWINGS.
11. THE CONTRACTOR SHALL FURNISH ALL MATERIALS AS REQUIRED FOR CARRYING OUT THE WORKS, APART FROM PRINCIPAL SUPPLIED ITEMS
12. ALL WORKS SHALL BE SUBJECT TO INSPECTION BY THE SUPERINTENDENT.
13. THE CONTRACTOR SHALL MAKE AN ASSESSMENT OF LOCAL GEOLOGICAL CONDITIONS WITH REGARD TO EXCAVATIONS AND TAKE FULL RESPONSIBILITY FOR SUCH.
14. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ACCESS TO THE SITE AT ALL TIMES DURING THE CONSTRUCTION.
15. THE CONTRACTOR IS TO INFORM HIMSELF FULLY IN RELATION TO SITE ROAD ACCESS ARRANGEMENTS. ALL COSTS ASSOCIATED WITH ALTERNATIVE ACCESS SHALL BE BORNE BY THE CONTRACTOR. SITE SHALL BE REINSTATED AT COMPLETION TO THE SATISFACTION OF THE SUPERINTENDENT.
16. ALL GATES & FENCING ARE TO BE MAINTAINED DURING WORKS AND REINSTATED BEFORE THE COMPLETION OF WORKS.
17. SITE SHALL BE EXCAVATED SLOPES SHOWN IN THIS DRAWING. TOPSOIL SHALLBE KEPT SEPARATE AND SPREAD OVER DISTURBED AREAS AT THE COMPLETION OF WORKS.
18. IT IS THE CONTRACTORS RESPONSIBILITY TO CONFIRM THE LOCATION AND DEPTH OF ALL OBSTRUCTIONS AND UNDERGROUND SERVICES IN THE VICINITY OF THE PROPOSED WORKS PRIOR TO THE COMMENCEMENT OF ANY WORKS.

ROCK MATERIALS

19. ALL ROCK MUST BE WELL GRADED, CLEAN, SOUND, HARD, TOUGH ANGULAR ROCK OF UNIFORM QUALITY WITH CRUSHING STRENGTH OF NOT LESS THAN 25MPa AND FREE OF DEFINED CLEAVAGE PLANES.

EQUIVALENT SPHERICAL DIAMETER	PERCENT (BY WEIGHT) OR ROCK SMALLER SIZE
1.5 -2.0 D_{50}	100%
D_{50}	50%
0.3 - 0.4 D_{50}	10-20%
0.1 - D_{50}	<5%

ROCK SUPPLY AND PLACEMENT

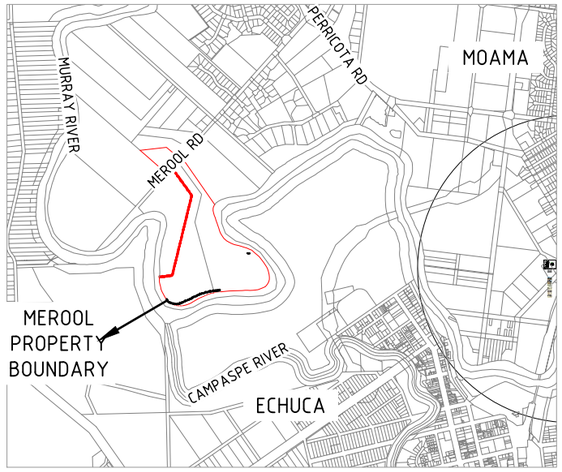
20. SUPPLY AND PLACEMENT OF ROCK TO BE IN ACCORDANCE WITH THIS DRAWING SET.
21. FINISHED SURFACE OF ROCK IS TO BE ROUGH AND ON DESIGN GRADE.
22. ROCK SHALL BE CAREFULLY PLACED FROM AN EXCAVATOR FROM NO GREATER THAN 1m ABOVE THE MATERIAL ONTO WHICH IT IS TO BE PLACED.
23. ROCK SHALL BE TAMPED INTO PLACE TO PROVIDE A BLANKET OF INTERLOCKING ROCK WITH NO SIGNIFICANT VOIDS AND DOES NOT MOVE UNDERFOOT.
36. ROCK IS TO BE PLACED ON GEOTEXTILE BIDIM A44 OR APPROVED EQUIVALENT WHERE SHOWN. GEOTEXTILE TO BE LAYERED IN SECTIONS PERPENDICULAR TO THE DIRECTION OF FLOW FROM DOWNSTREAM TO UPSTREAM WITH 500mm MINIMUM OVERLAP.

EXCAVATION

13. ALL EXCAVATIONS ASSOCIATED WITH THE DEVELOPMENT MUST BE PROPERLY GUARDED AND PROTECTED TO PREVENT THEM FROM BEING DANGEROUS TO LIFE OR PROPERTY.
15. PRIOR TO LAYING OF FILL, THE FULL DEPTH OF TOPSOIL (100mm) COMPRISING THE SURFACE LAYER INCLUDING GRASS, ROOTS AND ORGANIC MATTER SHALL BE CAREFULLY STRIPPED AND STOCKPILED SEPARATELY FOR REUSE AFTER REHABILITATION WORKS ARE COMPLETE.
18. ALL FILL SHALL BE LAID IN MAXIMUM 150mm LAYERS AND BE COMPACTED TO 95% OF STANDARD MAXIMUM DRY DENSITY IN ACCORDANCE WITH AS1289.
19. ALL DISTURBED SURFACES ARE TO BE SPREAD WITH TOPSOIL AT THE COMPLETION OF WORKS AND REVEGETATED WITH APPROVED NATIVE PLANTINGS.
20. EXCAVATION SHALL BE UNDERTAKEN IN ACCORDANCE WITH BEST PRACTICE IN A MANNER THAT MINIMISES IMPACT TO MATERIAL OUTSIDE THE LIMIT OF THE SITE.

ENVIRONMENTAL REQUIREMENTS

21. NO VEGETATION SHALL BE REMOVED DURING CONSTRUCTION.
22. EXCAVATION WORKS ARE NOT TO DISTURB TREE ROOTS GREATER THAN 15cm DIAMETER. AREAS ADJACENT TO LARGE TREES SHALL BE HAND EXCAVATED TO REDUCE IMPACT.
27. THE CONTRACTOR SHALL ENSURE THAT NOISE AND AIR EMISSIONS DURING CONSTRUCTION ARE WITHIN EPA AND LOCAL GOVERNMENT LIMITS.
29. CONTRACTOR TO MANAGE TIMING OF WORKS WITH REFERENCE TO LOCAL RAINFALL FORECASTS TO MINIMISE RISK OF EROSION AND SEDIMENT MOVEMENT FROM OPEN EXCAVATIONS. IF REQUIRED AFTER RAINFALL, CONTRACTOR IS TO REPAIR ERODED SURFACES AND REMOVE SEDIMENT FROM DRAINS AND OTHER AREAS.
30. ADEQUATE EROSION AND SEDIMENT CONTROLS MUST BE IN PLACE FOR THE DURATION OF CONSTRUCTION AND BE MAINTAINED BY THE CONTRACTOR.
31. CONTRACTOR TO MAINTAIN EQUIPMENT ON SITE FOR DEWATERING THE SITE PRIOR TO CONSTRUCTION AND AFTER RAIN. DISCHARGE LOCATION TO BE APPROVED BY THE SUPERINTENDENT.
32. NO FIRES ARE TO BE LIT OR WASTE MATERIALS BURNT ON THE SITE.
33. CONTRACTOR TO MINIMISE DUST GENERATION AT ALL TIMES THROUGHOUT CONSTRUCTION BY WATER APPLICATION ON AS-NEEDS BASIS.
34. ALL MACHINERY AND MATERIALS TO BE LOADED/UNLOADED WITHIN WORKSITE.
35. 35. CONTRACTOR TO DEMONSTRATE ADHERENCE TO 'COME CLEAN, GO CLEAN' PRINCIPLE BY PROVIDING EVIDENCE OF PLANT WASHDOWN RECORDS TO THE SUPERINTENDENT, PRIOR TO PLANT MOVEMENT ON/OFF SITE. THE 'SITE' INCLUDES THE LOCATION OF THE BORROW PIT EXCAVATION, WHERE REQUIRED.



LOCALITY PLAN
SCALE 1:20,000

DRAWING INDEX

Rev.	Description	Drn	Ckd	App	Date
B	ISSUED FOR COUNCIL APPLICATION	H.S	S.W	N.H	18/01/2022
A	ISSUED FOR CLIENT REVIEW	H.S	S.W	N.H	18/11/2021

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Scale: VARIES | Sheet: A1

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Discipline Head	N. HEINRICH	29/10/21
Job Manager	S. WALES	29/10/21

Client: tasman HOLIDAY PARKS

FIFTEE50

Project: MEROOL RIVER BANK REHABILITATION

Title: COVER SHEET

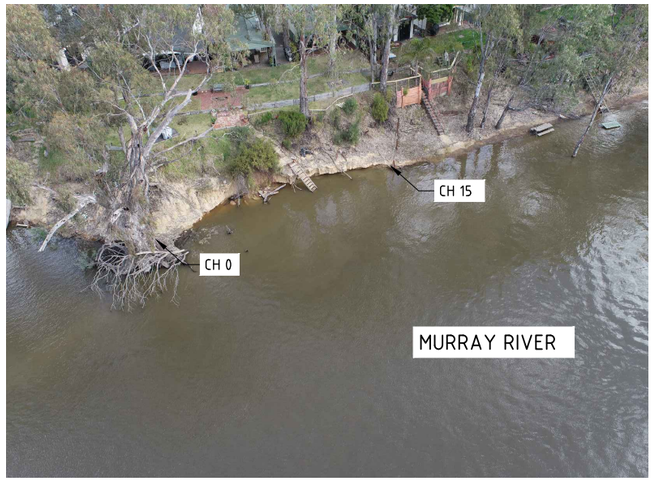
Drawing Status: DRAFT

Drawing No.: 21091-01 | Sheet.: 01/07 | Rev.: B

SITE 1
SCALE 1:200

LEGEND:

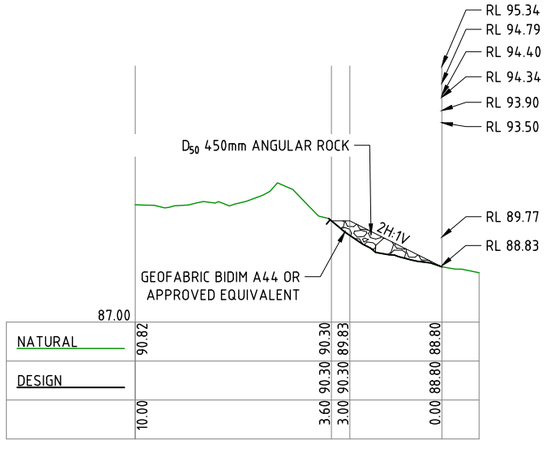
- D_{50} 450 mm ANGULAR ROCK ON 2H:1V
- D_{50} 450 mm ANGULAR ROCK ON 2H:1V TO 1H:1V
- D_{50} 450 mm ANGULAR ROCK ON 1H:1V
- (BTX) ROCK BEACHING TOP SET OUT POINTS
- (BBX) ROCK BEACHING BOTTOM SET OUT POINTS



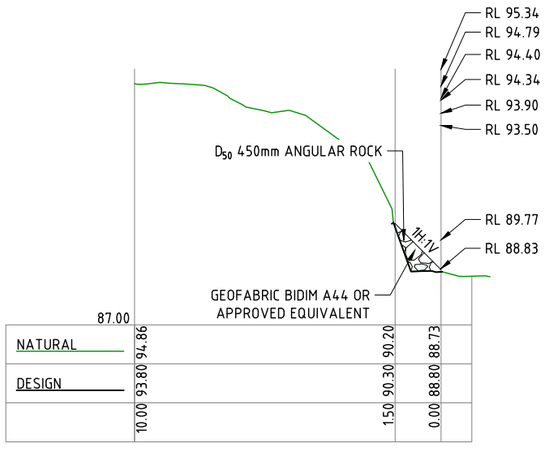
SITE 1 - PHOTO

QUANTITIES			
ROCK COMPOSITION	ROCK SIZE	VOLUME	WEIGHT
	(mm)	(m^3)	TONNES
D_{50}	450.0	50.0	130.0
GEOTEXTILE AREA = 50 m^2			

FLOOD LEVELS	
FLOOD TYPE	RL mAHD
DESIGN FLOOD (1 in 100 YEAR)	95.34
DESIGN FLOOD (1 in 20 YEAR)	94.79
BOM MAJOR FLOOD EVENT	94.40
DESIGN FLOOD (1 in 10 YEAR)	94.34
BOM MODERATE FLOOD EVENT	93.90
BOM MINOR FLOOD EVENT	93.50
PEAK WATER LEVEL (18/10/2021)	89.77
SURVEY WATER LEVEL (27/09/2021)	88.83



SECTION AT CH. 0.00
SCALE 1:100



SECTION AT CH. 12.00
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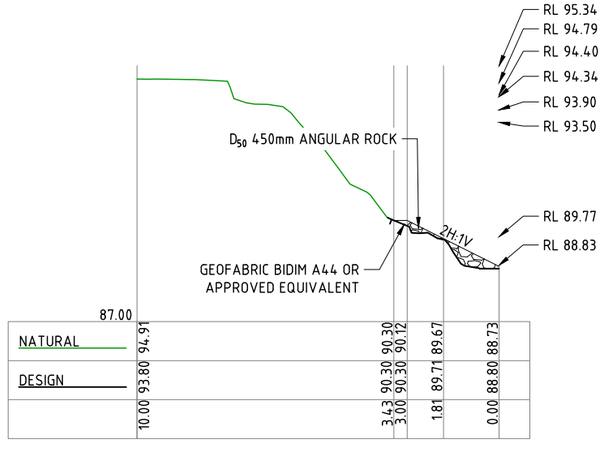

SECTION AT CH. 15.00
SCALE 1:100

1:100 2 1 0 2 4 6 8 10m AT A1

B	ISSUED FOR COUNCIL APPLICATION	H.S	S.W	N.H	18/01/2022
A	ISSUED FOR CLIENT REVIEW	H.S	S.W	N.H	18/11/2021
Rev.	Description	Drn	Ckd	App	Date

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Discipline Head	N. HEINRICH	29/10/21
Job Manager	S. WALES	29/10/21

Client: tasman HOLIDAY PARKS

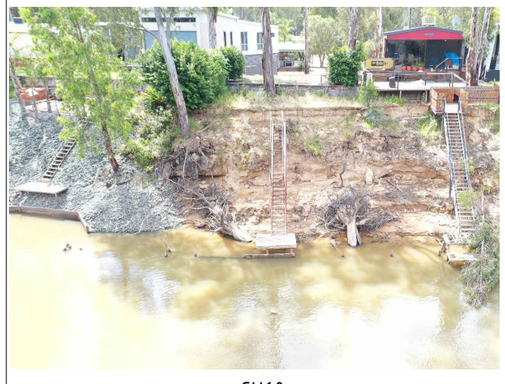
FIFTEE N 50

Project: MEROOL RIVER BANK REHABILITATION

Title: SITE 1 - PLAN AND CROSS-SECTION

Drawing Status: DRAFT

Drawing No. 21091-02 | Sheet. 02/07 | Rev. B

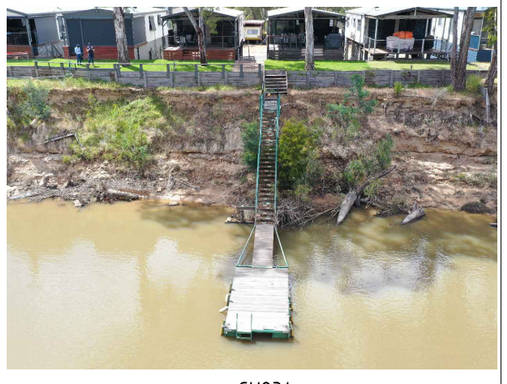


CH60

CH120

CH192

CH198



CH234

Rev.	Description	Drn	Ckd	App	Date
B	ISSUED FOR COUNCIL APPLICATION	H.S	S.W	N.H	18/01/2022
A	ISSUED FOR CLIENT REVIEW	H.S	S.W	N.H	18/11/2021

DOCUMENTS ISSUED DO NOT BEAR ORIGINAL SIGNATURES. EVIDENCE OF VERIFICATION AND APPROVAL MAY BE OBTAINED FROM THE COMPANY.

Scale: VARIES | Sheet: A1

	Name	Date
Drawn	H. SINGH	28/10/21
Design	H. SINGH	28/10/21
Checked	S. WALES	28/10/21
Discipline Head	N. HEINRICH	29/10/21
Job Manager	S. WALES	29/10/21

Client: tasman HOLIDAY PARKS

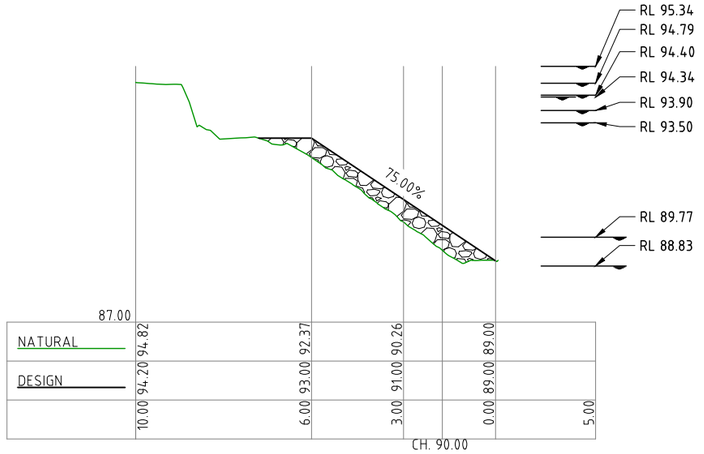
FIFTEE50

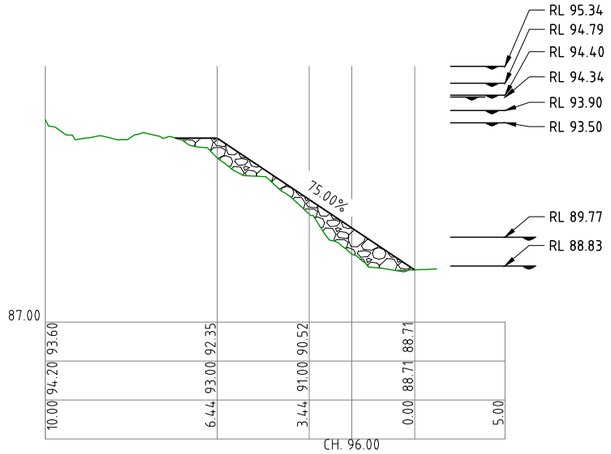
Project: MEROOL RIVER BANK REHABILITATION

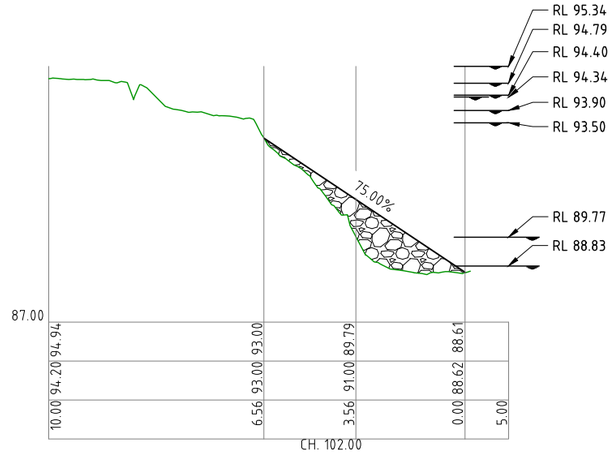
Title: SITE 2- PLAN

Drawing Status: DRAFT

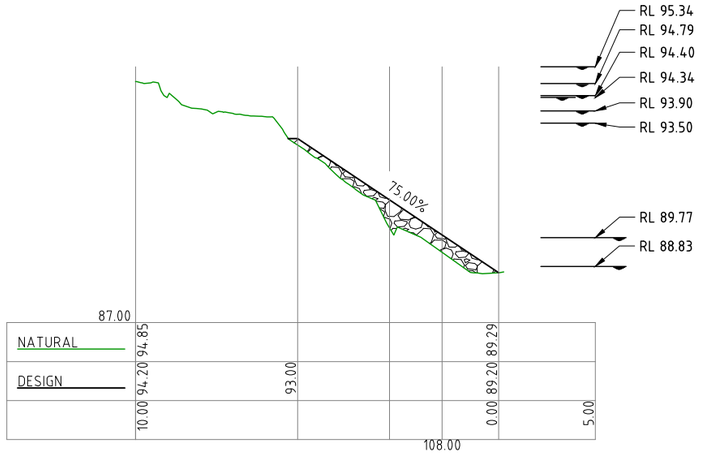
Drawing No. 21091-03 | Sheet. 03/07 | Rev. B

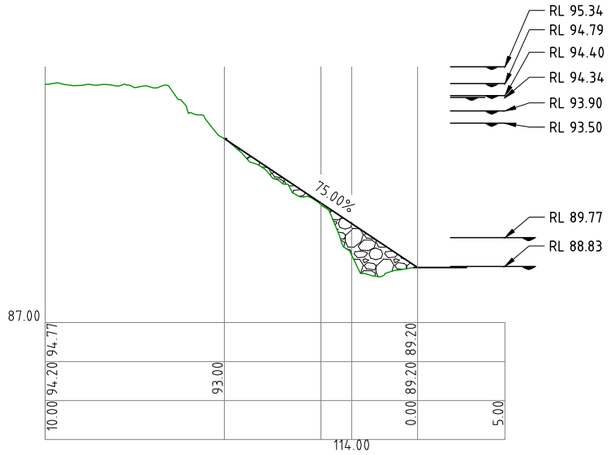


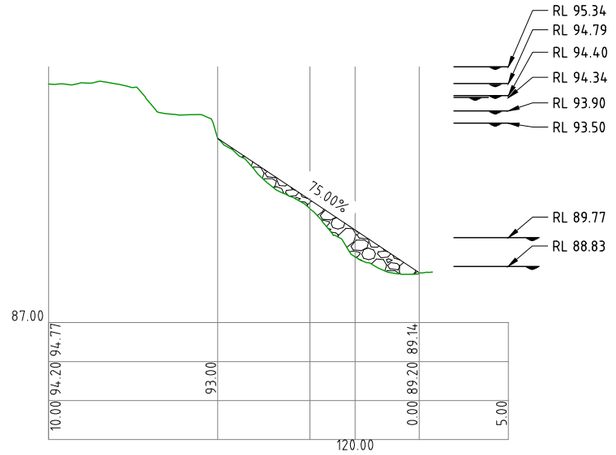


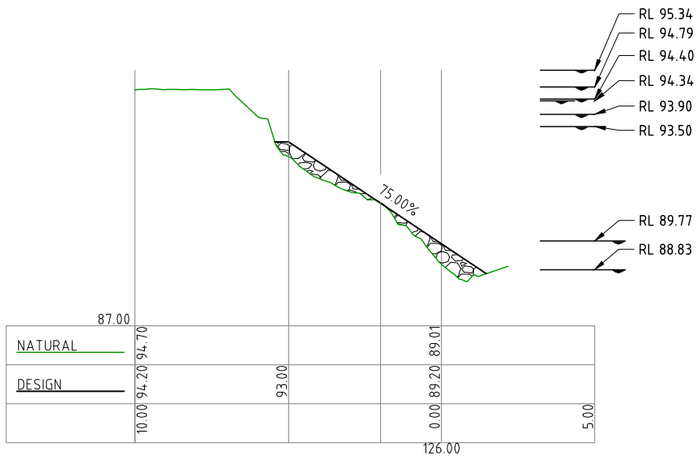


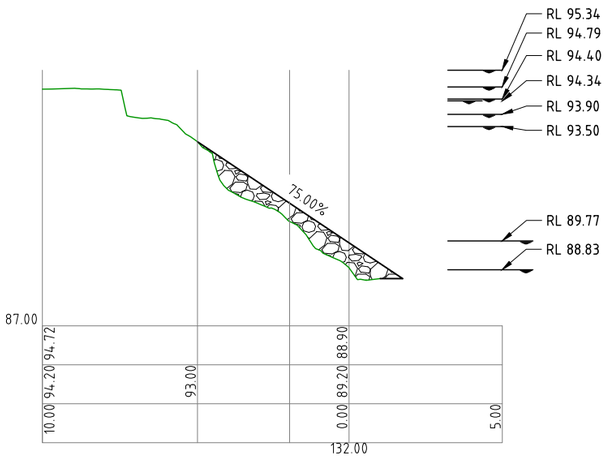
FLOOD LEVELS	
FLOOD TYPE	RL mAHD
DESIGN FLOOD (1 in 100 YEAR)	95.34
DESIGN FLOOD (1 in 20 YEAR)	94.79
BOM MAJOR FLOOD EVENT	94.40
DESIGN FLOOD (1 in 10 YEAR)	94.34
BOM MODERATE FLOOD EVENT	93.90
BOM MINOR FLOOD EVENT	93.50
PEAK WATER LEVEL (18/10/2021)	89.77
SURVEY WATER LEVEL (27/09/2021)	88.83

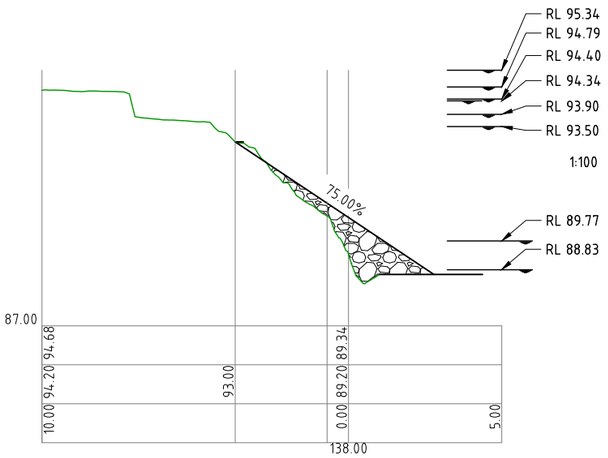












1:100

0 2 4 6 8 10m

2 1 AT A1

WARNING

BEWARE OF UNDERGROUND SERVICES

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Job Manager	S. WALES	29/10/21

Client: tasman HOLIDAY PARKS

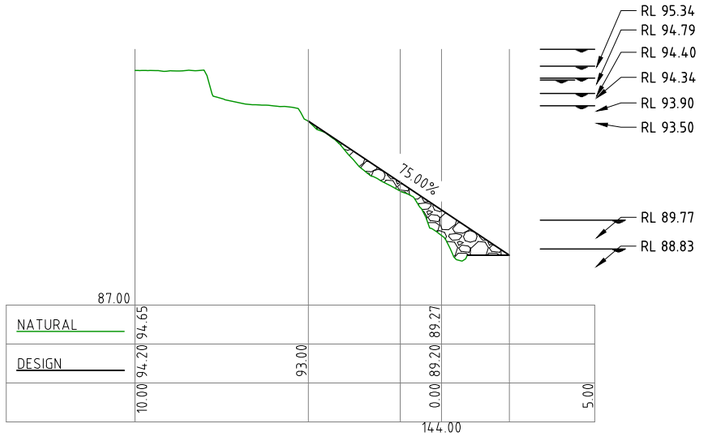
FIFTEEN50

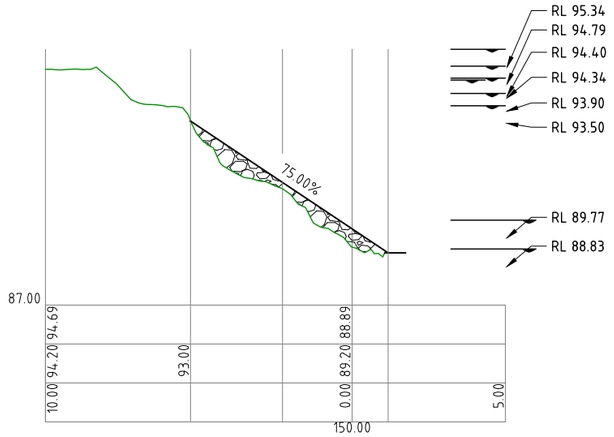
Project: MEROOL RIVER BANK REHABILITATION

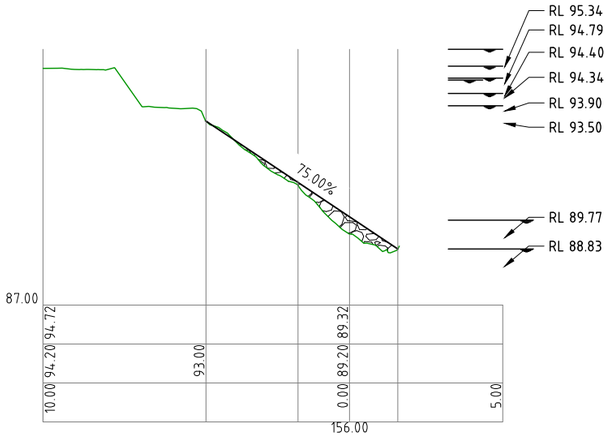
Title: SITE 2- CROSS-SECTIONS SHEET 1 OF 3

Drawing Status: DRAFT

Drawing No. 21091-04 | Sheet. 04/07 | Rev. B







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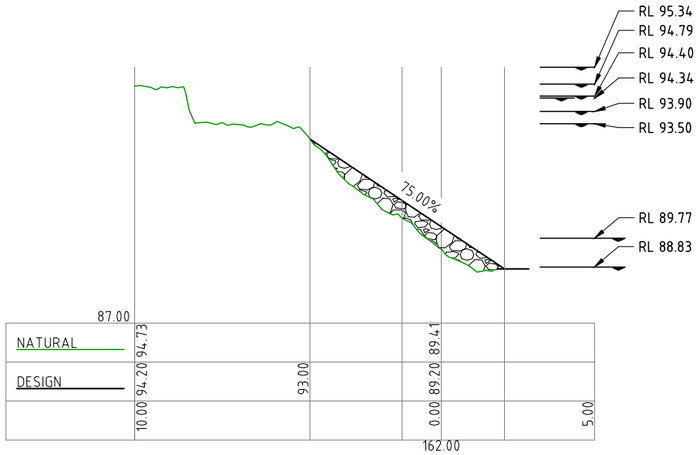

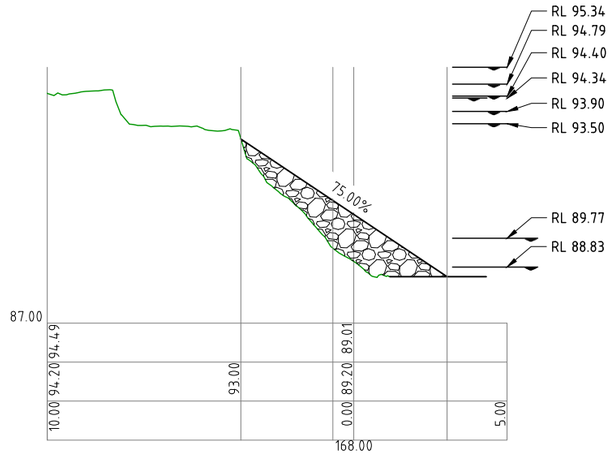

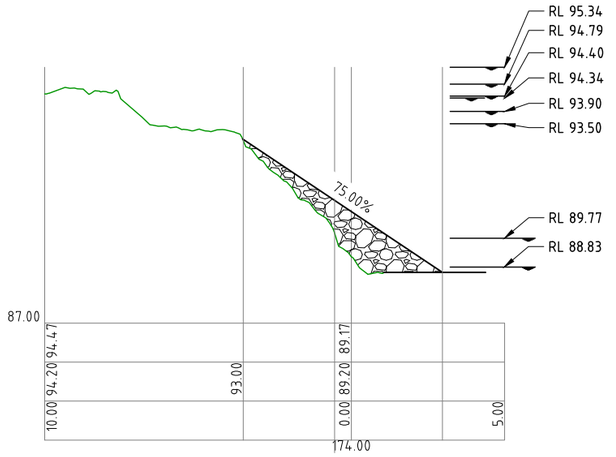

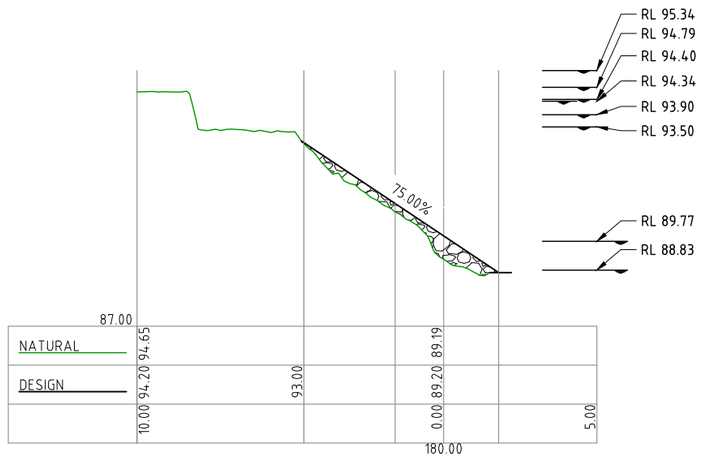

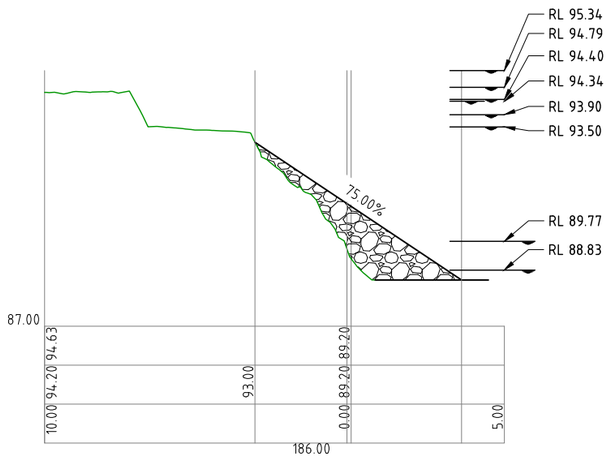

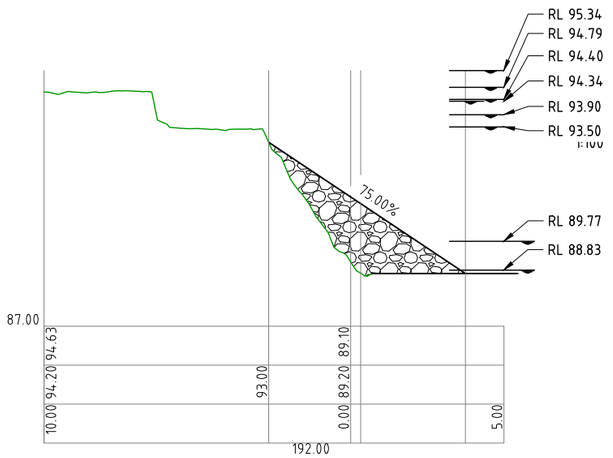

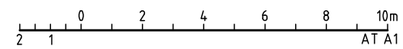

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Scale: VARIES | Sheet: A1

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Checked	S. WALES	28/10/21
Discipline Head	N. HEINRICH	29/10/21
Job Manager	S. WALES	29/10/21

Client: tasman HOLIDAY PARKS

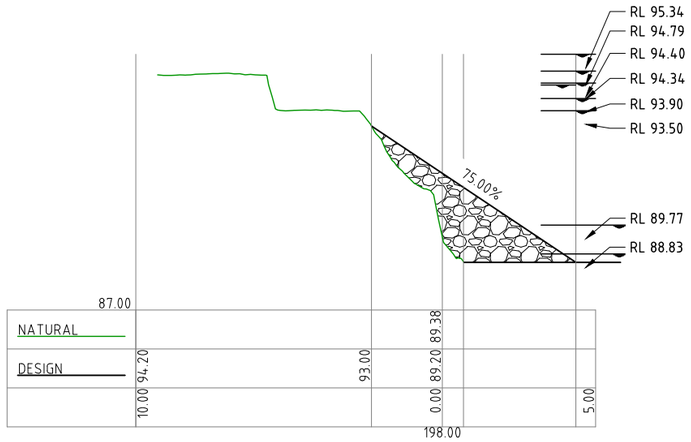
FIFTEEN50

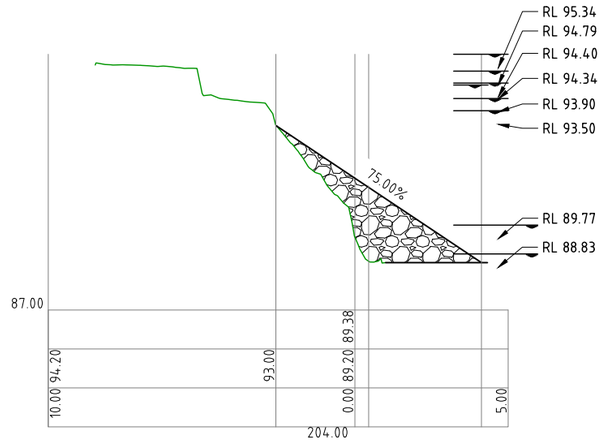
Project: MEROOL RIVER BANK REHABILITATION

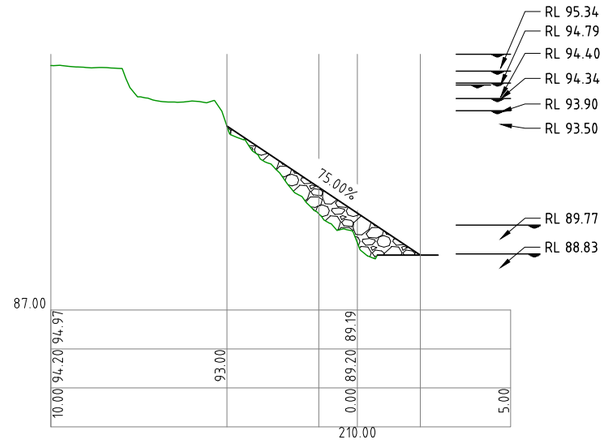
Title: SITE 2- CROSS-SECTIONS SHEET 2 OF 3

Drawing Status: DRAFT

Drawing No. 21091-05 | Sheet. 05/07 | Rev. B







FLOOD LEVELS	
FLOOD TYPE	RL mAHD
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DESIGN FLOOD (1 in 20 YEAR)	94.79
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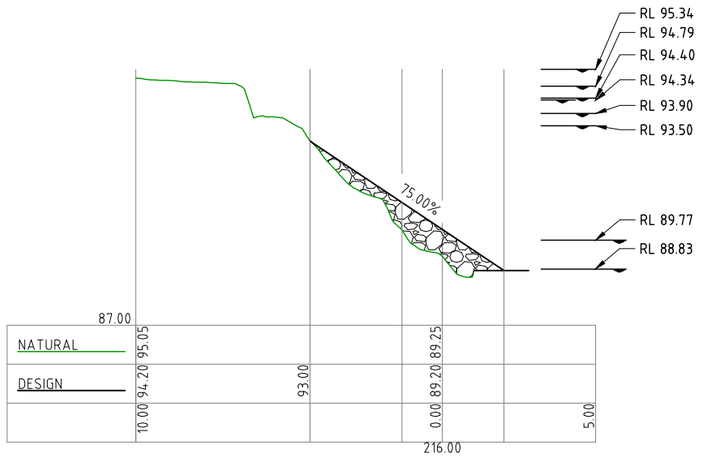

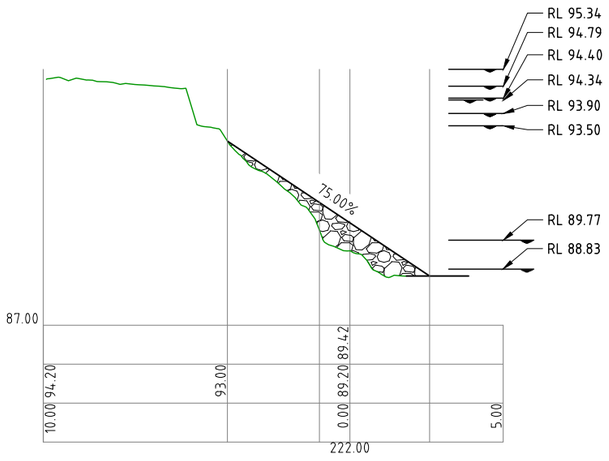

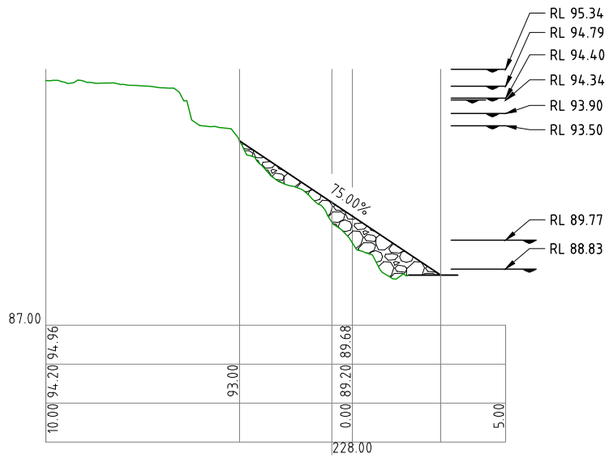

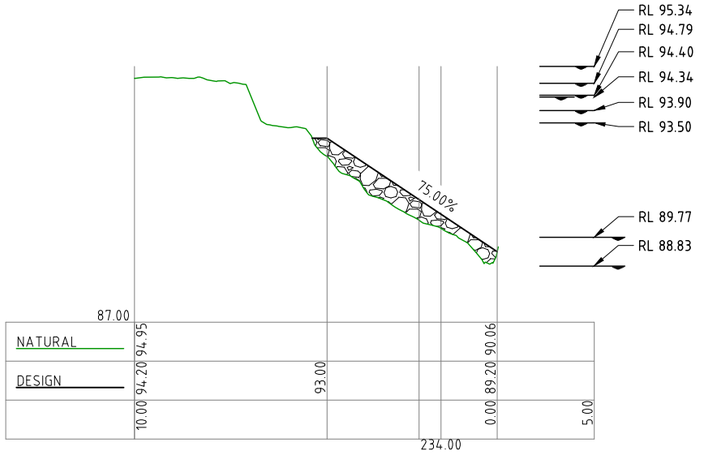

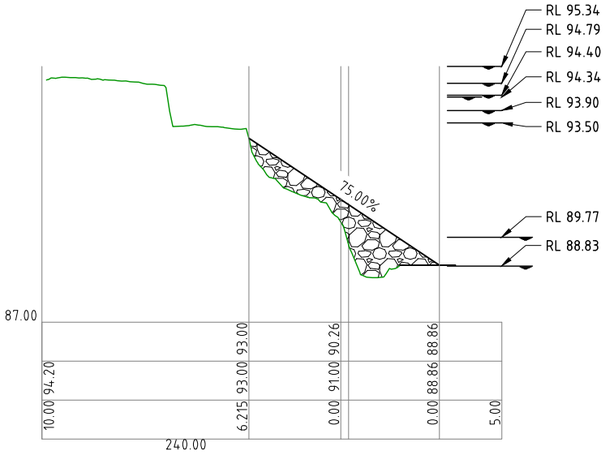

1:100 0 2 4 6 8 10m
2 1 AT A1

WARNING

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Job Manager	S. WALES	29/10/21

Client: tasman HOLIDAY PARKS

FIFTEE50

Project: MEROOL RIVER BANK REHABILITATION

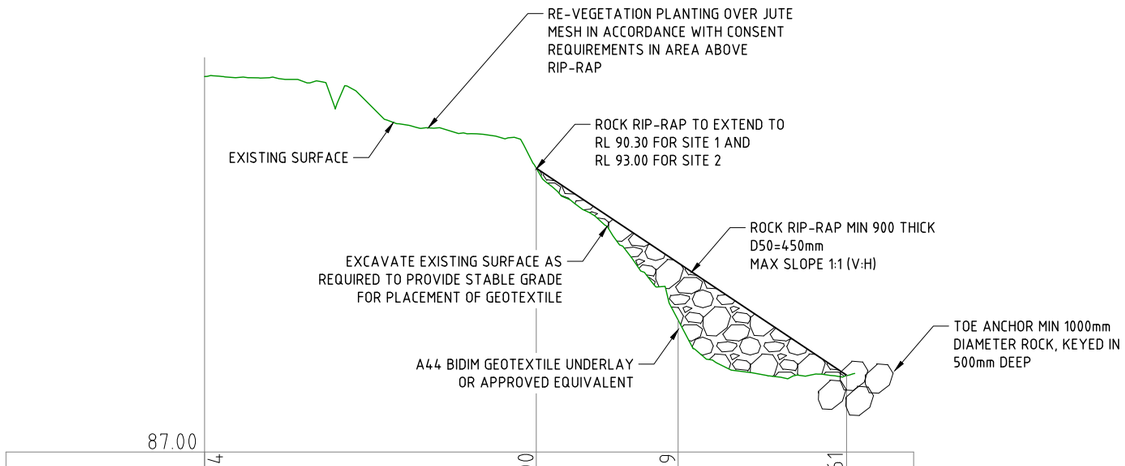
Title: SITE 2- CROSS-SECTIONS SHEET 3 OF 3

Drawing Status: DRAFT

Drawing No. 21091-06 | Sheet. 06/07 | Rev. B

NOTES

1. NO VEGETATION TO BE REMOVED TO FACILITATE INSTALLATION OF ROCK BEACHING. HAND EXCAVATE AROUND TREE ROOTS TO REDUCE IMPACT. ALL TREES TO BE RETAINED.



NATURAL	94.94	93.00	89.79	88.61	
DESIGN	94.20	93.00	91.00	88.62	
CHAINAGE	10.00	6.56	3.56	0.00	5.00

TYPICAL CROSS SECTION
SCALE N.T.S

1:100 0 2 4 6 8 10m
2 1 AT A1

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Client: tasman HOLIDAY PARKS

FIFTEE50

Project: MEROOL RIVER BANK REHABILITATION

Title: DETAILS

Drawing Status: DRAFT

Drawing No. 21091-07 | Sheet. 07/07 | Rev. B

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : Emily

Client Service ID : 631111

Emily Clark

2 Alva Close
Eltham Victoria 3095

Attention: Emily Clark

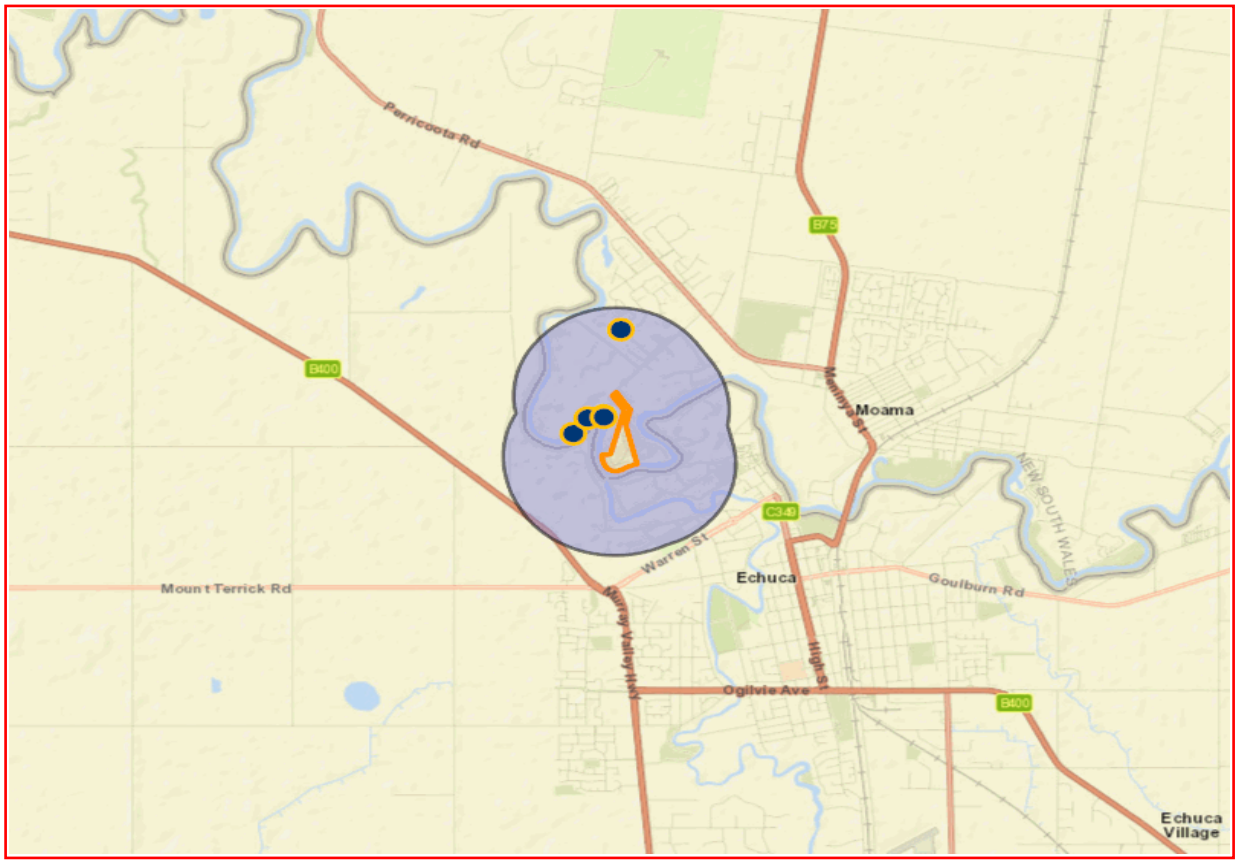
Email: emily.clark@fifteen50.com.au

Date: 18 October 2021

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 5, DP:DP560393, Section : - with a Buffer of 1000 meters, conducted by Emily Clark on 18 October 2021.

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



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

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

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

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

Important information about your AHIMS search

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

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : Emily

Client Service ID : 631110

Emily Clark

2 Alva Close
Eltham Victoria 3095

Attention: Emily Clark

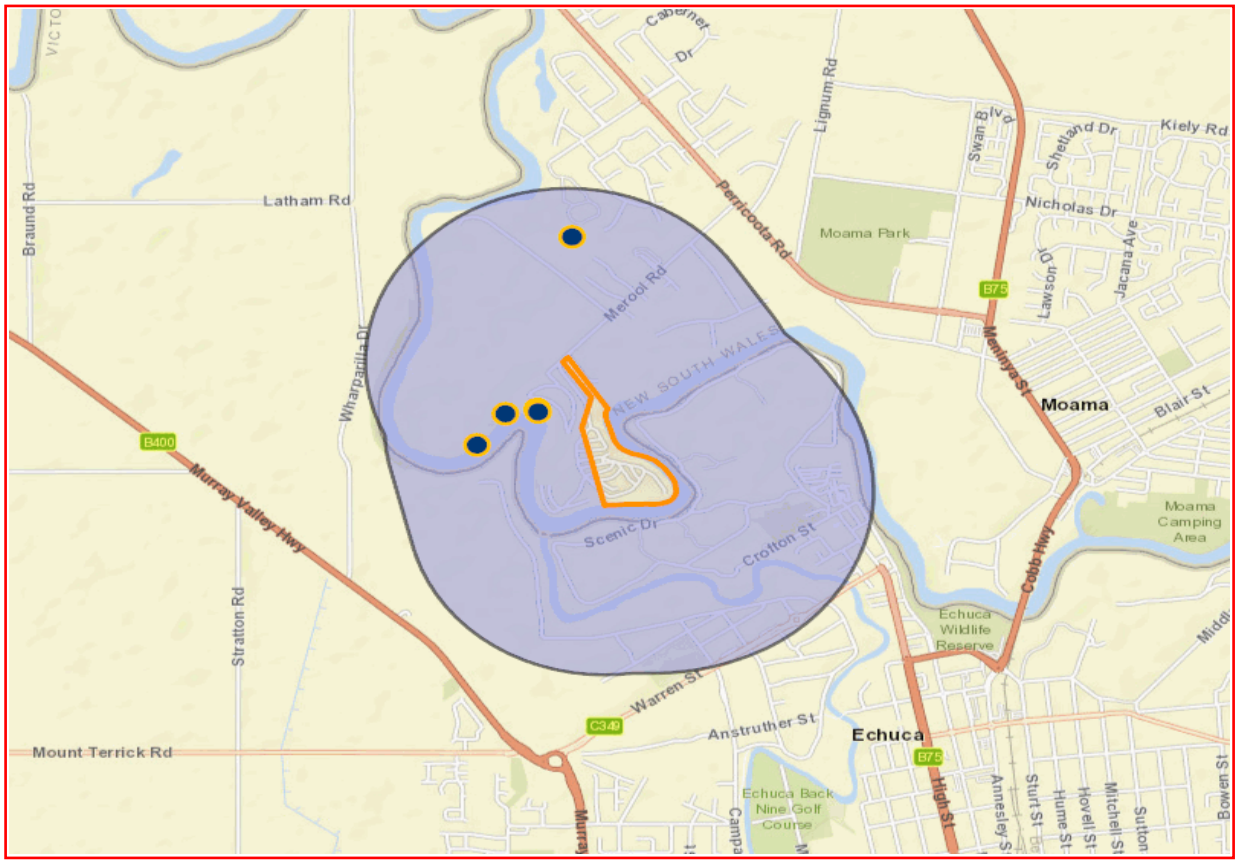
Email: emily.clark@fifteen50.com.au

Date: 18 October 2021

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 4, DP:DP560393, Section : - with a Buffer of 1000 meters, conducted by Emily Clark on 18 October 2021.

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



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ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

Australian Government

Department of Agriculture, Water and the Environment

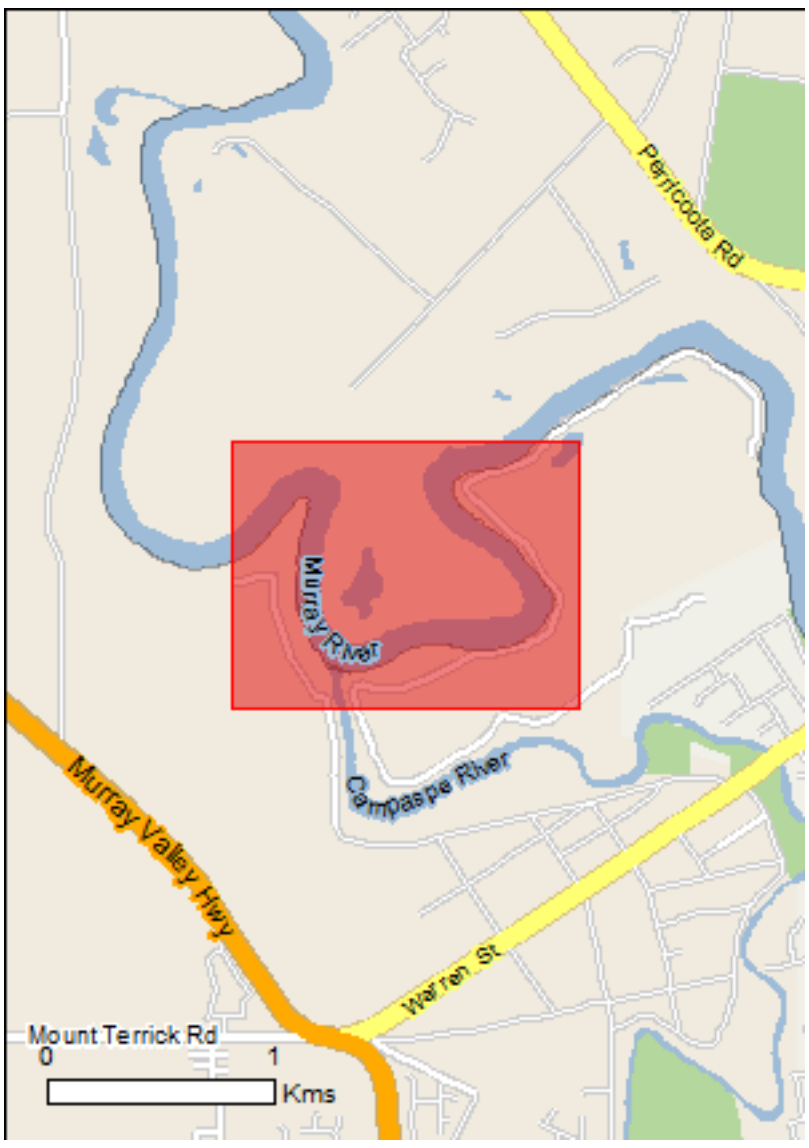
EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

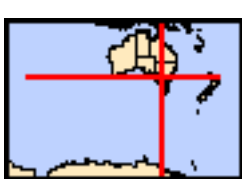
Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 18/10/21 12:46:38



Coordinates

Buffer: 0.0Km



Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	6
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	30
Listed Migratory Species:	12

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	18
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	None
Regional Forest Agreements:	None
Invasive Species:	30
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar)	[Resource Information]
Name	Proximity
Banrock station wetland complex	400 - 500km upstream
Gunbower forest	20 - 30km upstream
Hattah-kulkyne lakes	200 - 300km upstream
Nsw central murray state forests	10 - 20km upstream
Riverland	400 - 500km upstream
The coorong, and lakes alexandrina and albert wetland	400 - 500km upstream

Listed Threatened Ecological Communities	[Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions	Endangered	Community may occur within area
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Endangered	Community likely to occur within area
Natural Grasslands of the Murray Valley Plains	Critically Endangered	Community likely to occur within area
Weeping Myall Woodlands	Endangered	Community may occur within area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community may occur within area

Listed Threatened Species	[Resource Information]

Name	Status	Type of Presence
Birds		
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species

Name	Status	Type of Presence
		habitat may occur within area
[Pedionomus torquatus](#) Plains-wanderer [906]	Critically Endangered	Species or species habitat likely to occur within area
[Pezoporus occidentalis](#) Night Parrot [59350]	Endangered	Extinct within area
[Polytelis swainsonii](#) Superb Parrot [738]	Vulnerable	Species or species habitat likely to occur within area
[Rostratula australis](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
Fish		
[Bidyanus bidyanus](#) Silver Perch, Bidyan [76155]	Critically Endangered	Species or species habitat known to occur within area
[Craterocephalus fluviatilis](#) Murray Hardyhead [56791]	Endangered	Species or species habitat may occur within area
[Galaxias rostratus](#) Flathead Galaxias, Beaked Minnow, Flat-headed Galaxias, Flat-headed Jollytail, Flat-headed Minnow [84745]	Critically Endangered	Species or species habitat likely to occur within area
[Maccullochella macquariensis](#) Trout Cod [26171]	Endangered	Species or species habitat likely to occur within area
[Maccullochella peelii](#) Murray Cod [66633]	Vulnerable	Species or species habitat known to occur within area
[Macquaria australasica](#) Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area
Frogs		
[Crinia sloanei](#) Sloane's Froglet [59151]	Endangered	Species or species habitat may occur within area
[Litoria raniformis](#) Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog, Golden Bell Frog [1828]	Vulnerable	Species or species habitat likely to occur within area
Insects		
[Synemon plana](#) Golden Sun Moth [25234]	Critically Endangered	Species or species habitat may occur within area
Mammals		
[Nyctophilus corbeni](#) Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat may occur within area
[Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)](#) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat likely to occur within area
[Pteropus poliocephalus](#) Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area
Plants		
[Amphibromus fluitans](#) River Swamp Wallaby-grass, Floating Swamp Wallaby-grass [19215]	Vulnerable	Species or species habitat likely to occur

Name	Status	Type of Presence
		within area
Brachyscome muelleroides Mueller Daisy [15572]	Vulnerable	Species or species habitat may occur within area
Lepidium monoplocoides Winged Pepper-cress [9190]	Endangered	Species or species habitat may occur within area
Pimelea spinescens subsp. spinescens Plains Rice-flower, Spiny Rice-flower, Prickly Pimelea [21980]	Critically Endangered	Species or species habitat likely to occur within area
Sclerolaena napiformis Turnip Copperburr [11742]	Endangered	Species or species habitat likely to occur within area
Swainsona plagiotropis Red Darling-pea, Red Swainson-pea [10804]	Vulnerable	Species or species habitat likely to occur within area
Reptiles		
Delma impar Striped Legless Lizard, Striped Snake-lizard [1649]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within

Name	Threatened	Type of Presence
		area
Pandion haliaetus		
Osprey [952]		Species or species habitat may occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.		
Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Chrysococcyx osculans		
Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster		
White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundapus caudacutus		
White-throated Needletail [682]	Vulnerable	Species or species habitat likely to occur within area

Name	Threatened	Type of Presence
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat likely to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat may occur within area

Extra Information

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Alauda arvensis Skylark [656]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Mammals		
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Capra hircus Goat [2]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Sus scrofa Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Asparagus scandens Asparagus Fern, Climbing Asparagus Fern [23255]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within

Name	Status	Type of Presence
		area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Nassella neesiana Chilean Needle grass [67699]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Solanum elaeagnifolium Silver Nightshade, Silver-leaved Nightshade, White Horse Nettle, Silver-leaf Nightshade, Tomato Weed, White Nightshade, Bull-nettle, Prairie-berry, Satansbos, Silver-leaf Bitter-apple, Silverleaf-nettle, Trompillo [12323]		Species or species habitat likely to occur within area
Ulex europaeus Gorse, Furze [7693]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-36.11055 144.72261,-36.11055 144.73618,-36.11908 144.73618,-36.11908 144.72261,-36.11055 144.72261

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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NSW Threatened Species

Data from the BioNet Atlas website, which holds records from a number of custodians. The data are only indicative and cannot be considered a comprehensive inventory, and may contain errors and omissions. Species listed under the Sensitive Species Data Policy may have their locations denatured (^ rounded to 0.1°C; ^^ rounded to 0.01°C. Search criteria : Public Report of all Valid Records of Entities in selected area [North: -36.07 West: 144.68 East: 144.78 South: -36.17] returned a total of 587 records of 270 species.

Report generated on 9/12/2021 10:04 AM

Kingdom	Class	Family	Species Code	Scientific Name	Exotic	Common Name	NSW status	Comm. status	Records	Info
Animalia	Aves	Burhinidae	0174	*Burhinus grallarius*		Bush Stone-curlew	E1,P		1	
Animalia	Aves	Psittacidae	0309	*^^Lathamus discolor*		Swift Parrot	E1,P,3	CE	1	
Animalia	Aves	Climacteridae	8127	*Climacteris picumnus victoriae*		Brown Treecreeper (eastern subspecies)	V,P		2	
Animalia	Aves	Pomatostomidae	8388	*Pomatostomus temporalis temporalis*		Grey-crowned Babbler (eastern subspecies)	V,P		2	
Animalia	Mammalia	Petauridae	1137	*Petaurus norfolcensis*		Squirrel Glider	V,P		1	
Animalia	Mammalia	Emballonuridae	1321	*Saccolaimus flaviventris*		Yellow-bellied Sheathtail-bat	V,P		1	
Plantae	Flora	Chenopodiaceae	6371	*Sclerolaena napiformis*		Turnip Copperburr	E1	E	49	
Plantae	Flora	Poaceae	4739	*Amphibromus fluitans*		Floating Swamp Wallaby-grass	V	V	1	

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MEROOL HOLIDAY PARK – MOAMA NEW SOUTH WALES

ABORIGINAL CULTURAL HERITAGE DUE DILIGENCE ASSESSMENT

FINAL REPORT

FIFTEEN50

29 November 2021

DOCUMENT INFORMATION

Project:	MEROOL HOLIDAY PARK – MOAMA
Services required:	ACHDDA
Client:	Fifteen50
Prepared by:	Nicole Monk
Project number:	21128

DOCUMENT HISTORY AND APPROVAL STATUS

Version No.	Version Type	Issue Date	Authored by	Approved by	Date Approved
1	Draft	28/09/2021	NM	NF	28/10/2021
2	Final	29/11/2021	NM	NF	29/11/2021

DISTRIBUTION OF COPIES

Version No.	Quantity	Issue date	Issued to
1	1	28/10/2021	Fifteen50
2	1	29/11/2021	Fifteen50

EXECUTIVE SUMMARY

This report has been prepared for Fifteen50 and details the Aboriginal Cultural Heritage Due Diligence Assessment (ACHDDA) of the proposed bank works at Merool Holiday Park, Moama, New South Wales (NSW) [the study area], within the Moama Local Government Areas (LGA). The study area assessed in this report includes approximately 1.6 kilometres of riverbank with a 550 metre section of bank that is heavily eroded.

This ACHDDA was undertaken to assess the archaeological potential for Aboriginal material to be impacted during the proposed works being prepared by the proponent to determine the feasibility of the project. The ACHDDA has been undertaken in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (Department of Environment Climate Change and Water NSW 2010) [the Code].

The Murray River and its floodplains are extremely rich in Aboriginal heritage objects and sites. A search of the previously registered sites on the AHIMS register resulted in 23 known sites within proximity to the study area, however, no sites were located within the study area. These sites include a large range of site types with the most prominent being modified trees followed by earth mound-shell-artefact, burial, shell and shell-artefact-hearth. The Murray River has been subject to many archaeological assessments, with a few completed in close proximity to the study area. However, in the wider area, there is limited understanding of the Aboriginal heritage.

It is recommended that:

1 No further archaeological investigations will be required before commencing the works.

2 All Aboriginal objects and Places are protected under the NPW Act. It is an offence to knowingly disturb an Aboriginal site without an AHIP issued by Heritage NSW. Should any Aboriginal objects be encountered during works associated with this proposal, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist. If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying Heritage NSW and Aboriginal stakeholders.

3 Aboriginal ancestral remains may be found in a variety of landscapes in NSW, including middens and sandy or soft sedimentary soils. If any suspected human remains are discovered during any activity, you must:

- immediately cease all work at that location and not further move or disturb the remains
- notify the NSW Police and Heritage NSW's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location
- not recommence work at that location unless authorised in writing by Heritage NSW.

CONTENTS

FIGURES

TABLES

1 INTRODUCTION

Austral Archaeology Pty Ltd (Austral) has been engaged by Fifteen50 on behalf of Tasman Tourism to provide Aboriginal Cultural Heritage Due Diligence Advice (ACHDDA) for the proposed bank stabilisation works at 131 Merool Road, Moama, New South Wales (NSW) [the study area]. This advice is intended to assist Tasman Tourism in determining their obligations with regard to the *National Parks and Wildlife Act 1974* (NPW Act) and to determine whether the project will involve activities that may harm Aboriginal objects or places.

The study area is shown in Figure 1.1 and comprises an approximately 1.6 kilometre stretch of riverbank and is located adjacent to the Murray River, within the Merool Holiday Park, Moama (study area). The riverbank is divided into different condition levels, with good forming approximately 925 metres of the bank, fair forming 128 metres of the bank and poor condition forming 550 metres off the bank. The riverbank within the study area is heavily eroding and encroaching on the cabin footings within the park. The exact nature of the works have not yet been determined but will be a combination of bank shaping, rock beaching, vegetation planting, rock gabions and short retaining walls.

1.1 ASSESSMENT OBJECTIVES

The NPW Act allows for a person or organisation to exercise due diligence in determining whether their actions will or are likely to impact upon Aboriginal objects or places. Any person or organisation who can demonstrate that they have exercised due diligence has a defence against prosecution under the strict liability provisions of the NPW Act. Where an activity is likely to harm Aboriginal objects or places, consent in the form of an AHIP is required

Section 87 of the NPW Act makes it a strict liability offence to knowingly or unknowingly harm Aboriginal objects or declared Aboriginal places without an Aboriginal Heritage Impact Permit (AHIP). Harm is defined under the NPW Act as "*any act or omission that destroys, defaces or damages the object or place or in relation to an object, moves the object from the land on which it had been situated*".

The *National Parks and Wildlife Regulation 2009* adopted the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DECCW 2010a) [the Code] as guidance on reasonable and practicable steps which individuals and organisations need to take to:

- Identify whether Aboriginal objects are, or are likely to be, present within the study area.
- If Aboriginal objects are, or are likely to be present, determine whether their activities are likely to cause harm.
- Determine whether further assessment or an AHIP application is required for the activity to proceed.

This advice has been formulated to provide a robust assessment that will identify whether Aboriginal objects or places are present or are likely to be present within the study area. This has been achieved through the completion of a desktop review and survey of the study area. The Code provides a series of questions that clarify whether it is applicable to a proposed project. These questions are addressed in Section 2.

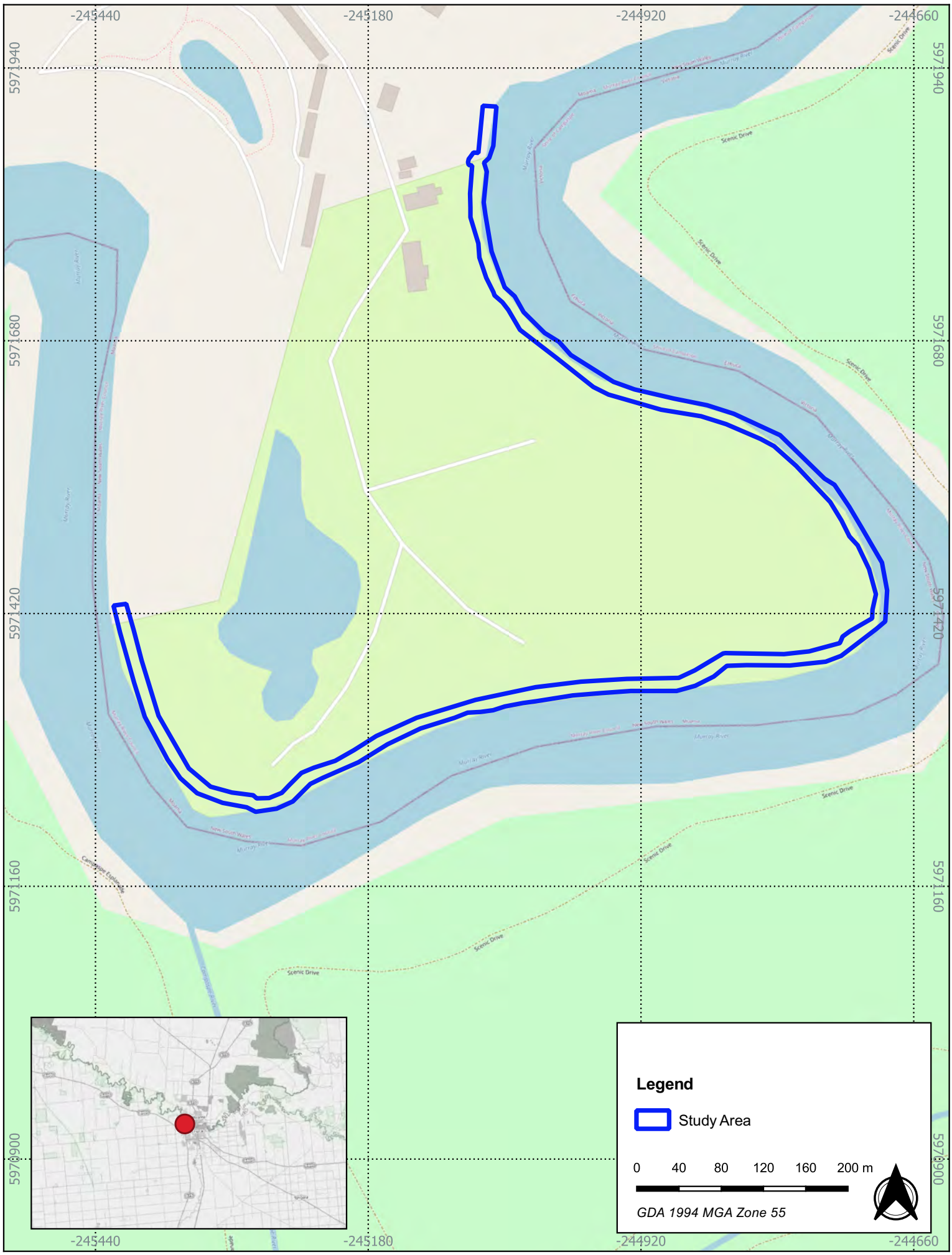

Figure 1 - Location of the study area

21128 - 131 Merool Road, Moama - ACHDDA

Source: OSM

Drawn by: ARH Date: 2021-10-01

AUSTRAL ARCHAEOLOGY

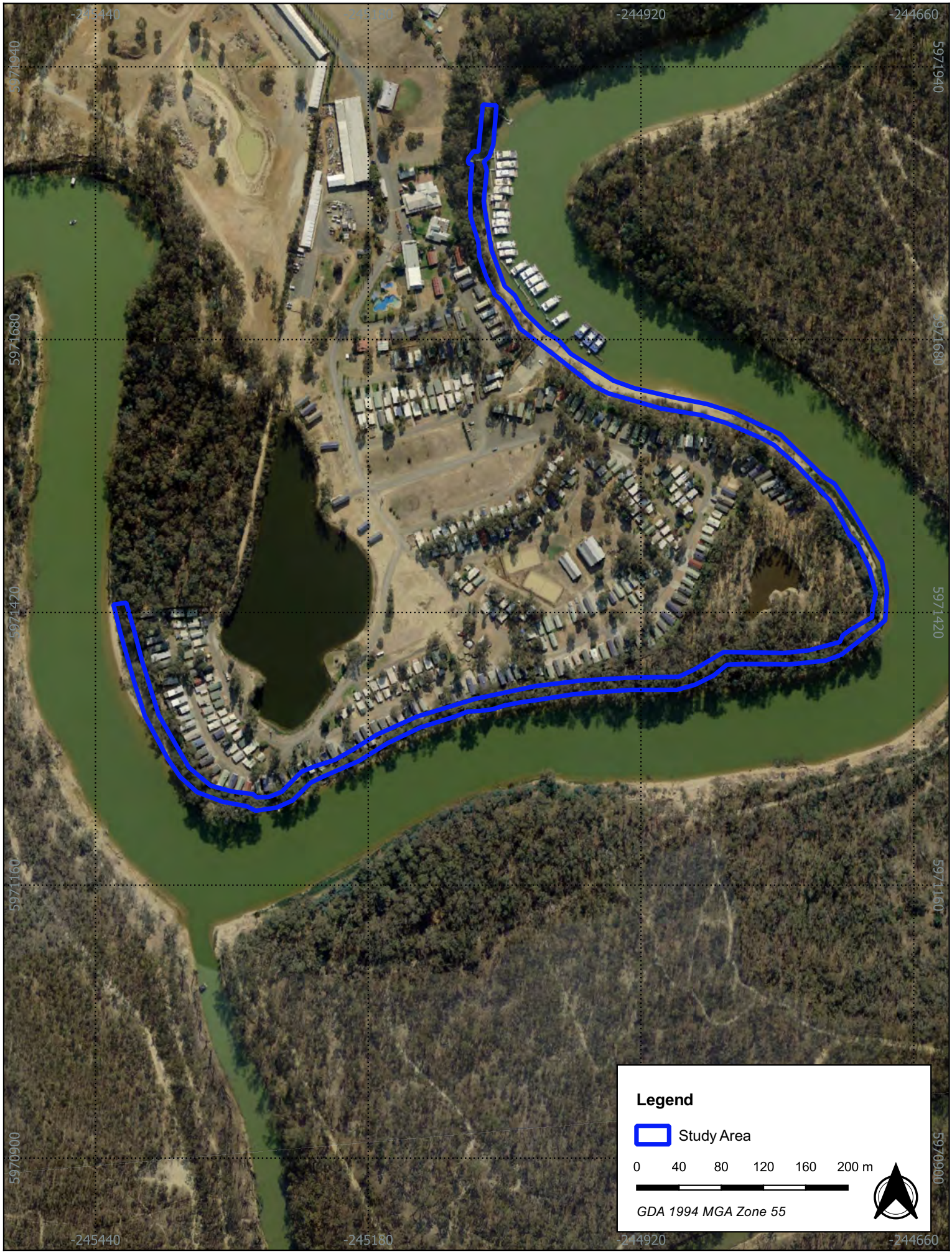

Figure 2 - Detailed aerial of the study area

21128 - 131 Merool Road, Moama - ACHDDA

Source: NSW LPI Aerial *Drawn by: ARH Date: 2021-10-01*

AUSTRAL ARCHAEOLOGY

1.2 PROJECT TEAM AND QUALIFICATIONS

The following personnel have been involved in the preparation of this ACHDDA.

AMANDA HANSFORD (BA (ARCH/PALEO), GRAD DIP. ARCH)

Amanda brings unrivalled experience in the practical issues of heritage management, archaeological survey and excavation, especially in the lower Murray regions. Amanda is a Director of Austral and specialises in Aboriginal heritage. Amanda has worked on many of major lacustrine projects in the region including Lake Victoria and Willandra Lakes. Amanda began her career in 2007 and has developed a strong understanding of the technical aspects of Australian archaeology as well as legislative processes and consultation with Aboriginal communities.

NICOLE MONK (B ARCH, GRAD DIP. ARCH)

Nicole is an archaeologist with 2 years' experience. Nicole has successfully authored approved Cultural Heritage Management Plans (CHMPs) in Victoria and has co-authored Aboriginal Cultural Heritage Assessments (ACHAs) in NSW. Nicole has experience on complex fieldwork projects including the Menindee Lakes Water Infrastructure Project and has begun leading field teams on small surveys and excavation programs.

Amanda has reviewed this report for quality assurance and technical adequacy and had input into the management recommendations.

1.3 ABBREVIATIONS

The following are common abbreviations that are used within this report:

Burra Charter	*Burra Charter: Australia ICOMOS Charter for Places of Cultural Significance 2013*
ACHA	Aboriginal Cultural Heritage Assessment
ACHDDA	Aboriginal Cultural Heritage Due Diligence Assessment
A**HIP**	Aboriginal Heritage Impact Permit
LGA	Local Government Area
NPW Act	*National Parks and Wildlife Act 1974*
The Proponent	Fifteen50
RNE	Register of the National Estate
Study Area	Merool Holiday Park

2 DUE DILIGENCE ASSESSMENT

As none of the questions outlined in Table 2.3 apply to the project, due diligence must be established through using the Code. The Code consists of a series of 5 steps outlined below

STEP 1. WILL THE ACTIVITY DISTURB THE GROUND SURFACE OR ANY CULTURALLY MODIFIED TREES?

The proposed works involve stabilisation activities to protect the bank from further erosion. As part of this process bank shaping activities will be implemented. These include vegetation planting and rock gabion and short retaining wall installations bank shaping, rock beaching, vegetation planting, rock gabions and short retaining walls.

Therefore, in these areas, any sites that may be present adjacent to or within the river channel have the potential to be displaced or destroyed. As the activity has the potential to disturb the ground surface and any culturally modified trees, should they be present, consideration of steps 2a and 2b of the Code is required.

STEP 2A. SEARCH THE ABORIGINAL HERITAGE INFORMATION MANAGEMENT SYSTEM (AHIMS) DATABASE AND USE ANY OTHER SOURCES OF INFORMATION OF WHICH YOU ARE ALREADY AWARE

An extensive search of the Aboriginal Heritage Information Management System (AHIMS) database was conducted on 30 September 2021 (Client service ID: 626904). The search identified 23 Aboriginal archaeological sites within a 12 kilometre by 10 kilometre search of the proposed study area (Lat, Long from: -33.13, 144.69 - Lat, Long to: -36.06, 144.82). None of these registered sites are located within the study area.

Spatial information for this report is displayed using the GDA94 Datum. Where AHIMS site records were provided on a different datum, they were converted using standard functions in QGIS software.

Table 1 AHIMS sites identified within 15 kilometres of the study area.

Site type	Occurrence
Modified Tree (Carved or Scarred)	16
Earth Mound, Shell, Artefact	3
Burial	2
Shell	1
Shell, Artefact, Hearth	1
Total	**23**

In NSW, there is a strong correlation between proximity to water and the presence of Aboriginal sites. The data in Table 1 shows a variety of site types associated with the Murray River at Moama, with the most common site type being modified trees. There are 3 earth mound – shell – artefact sites and 2 burials along with one shell-artefact-hearth site and one shell site. The closest site type identified was the earth mound-shell-artefact which was located approximately 336 metres east of the current study area.

A review of the reports held on the AHIMS database identified several archaeological studies undertaken in the general locality of the study area and these are summarised in Table 2. Austral has also undertaken a review of information to identify whether the activity is located within landscape features likely to contain Aboriginal objects. This includes an assessment of ethnographic information, soils, geology, landform, disturbance and resource information pertinent to the study area. The outcome of this review is outlined in the remainder of Section 2.

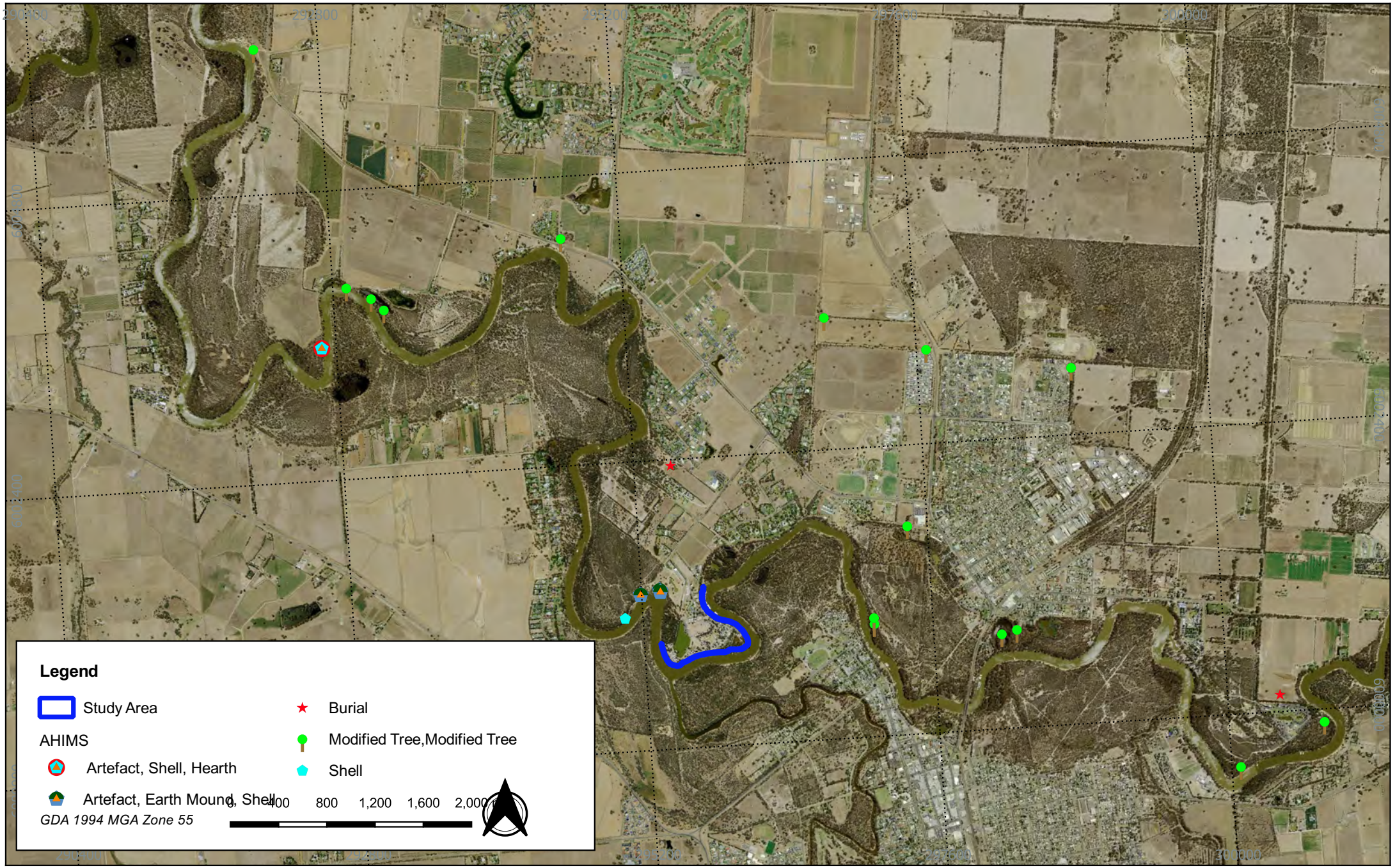

Figure 3 - AHIMS sites in relation to the study area

21128 - 131 Merool Road, Moama - ACHDDA

Source: NSW LPI Aerial

Drawn by: ARH Date: 2021-10-19

AUSTRAL ARCHAEOLOGY

2.1 LOCAL ARCHAEOLOGICAL CONTEXT

Archaeological investigations in the central Murray, and in particular in the vicinity of Echuca and Moama, have been conducted in response to developments and within the framework of academic enquiries. The limited ethnographic accounts of early settlers and explorers were once considered the primary source for archaeological enquiry.

The major studies which have contributed to our understanding of the Central Murray, and those with direct relevance to the study area, are outlined in Table 2. Reference is made to the main trends garnered from these investigations which serve to provide a broad framework in which to base the current study.

Table 2 Summary of past reports within the vicinity of the study area.

Author	Year	Details
Atkinson & Berryman	1983	Attempted to document the Aboriginal association with the Murray Valley through ethnographic material. The report talks about the Aboriginal material culture, social organisation and mythology of the region based on archaeological, historical and oral history records. It further observes the economy, material culture, social organisation and intertribal relations within the Murray Valley region. It documents the early contact history between the traditional communities and European settlers within the region. According to the report, the study area was a part of the Pangerang, Yorta Yorta and Kwat Kwat tribes, who are collectively referred to as the Bangerang group and who occupied an area of 56,000 km^2 over the heartlands of the Murray and Riverina ecological zones, which includes the outflows of different rivers like the Avoca, Loddon, Campaspe, Goulburn and Broken rivers.
Beesley	1987	Completed a site inspection of 2 scarred trees at Barmah and Grasmere, approximately 23km north-east of the current study area. Within the Barmah property the scarred tree was located within the cattle yards and identified as a yellow box (*Eucalyptus melliodora*). This tree was described as a canoe tree. The Grasmere tree was an unknown species and was located in a paddock. No details regarding the scarring were provided. Management recommendations were suggested for the tree.
Bonhomme	1990	Completed an archaeological survey of the Barmah Forest, approximately 26km north-east of the current study area. The survey aimed to document archaeological evidence of Aboriginal occupation in the area, make a recording of the Aboriginal cultural sites, evaluate the significance of the sites identified, and prepare draft management recommendations for the recorded sites. 182 sites (172 intact sites and 10 destroyed locations) were recorded. These sites included 86 earthen mounds, 88 scarred trees, 5 middens, 1 burial and 2 open artefact scatters. 17% of sites were associated with the river and creek margins, 32% of sites were located on the floodplain and 38% were located on the plain.
Craib	1991	Completed a study of the Moria-Millewa state forest, situated approximately 8km north-east of the study area. As a result of the survey, 168 sites were recorded. The sites recorded included scarred trees (n=77), cultural deposits (n=68), shell midden material (n=15) and burial (n=8).
Pardoe	1985	Pardoe studied the burial grounds in the Murray-Darling River system. He systematically studied reports of Aboriginal cemeteries and found that burial grounds occur near the River Murray. He concluded, cemeteries are distinct entities in Aboriginal culture. He identified cemeteries first emerging around 13,000 BP and their spread in the Murray River corridor could be seen around 6,000 – 7,000 BP, with significant increases around 4,000 BP
Heritage Insight	2015	Completed a cultural heritage report for the Echuca-Moama Bridge, situated approximately 2km east of the study area. During the desktop assessment, 6 previously registered scarred trees were identified and a further 3 scarred trees were recorded during the Victorian portion survey (VAHR 7825-0480, 7825-0481 and 7825-0482). Subsurface testing was completed at the location of the Bridge pylons and identified a further 2 sites (VAHR 7825-0485 and 7825-0486). 7825-0486 was recorded as an isolated stone artefact and 7825-0486 was a sub-surface deposit of stone artefacts. A majority of the scarred trees were located between the Murray Valley Highway and the Campaspe River and 2 scarred trees were near the base of the north side of a sandhill.

2.2 ETHNOHISTORY

According to Tindale, the Aboriginal custodians of the study area are the Joti Jota (alternatively spelled Yorta Yorta and Yotayota) people (Tindale 1974). The geographic location of the Joti Jota extended from the junction of the Murray River and Goulburn River, west of Echuca, to the east of Cobram/Tocumwal and south-east along the Goulburn River to the Mooroopna-Shepparton area (Tindale 1974, Horton 1994, Clark 2002). The Joti Jota group share their boundary with the Wiradjuri to the north, Pangerang (Berrigan), the Waveroo to the east, the Ngurraiilam to the south and the Barapa Barapa on the north-west (Tindale 1974).

Population numbers at the time of contact are often difficult to determine as prior to record-keeping, European disease and occupation resulted in decimated population numbers. At the time of European contact, Curr estimated that some of the local groups had population numbers around 1,200, however, he believed that these numbers were reduced due to the presence of abandoned mounds in the region at the time of his settlement in the area (Curr 1883).

Pre-contact, Aboriginal people in the area were seasonal hunter and gatherers who would have utilised the arid interior and riverine environments (Mitchell 1839, p.307, Pardoe 2003). Depending on whether there were droughts or floods, people would have used both environments for resource gathering, but in areas around the Murray River, Aboriginal people were considered less nomadic than tribes that relied solely on one form of sustenance (Mitchell 1839, p.307, Buchan 1974, p.20, Pardoe 2003). Due to the variety of resources in this area and the permanent water supply, local people's diet would have included animals such as fish, shellfish and water birds from the river and kangaroo, wallaby and lizards from the interior. Flora was also an important part of Aboriginal diet and comprised vegetable foods and roots, such as bulrush, sow thistle, dandelion, manna gum and wild fruit (Buchan 1974, p.25).

As part of these resource gathering processes, people would have used fishing and hunting spears, nets and coolamons. Spears were often assembled using the stalks of reeds around the Murray, such as the common reed (typha sp.), but bone and wood could also be used, depending on the spear (Buchan 1974, p.26). When making nets, people would use chewed fibre from common reeds and mesh and often traded them with other groups away from the Murray (Beveridge 1889). Canoes were also used for fishing in the river with people diving for fish during the day and at night. where people would light fires on clay plates in the canoes as a source of light (Beveridge 1889, Coutts et al. 1977).

Beveridge has also given details about the ovens used by the Aboriginal community along the Murray River. As per his writings, the ovens were made by excavating a hole that was generally 3 feet (0.91 metres) in diameter and 18 inches (450 millimetres) deep. Clay balls, about the size of a cricket ball, were carefully placed on one side of the hole. These nodules were baked until they were red hot. They were later removed with a wood stick. Once the clay balls were removed, the hole was swept out and a moistened layer of grass was placed over the bottom and around the hole. Over them, the hot clay nodules were spread equally. Food was added to cook and the entire oven was then covered with the fine earth (Beveridge 1889, Coutts et al. 1977). During wetter periods, crabholes (holes in the ground formed from burrowing water species) and small depressions in the ground surface were filled with water for weeks on end, enabling oven mounds to be situated further away from permanent water sources.

The above ethnohistory should be employed with caution though, and Hiscock (2008, p.17) has argued that even very early historical accounts may not be a suitable basis for analogy. As Aboriginal groups had to change their economic, cultural and political practices to cope with the social impacts of disease decimating the population before any observations and subsequent historical accounts were recorded. He also argues that it is likely that similar drastic changes happened in response to "altered cultural and environmental circumstances" following the arrival of Europeans (Hiscock 2008, p.17).

2.3 TOPOGRAPHY AND HYDROLOGY

The major hydrological system associated with and adjacent to the study area is the Murray River, located in the south-eastern part of the Murray Basin. The Murray River has its major headwaters in the Australian Alps and runs approximately 3,750 kilometres to the Southern Ocean at Goolwa, South Australia. This permanent freshwater source has many tributaries including other rivers, streams, paleo-channels, creeks, billabongs, swamps that feed into the main river.

Prior to European settlement and large scale infrastructure, the Murray River would have flooded seasonally each year (Coutts et al. 1979, p.29). During these periods of flooding, the areas of inundation would have supported a number of food resources for Aboriginal people, such as fish, shellfish other aquatic animals and water birds (Pardoe 2014, p.114).

The hydrological systems identified within and in the locality of the study area are identified in Figure 2.2.

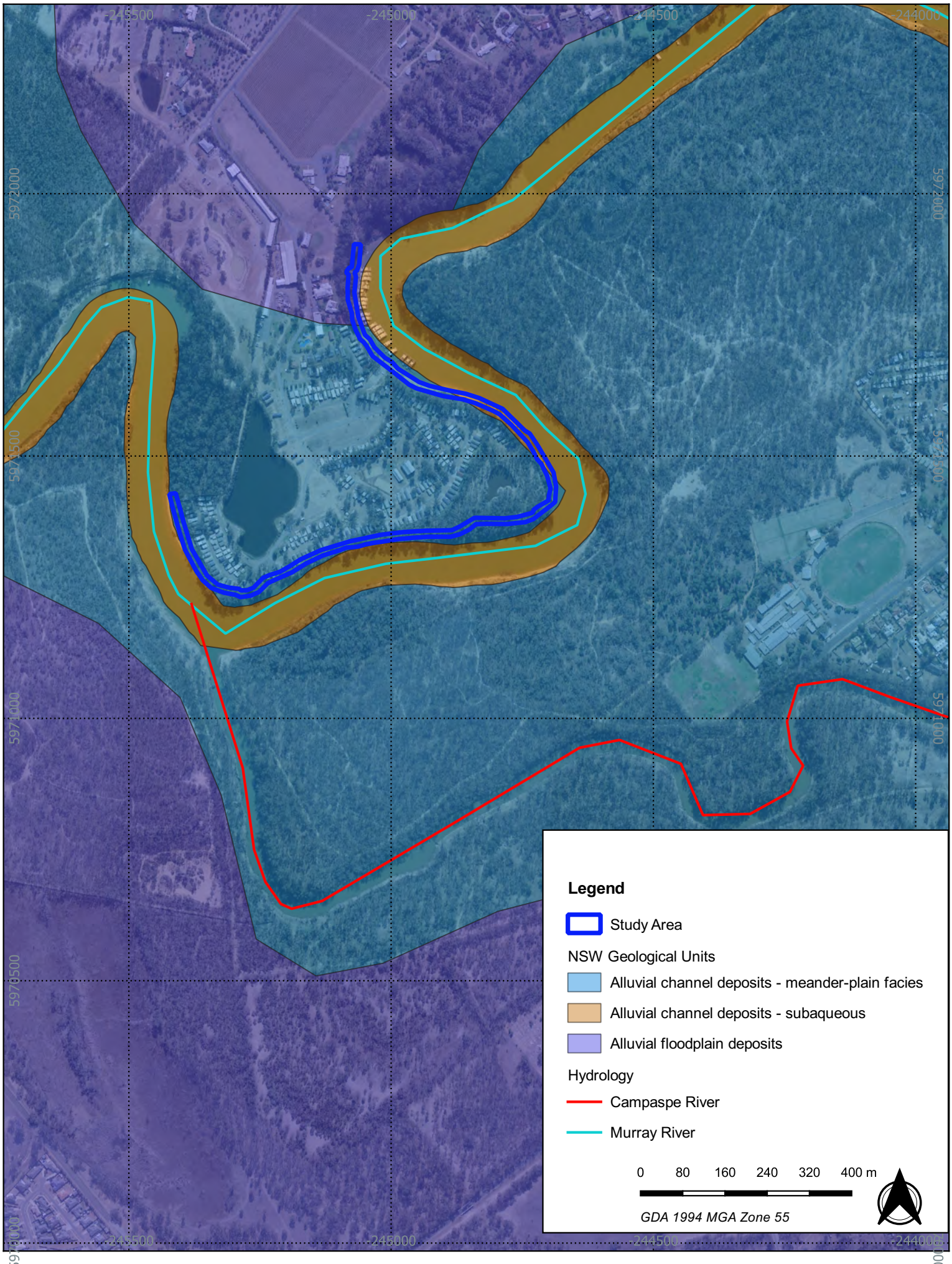

Figure 4 Geology and hydrology of the study area

21128 - 131 Merool Road, Moama - ACHDDA

Source: NSW LPI Aerial, NSW Geological units

Drawn by: ARH Date: 2021-10-19

AUSTRAL ARCHAEOLOGY

2.4 GEOLOGY AND SOILS

The study area consists of the geological formation 'Alluvial channel deposits - meander-plain facies', which are deep alluvium soils that have accumulated and relocated or meandered from water movement and that have travelled (Williams 2011). Stone artefacts made from silcrete, quartzite and sandstone materials have been identified in these areas (Landskape 2008).

The geological units identified within the study area are identified in Figure 2.2.

The study area is characterised by Murray Channels and Floodplains (Figure 2.3). These soil types are associated with active channels and seasonally inundated floodplains (Mitchell 2002). This indicates that site types likely to be identified would be modified trees, earth mounds, shell middens and artefact scatters as a result of long term use of these areas and the resources available close to permanent freshwater.

2.5 LANDFORMS

The study area is located on the Murray River bank and within 200 metres of water. These areas, within 200 metres of water, are often associated with Aboriginal people's occupation of the area and traditional activities, which can result in the presence of Aboriginal objects (DECCW 2010a, p.12).

The study area is in the Murray Channels and Floodplains, which are active channels and seasonally inundated floodplains (Figure 2.3). The channel banks of the Murray are grey and brown clays and are located in (Mitchell 2002, p.103).

2.6 LANDSCAPE RESOURCES

Depending on the season and the flow and level of water in the Murray River, the ecological diversity between the river and semi-arid environment would have provided a wide range of resources for Aboriginal people. Flora and fauna were not only a necessity to Aboriginal diet but were also important for making resources, ornaments, clothing and medicine. Today, animals and plants that were once located in the wider region may be extinct or extinct from the region.

Prior to the removal of the natural vegetation, the ecological diversity of the area would have provided a wide range of resources for Aboriginal people. The study area is the part of Riverina Bioregion. Commonly seen trees are red gum (*Eucalyptus camaldulensis)* and river cooba (*Acacia stenophylla)* communities. The understorey of red gum in the region of sandy soils mainly consists of herbaceous perennials. Near the outer perimeter of the floodplains, commonly seen species are black-box (*Eucalyptus largiflorens),* salt-tolerant grasses, saltbushes and daisies as the understorey.

Nets made of plant fibres and three-pronged spears made from reeds were used for fishing (Beveridge 1889). Curr recorded the fish trapping process within the region. He reported construction of earthen banks in streams and lagoons to trap floodwaters and wooden stakes were driven between the banks to trap fish (Curr 1883).

Important faunal species seen in and around the study area that would have been important to Aboriginal diet include reptiles species, such as the sand goanna (*Varanus gouldii*), blue tongued lizard (*Tiliqua species*), stump-tailed lizard (*Tiliqua rugosa*); snakes; tortoises; fish and shellfish, including the Murray cod (*Maccullochella peelii*), perch (*Perca sp.*) and yabbies (*Cherax destructor*); as well as waterfowl, such as cockatoos (*Cacatuidae*) and ducks (*Anas platyrhynchos*). Mammals that would have also been present in the study area include kangaroos, (*Macropodidae sp.*), wallabies (*Macropodidae sp.*), mice (*Pseudomys delicatulus*), bats (*Pteropus alecto*), wombats *(Vombatus ursinus*) and possums (*Trichosurus vulpecula*) [Buchan 1974, p.15].

As well as being important food sources, animal products were also utilised for tool making and the production of ceremonial items. Animals such as brush-tailed possums were highly prized for their fur, with possum-skin cloaks a common item made by Aboriginal people (Beveridge 1889). Curr also reported that the fur of the possum was spun and used as a neck ornament by women (Curr 1883).

2.7 PAST LAND USE PRACTICES

By 1961, large land clearing activities surrounded the study area and the Holiday Park, possibly as a result of farming and by 1976 several trees surrounding the study area had been cleared. At this time, it appears that land clearing had not impacted the study area itself. The Merool Caravan Park was established in 1983 and the location remains largely the same since then. The construction of the caravan park would have resulted in significant levels of disturbance from the development of the cabins, land clearing and the introduction and building up of land as well as the development of dams. This may have led to Aboriginal cultural material being harmed.

Water diversion and irrigation activities, including dam and weir constructions, further along the Murray, have also had a significant impact on land usage over time. The construction of water management infrastructure has resulted in impacts to the flow regime of the Murray River, and overall regime of flooding in the region. This, in turn, has resulted in changes to soil erosion and deposition patterns, as well as altering the natural wetting and drying pattern. In the Central Murray region, the major problems seen as a result of such land-use practices is salinization, channel erosion, and the decline of native plants and animals (Walker & Thomas 1993).

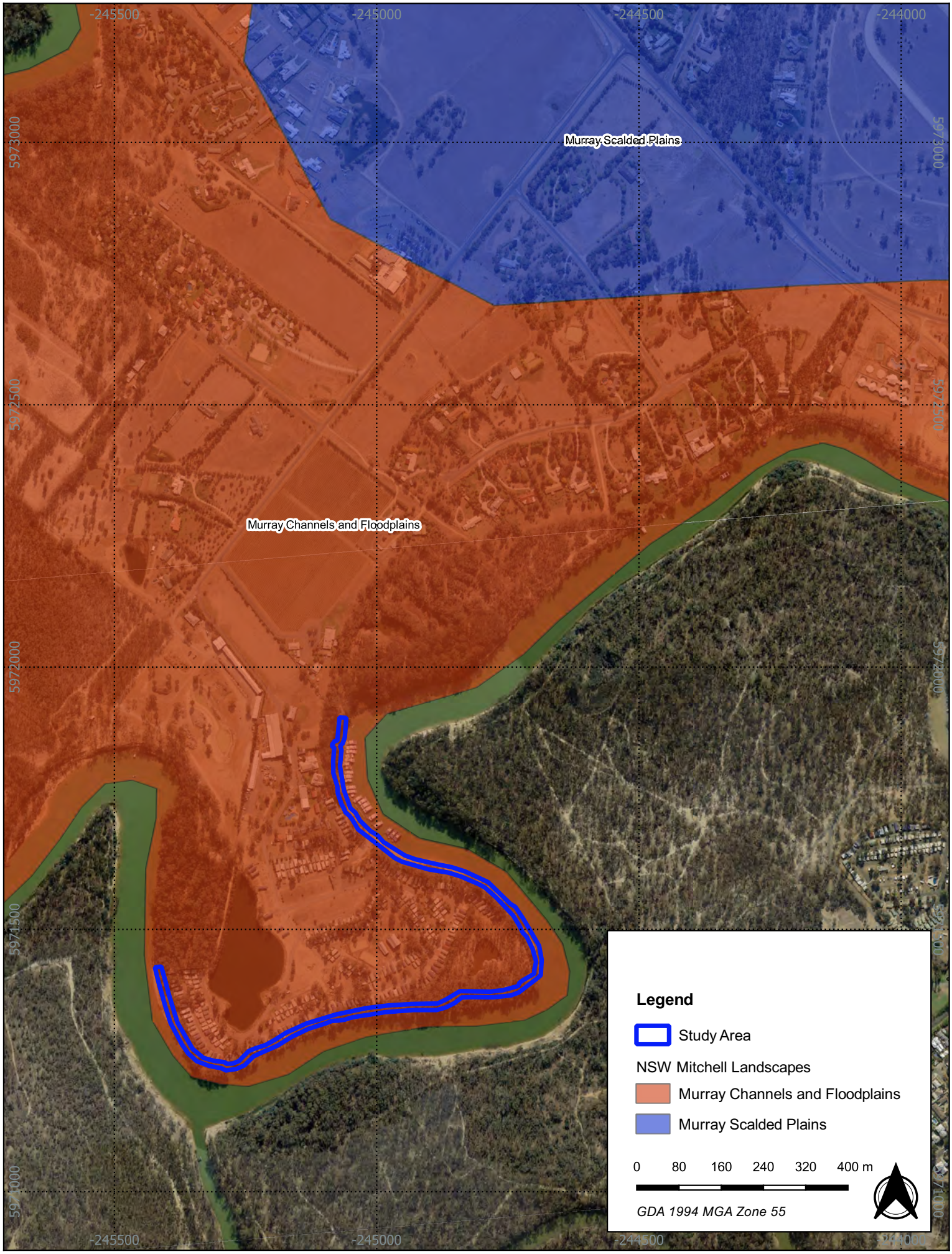

Figure 5 Mitchell Landscapes associated with the study area

21128 - 131 Merool Road, Moama - ACHDDA

Source: NSW LPI Aerial, Mitchells landscape

Drawn by: ARH Date: 2021-10-01

AUSTRAL ARCHAEOLOGY

2.8 PREDICTIVE STATEMENTS

In general, an archaeological predictive statement for any study area draws on surrounding environmental data, previous archaeological research and predictive models for Aboriginal occupation. Another essential aspect to predicting the archaeological integrity of a site and something that must be considered is previous land uses of the study area and degree of disturbance.

The main trends broadly in along the central section of the Murray River are that:

- Archaeological sites occur on most landforms.
- Site frequency and density are dependent on their location in the landscape.
- There is a dominance of hearths, ovens and small artefact scatters.
- Source bordering dunes and sand hills have high sensitivity and high potential to contain Aboriginal heritage sites including burial sites.
- Artefact scatters are commonly located in close proximity to permanent water sources along creek banks, alluvial flats and low slopes. More complex sites are usually located close to major water sources.
- The dominant raw material used in artefact manufacture is silcrete and fine grained silicious material with smaller quantities of chert, quartz and volcanic stone seen.
- Artefact assemblages usually comprise a proportion of formal tool types with the majority of assemblages dominated by flakes and debitage.
- While surface artefact scatters may indicate the presence of subsurface archaeological deposits, surface artefact distribution and density may not accurately reflect those of subsurface archaeological deposits.
- Aboriginal scarred trees may be present in areas where remnant old growth vegetation exists.

While these statements provide an adaptable framework for applying a predictive model to the study area, the Murray River and its floodplains are rich in archaeological material and all Aboriginal heritage sites types can be located within the region. The general studies of the south-western region, the specific investigations surrounding the study area and the search of the AHIMS database have helped to predict what certain site types can be expected within the study area. Based upon the results of these background studies Austral has been able to develop a series of predictive statements relating to the type and character of Aboriginal cultural heritage sites that are likely to exist in the study area and where they are more likely to be located. These predictive statements indicate that:

- Site types with the potential to occur include ovens, scarred trees, middens, burials and artefacts.
- Shell middens, ovens and scarred trees are the most frequently occurring site type and are often identified on the banks of rivers or creeks.
- Middens are generally located near water and resource collection, although are in locations that do not flood.
- Scarred trees are often located in the flood plain river corridor.
- Burials are likely to be found in sandy deposits, along watercourses, in well-drained areas;
- Artefact scatters are most likely to occur on well-drained and raised, level ground, near sources of freshwater or wetlands, or along spur crest or ridgelines.

STEP 2B. ACTIVITIES IN AREAS WHERE LANDSCAPE FEATURES INDICATE THE PRESENCE OF ABORIGINAL OBJECTS

Table 2.3 Landscape features in the Code that indicate the likely existence of Aboriginal objects.

Question	Response
Is the activity within 200 metres of 'waters'?	Yes
Is the activity within a sand dune system?	No
Is the activity located on a ridge top, ridge line or headland?	No
Is the activity located within 200 metres below or above a cliff face?	No
Is the activity within 20 metres of or in a cave, rock shelter or cave mouth?	No
Is the activity (or any part of it) on land that is disturbed?	Yes
Do the predictive statements of 2A indicate Aboriginal Objects or places are likely to occur on any of the topographic elements of the activity area?	Yes

The proposed works are being undertaken along the Murray River near the township of Moama. This area is considered archaeologically sensitive as previous research has identified that areas within 200 metres of water are likely to contain evidence of Aboriginal cultural material. Although the study area is approximately 1.6 kilometres long, the main areas of impact will be confined to the south-western and north-eastern portions of the study area where heavy erosion has occurred. The land within the study area is currently disturbed from the construction and maintenance works for the holiday park, the construction of a dam and the construction of the pontoons. Areas that have not been as heavily disturbed may contain previously unrecorded cultural material.

STEP 3. CAN YOU AVOID HARM TO THE OBJECT OR DISTURBANCE OF THE LANDSCAPE FEATURE?

As the works will include maintenance works for the bank, harm cannot be avoided. Therefore, both the river and the landforms will be impacted by the proposed upgrades to the bank.

STEP 4. DESKTOP ASSESSMENT AND VISUAL INSPECTION

A visual inspection of the study area was undertaken on 15 October 2021 by Neil Fenley (Senior Archaeologist, Austral) and Nicole Monk (Archaeologist, Austral). The inspection consisted of a systematic survey of the study area to identify and record any Aboriginal archaeological sites visible on the surface or areas of Aboriginal archaeological potential and cultural sensitivity. The archaeological survey was conducted on foot. The methods used during the visual inspection conformed to requirements 5 to 8 of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010b).

In general, the inspection confirmed that the study area was located on a built up riverbank that is eroding and has been heavily modified with the construction of terraces, pontoons and stairs (Figure 6 and Figure 7). Vegetation within the study area included River Red Gum trees (*Eucalyptus camaldulensis*), Black Wattle (*Acacia mearnsii*) and Common Nettle (*Urtica dioica*). Visibility was low at 5% with landscaped gardens and compact grass limiting visibility and exposure was also recorded as low at 5%.

During the inspection, it was identified that there was heavy disturbance to the riverbank. This was evident by the height of the bank, which was significantly higher than the surrounding land, with some areas around the cabins up to 3 metres higher than other areas (Figure 9). This may have been built up during the levelling of the park and the excavation of the dams, which are located near the south-eastern section of the study area. Other disturbances in the study area were often associated with the cabins and access to the rivers and included decking, pipelines, pontoons, fencing and stairs (Figure 6 to Figure 9).

A majority of the study area has been disturbed through the previous developments, maintenance activities and the ongoing use of the study area as a holiday park. Despite Aboriginal sites being associated with the Murray River, the inspection noted that there was no identified Aboriginal heritage located within the study area. The results of the visual inspection are outlined in Figure 10.

Figure 6 **North facing view of disturbance to riverbank**

Figure 7 **West facing photograph of riverbank and pontoons**

Figure 8 **South-west of riverbank with a rock embankment**

Figure 9 **East facing view of the disparity between the riverbank and the holiday park**

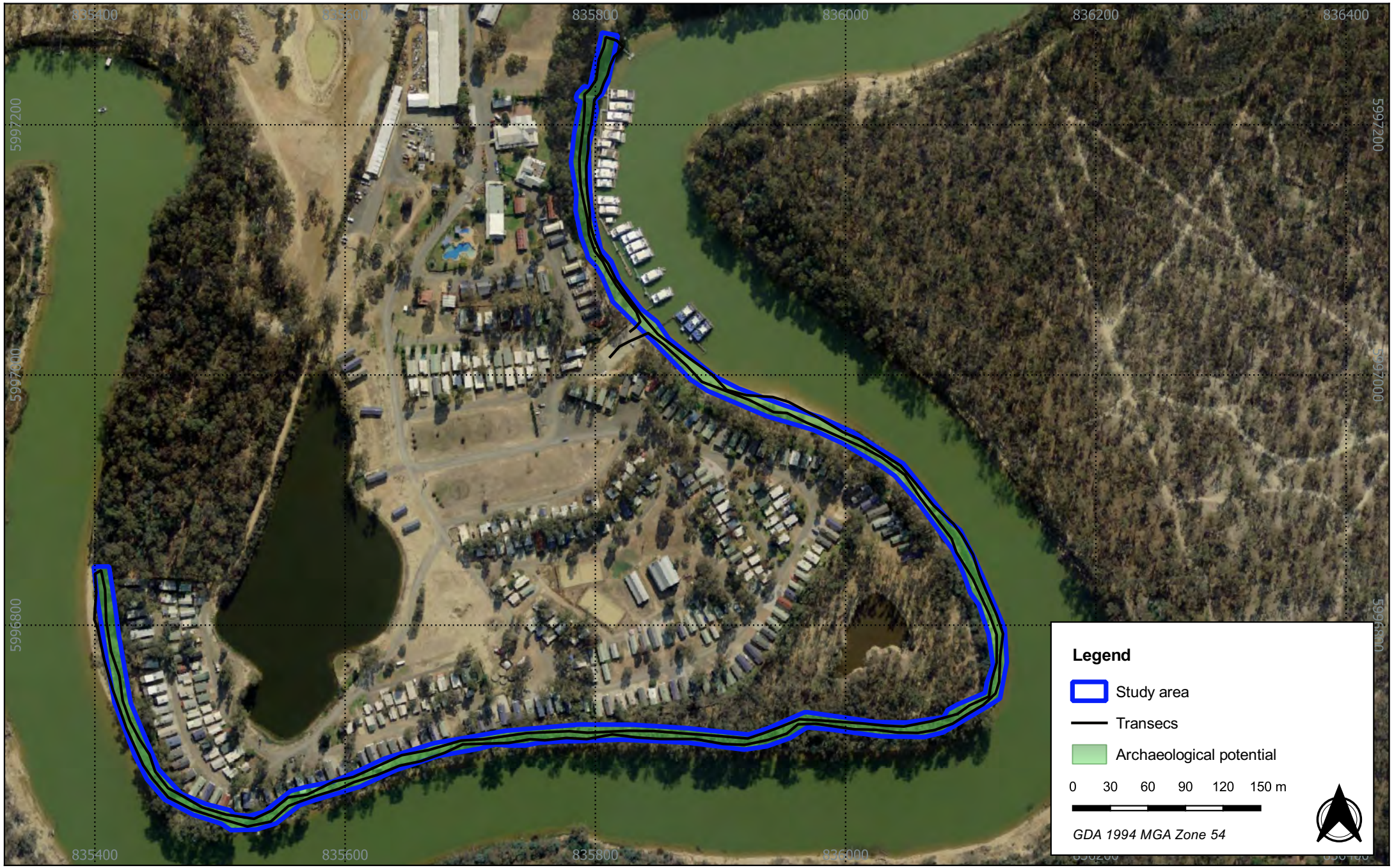

Figure 10 Archaeological Potential and survey tracks within the study area

21128 - 131 Merool Road, Moama - ACHDDA

Source: NSW LPI Aerial

Drawn by: ARH Date: 2021-10-21

AUSTRAL ARCHAEOLOGY

STEP 5. FURTHER INVESTIGATIONS AND IMPACT ASSESSMENT

Based upon the outcome of Steps 1 to 4 of the code, no further assessment is warranted.

The following recommendations are derived from the findings described in this ACHDDA. The recommendations have been developed after considering the archaeological context and environmental information.

It is recommended that:

1 No further archaeological investigations will be required before commencing the works

2 All Aboriginal objects and Places are protected under the NPW Act. It is an offence to knowingly disturb an Aboriginal site without an AHIP issued by Heritage NSW. Should any Aboriginal objects be encountered during works associated with this proposal, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist. If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying Heritage NSW and Aboriginal stakeholders.

3 Aboriginal ancestral remains may be found in a variety of landscapes in NSW, including middens and sandy or soft sedimentary soils. If any suspected human remains are discovered during any activity, you must:

- immediately cease all work at that location and not further move or disturb the remains
- notify the NSW Police and Heritage NSW's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location
- not recommence work at that location unless authorised in writing by Heritage NSW.

If you have any questions regarding the advice within this letter, please do not hesitate to contact me on the details below.

Yours sincerely,

Nicole Monk

Archaeologist

Austral Archaeology

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E: nicolem@australarch.com.au

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Moama Local Aboriginal Land Council

Cultural Heritage Site Survey Report

(SSR 061)

Prepared for: Fifteen 50

Name: Mr. Sam Wales
Project: Aboriginal Site Survey
Location: Merool Holiday Park
Merool Lane Moama NSW 2731

Prepared by:
Name: Ms Diarna Kerr

On Behalf of:
Moama Local Aboriginal Land Council
Email: admin@moamalalc.com.au
Phone: 03 5482 6071
ABN: 95 659 710 168

Purpose

The purpose of this site survey report is to provide details on the findings and recommendations relating site surveys conduct at Merool Holiday Park, Merool Lane Moama NSW 2731This report is intended for the purpose of informing your organization of the site survey findings and recommendations as to what future action that Moama LALC believes should be taken in respect to this project. This report is not intended for the purpose of providing your organization with approval to harm (destroy, deface, or damage) or desecrate an Aboriginal object or Aboriginal place, or in relation to an object, move the object from the land on which is has been situated which is an offence under the *National Parks and Wildlife Act 1974*.

Background

The Moama LALC was contacted by Mr. Sam Wales on the 22/11/2021 to conduct site survey investigations at Merool Holiday Park, Merool Lane Moama NSW 2731 The following members were involved in the Sites Work Surveys:

Name	**Title (Position)**	**Date(s) on Site**	**Location(s)**
Diarna Kerr	Site Officer	23/11/2021	Merool Holiday Park, Merool Lane Moama NSW 2731

The total sites work costs for the project(s) was $450 plus $500 for this report excluding GST, total cost $950 plus GST – ($1,045.00)

Site Work Summary

1. Provide a general description of the landscape and known local history of the area surveyed. Insert maps if available.

2. Provide a general description of the type of investigations conducted (e.g. Walk Overs, Sub Surface Testing, Archeological Survey's, and Research – Knowledge Holders etc.).

3. Provide a description of any issues, limitations or difficulties that were experienced during the project.

Findings

During the sites work investigation the Moama LALC made the following findings:

Finding #1	
Site Discovered	Not known
Located by	Visual Inspection
Inspected by	Diarna Kerr
Type and Details of Site / Possible Site	Riverbank, unable to visually see any findings due to vertical scale of riverbank. (Very high)
Details of any Disturbance / Action	Disturbed land / Holiday Park
Site Risks and Required Protective Measures	Shell midden disturbance a very high possibility due to erosion on riverbank, also skeletal remails may be sighted. No works to be carried out on Riverbank without a minimum of one Cultural Heritage Officer at all times.
Location / GPS	Merool Holiday Park, Merool Lane Moama
DECCW Notified	N/A
Site Registered	TBA
Picture	N/A
Further Details	Moama Local Aboriginal Land Council 0354 826 071

High possibility of Shell Midden, Ancestral Remains, Earth Mounds discovery due to location of proposed works along the riverbank. This site has been disturbed and our recommendations are that there be at least one MLALC Cultural Heritage Officers to be always on-site during riverbank excavation/restoration works.

Green Zones: revegetation of riverbank proposed.
Red/Orange Zones: Riverbank to be strengthened via rock wall. Excavation will need to be always monitored by a Moama LALC Cultural Heritage Officer.

We recommend under no circumstances, that the proposed works to be carried out without Moama Local Aboriginal Land Council Cultural Heritage Officers in attendance at all times.

All Aboriginal cultural places in NSW are protected by law. Aboriginal artefacts are also protected. It is illegal to disturb or destroy an Aboriginal place. Artefacts should not be removed from site.

Recommendation

Evidence Found

Given the findings identified above the Moama LALC has a number of recommendations in relation to those findings as follows:

Finding #1	
Recommendation(s)	Under NO circumstances is the proposed works to be commenced without Moama Local Aboriginal Land Council Cultural Heritage Officer present in all consultations of this project.

However, should Shell Midden, skeletal material or anything of Aboriginal significance be exposed, during ground disturbance, work within the project area must cease immediately and contact made with the Moama LALC initially who will organize a sites worker to be in contact with your organization. As per the *National Parks and Wildlife Act 1974* it is an offence to destroy or remove anything of Aboriginal significance.

In addition to the above recommendations the Moama LALC is willing to provide a brief training session to those who may be working on the site to ensure that they have a nominal understanding of potential Aboriginal objects/places.

Please do not hesitate to contact me if you have any queries regarding the context of this report and I will endeavor to answer them for you. On behalf of Moama LALC, I wish you well with your forthcoming project.

Kind Regards

Site Officer – Ms. Diarna Kerr

Moama Local Aboriginal Land Council

Test of significance for Merool Holiday Park riverbank rehabilitation

Introduction

This test of significance is part of the statement of environmental effects for the Merool Holiday Park riverbank rehabilitation, Moama NSW.

A database search was undertaken on 9 December 2021 of the NSW Environment, Energy and Science (BioNet Atlas) and the Department of Agriculture, Water and Environment websites to identify threatened species that may be found within the proposed project site as listed under the *Biodiversity Conservation Act 2016* and the *Environmental Protection and Biodiversity Act 1999* (EPBC Act).

A desktop search of the online databases was undertaken as follows:

- NSW Environment, Energy and Science BioNet Atlas
- *Fisheries Management Act 1994*
- Department of Agriculture, Water and Environment, Environmental Protection and Biodiversity Conservation (EPBC) Protected Matters Report

The following threatened species has potential to occupy the site and has triggered a test of significance:

- **Sloane's Froglet (*Crinia sloanei*) Endangered NSW**
- **Growling Grass-frog (*Litoria raniformis*) Vulnerable NSW**
- **Silver Perch (*Bidyanus bidyanus*) Vulnerable NSW, Critically endangered Commonwealth**
- **Murray Hardyhead (*Craterocephalus fluviatile*), Endangered Commonwealth**
- **Flathead Galaxias (*Galaxias rostratus*), Critically endangered Commonwealth**
- **Trout Cod (*Maccullochella macquariensis*) Endangered Commonwealth**
- **Murray Cod (*Maccullochella peelii*) Vulnerable Commonwealth**
- **Macquarie Perch (*Macquaria australasica*) Endangered Commonwealth**
- **Murray Crayfish (*Euastacus armatus*) Vulnerable NSW**

Sloane's Froglet (*Crinia sloanei*)

(1) The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats:

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

Sloane's Froglet has been recorded from widely scattered sites in the floodplains of the Murray-Darling Basin, with the majority of records in the Darling Riverine Plains, NSW South Western Slopes and Riverina bioregions in New South Wales. It has not been recorded recently in the northern part of its range and has only been recorded infrequently in the southern part of its range in NSW. It is typically associated with periodically inundated areas in grassland, woodland and disturbed habitats.

The proposal will not affect the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

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

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or
N/A – Sloane's Froglet is not considered an endangered ecological community, but a single species, therefore, no ecological communities are placed at risk of extinction.

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,
N/A – Sloane's Froglet is not considered an endangered ecological community, but a single species, the development is not likely to substantially and adversely modify the composition of an endangered community, therefore placing it at risk.

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

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and
Due to the small, localised nature of the proposal, only minor modification to potential habitat will occur.

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and
The proposal will not cause fragmentation or isolations from other potential habitats.

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,
The habitat proposed to be modified is not critical to the long-term survival of the species.

(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly)
The activity area is not mapped as an area of outstanding biodiversity value (OBV).

(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.
The action does not contravene part of the following key threatening processes as listed in the *BC Act 2016 Schedule 4.*

Growling Grass-frog (*Litoria raniformis*)

(1) The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats:

(**a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction**
The Growling Grass Frogs need still or slow-moving water with emergent vegetation around the edges and mats of floating and submerged plants. They can live in artificial waterbodies, such as farm dams, irrigation channels and disused quarries. Favourable habitat features include abundant aquatic vegetation, minimal tree canopy cover, waterbodies with salinity less than 7.0 mS/cm or (7,000 EC) which hold water for at least six months of the year. A cluster of waterbodies (within 700 m) allows frogs to move between sites as conditions change. They usually move on rainy nights.

It is unlikely that the threatened species will be impacted so that the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction. The aim of the project tis to increase available habitat for the species by reducing erosion in the long term.

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

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or
N/A – Growling Grass-frog is not considered an endangered ecological community, but a single species, therefore no ecological communities are placed at risk of extinction.

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,
N/A – Growling Grass-frog is not considered an endangered ecological community, but a single species, the development is not likely to substantially and adversely modify the composition of an endangered community, therefore placing it at risk.

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

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and
Due to the small nature project, only minor modification to potential foraging habitat may occur.

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and
The proposal will not cause fragmentation or isolations from other potential foraging habitats, rather enhance habitat available.

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,
The habitat proposed to be modified is not critical to the long-term survival of the species.

(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly)
The area not mapped as an area of outstanding biodiversity value (OBV).

(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.
The action does not contravene part of the following key threatening processes as listed in the *BC Act 2016 Schedule 4.*

Silver Perch (*Bidyanus bidyanus*)
(1) The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats:

(**a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction**
Silver Perch have been found in a wide range of habitats and climates across the Murray-Darling Basin. They are generally found in faster-flowing water including rapids and races and more open sections of river. Individuals sometimes form large shoals in open water.
They are omnivorous, feeding on a variety of small prey including aquatic insects, molluscs, worms, crustaceans, zooplankton and algae.

The proposal will not affect the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

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

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or
N/A – Silver Perch is not considered an endangered ecological community, but a single species, therefore, no ecological communities are placed at risk of extinction.

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,
N/A – Silver Perch is not considered an endangered ecological community, but a single species, the development is not likely to substantially and adversely modify the composition of an endangered community, therefore placing it at risk.

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

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and
Due to the small, localised nature of the proposal, only minor modification to potential habitat will occur.

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and
The proposal will not cause fragmentation or isolations from other potential habitats.

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,
The habitat proposed to be modified is not critical to the long-term survival of the species.

(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly)
The activity area is not mapped as an area of outstanding biodiversity value (OBV).

(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.
The action does not contravene part of the following key threatening processes as listed in the *BC Act 2016 Schedule 4.*

Murray Hardyhead (*Craterocephalus fluviatile*)
(1) The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats:

(**a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction**
Murray hardyhead prefer brackish water but can survive in saline environments. They tend to form schools, and can be found along the sheltered edges of lakes, billabongs, backwaters and wetlands, often in areas with abundant submerged vegetation.

It is unlikely that the threatened species will be impacted so that the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction. The aim of the project tis to increase available habitat for the species by reducing erosion in the long term.

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

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or
N/A – Murray Hardyhead is not considered an endangered ecological community, but a single species, therefore no ecological communities are placed at risk of extinction.

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,
N/A – Murray Hardyhead is not considered an endangered ecological community, but a single species, the development is not likely to substantially and adversely modify the composition of an endangered community, therefore placing it at risk.

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

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and
Due to the small nature project, only minor modification to potential foraging habitat may occur.

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and
The proposal will not cause fragmentation or isolations from other potential foraging habitats, rather enhance habitat available.

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,
The habitat proposed to be modified is not critical to the long-term survival of the species.

(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly)
The area not mapped as an area of outstanding biodiversity value (OBV).

(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.
The action does not contravene part of the following key threatening processes as listed in the *BC Act 2016 Schedule 4.*

Flathead Galaxias (*Galaxias rostratus*)
(1) The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats:

(**a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction**
Flathead Galaxias are found in still or slow-moving water bodies such as wetlands and lowland streams. The species has been recorded forming shoals. They have been associated with a range of habitats including rock and sandy bottoms and aquatic vegetation. Flathead Galaxias spawn in spring and lay slightly adhesive demersal eggs.

The proposal will not affect the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

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

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or
N/A – Flathead Galaxias is not considered an endangered ecological community, but a single species, therefore, no ecological communities are placed at risk of extinction.

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,
N/A – Flathead Galaxias is not considered an endangered ecological community, but a single species, the development is not likely to substantially and adversely modify the composition of an endangered community, therefore placing it at risk.

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

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and
Due to the small, localised nature of the proposal, only minor modification to potential habitat will occur.

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and
The proposal will not cause fragmentation or isolations from other potential habitats.

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,
The habitat proposed to be modified is not critical to the long-term survival of the species.

(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly)
The activity area is not mapped as an area of outstanding biodiversity value (OBV).

(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.
The action does not contravene part of the following key threatening processes as listed in the *BC Act 2016 Schedule 4.*

Trout Cod (*Maccullochella macquariensis*)
(1) The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats:

(**a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction**
The Trout Cod is endemic to the southern Murray-Darling river system, including the Murrumbidgee and Murray Rivers, and the Macquarie River in central NSW. The species was once widespread and abundant in these areas but has undergone dramatic declines in its distribution and abundance over the past century. The last known reproducing population of Trout Cod is confined to the Murray River below Yarrawonga downstream to Tocumwal.

It is unlikely that the threatened species will be impacted so that the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction. The aim of the project tis to increase available habitat for the species by reducing erosion in the long term.

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

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or
N/A – Trout Cod is not considered an endangered ecological community, but a single species, therefore no ecological communities are placed at risk of extinction.

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,
N/A – Trout Cod is not considered an endangered ecological community, but a single species, the development is not likely to substantially and adversely modify the composition of an endangered community, therefore placing it at risk.

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

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and
Due to the small nature project, only minor modification to potential foraging habitat may occur.

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and
The proposal will not cause fragmentation or isolations from other potential foraging habitats, rather enhance habitat available.

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,
The habitat proposed to be modified is not critical to the long-term survival of the species.

(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly)
The area not mapped as an area of outstanding biodiversity value (OBV).

(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.
The action does not contravene part of the following key threatening processes as listed in the *BC Act 2016 Schedule 4.*

Murray Cod (*Maccullochella peelii*)
(1) The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats:

(**a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction**
Murray Cod, also referred to as cod or codfish, were once abundant throughout the Murray-Darling river system, but overfishing and environmental changes have drastically reduced its numbers. The species has been selectively stocked in other river systems in NSW, Victoria and Western Australia, but has generally failed to establish itself in those areas. Murray Cod generally prefer slow flowing, turbid water in streams and rivers, favouring deeper water around boulders, undercut banks, overhanging vegetation and logs. Small numbers are still present in the Nepean River and Yarra River.
The proposal will not affect the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

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

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or
N/A – Murray Cod is not considered an endangered ecological community, but a single species, therefore, no ecological communities are placed at risk of extinction.

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,
N/A – Murray Cod is not considered an endangered ecological community, but a single species, the development is not likely to substantially and adversely modify the composition of an endangered community, therefore placing it at risk.

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

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and
Due to the small, localised nature of the proposal, only minor modification to potential habitat will occur.

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and
The proposal will not cause fragmentation or isolations from other potential habitats.

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,
The habitat proposed to be modified is not critical to the long-term survival of the species.

(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly)
The activity area is not mapped as an area of outstanding biodiversity value (OBV).

(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.
The action does not contravene part of the following key threatening processes as listed in the *BC Act 2016 Schedule 4.*

Macquarie Perch (*Macquaria australasica*)
(1) The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats:

(**a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction**
Macquarie Perch are found in the Murray-Darling Basin (particularly upstream reaches) of the Lachlan, Murrumbidgee and Murray rivers, and parts of south-eastern coastal NSW, including the Hawkesbury/Nepean and Shoalhaven catchments. Macquarie Perch occur in waters with lots of cover such as aquatic vegetation, snags, boulders and overhanging banks.

It is unlikely that the threatened species will be impacted so that the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction. The aim of the project tis to increase available habitat for the species by reducing erosion in the long term.

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

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or
N/A – Macquarie Perch is not considered an endangered ecological community, but a single species, therefore no ecological communities are placed at risk of extinction.

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,
N/A – Macquarie Perch is not considered an endangered ecological community, but a single species, the development is not likely to substantially and adversely modify the composition of an endangered community, therefore placing it at risk.

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

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and
Due to the small nature project, only minor modification to potential foraging habitat may occur.

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and
The proposal will not cause fragmentation or isolations from other potential foraging habitats, rather enhance habitat available.

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,
The habitat proposed to be modified is not critical to the long-term survival of the species.

(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly)
The area not mapped as an area of outstanding biodiversity value (OBV).

(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.
The action does not contravene part of the following key threatening processes as listed in the *BC Act 2016 Schedule 4.*

Murray Crayfish (*Euastacus armatus*)
(1) The following is to be taken into account for the purposes of determining whether a proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats:

(**a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction**
Murray Crayfish can be found in the Murray River upstream of Mildura, in the Murrumbidgee River and in some dams, and are the only species in the *Euastacus* genus that live in both cold and warm water habitats. Murray Crayfish prefer cool, flowing water that is well oxygenated. The species is tolerant of water temperatures up to 27°C and moderate salinities, but are intolerant to low dissolved oxygen concentrations. They create burrows that vary in complexity, from deep burrows with multiple entrances to simple burrows under a rock or log,

It is unlikely that the threatened species will be impacted so that the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction. The aim of the project tis to increase available habitat for the species by reducing erosion in the long term.

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

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or
N/A – Murray Crayfish is not considered an endangered ecological community, but a single species, therefore no ecological communities are placed at risk of extinction.

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,
N/A – Murray Crayfish is not considered an endangered ecological community, but a single species, the development is not likely to substantially and adversely modify the composition of an endangered community, therefore placing it at risk.

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

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and
Due to the small nature project, only minor modification to potential foraging habitat may occur.

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and
The proposal will not cause fragmentation or isolations from other potential foraging habitats, rather enhance habitat available.

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,
The habitat proposed to be modified is not critical to the long-term survival of the species.

(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly)
The area not mapped as an area of outstanding biodiversity value (OBV).

(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.
The action does not contravene part of the following key threatening processes as listed in the BC Act 2016 Schedule 4.

Conclusions

The assessment of significance for:

- Sloane's Froglet
- Growling Grass-frog
- Silver Perch
- Murray Hardyhead
- Flathead Galaxias
- Trout Cod
- Murray Cod
- Macquarie Perch
- Murray Crayfish

revealed that the potential impacts of the proposal on the threatened species are extremely unlikely and where there could be potential impacts, they will be very low. Potential minor impacts resulting from the proposed infrastructure install are not expected to increase the likelihood of a threatened or endangered species becoming extinct.

The test of significance for these threatened species does not trigger the requirement for a species impact statement (SIS). The proposal is deemed to be non-significant for the assessed species. In determining the significance of the proposed works on threatened species, the following matters were taken into consideration:

- implementation of the proposed works, installation, new operation and maintenance regimes
- activities to be undertaken in the area following the proposed works
- all direct and indirect impacts, on and off-site impacts through all phases
- the frequency and duration of each known or likely impact/action
- the total impact which can be attributed to that action over the entire geographic area affected initially and over time
- the sensitivity of the receiving environment
- the degree of confidence with which the impacts of the action are known and understood.

References

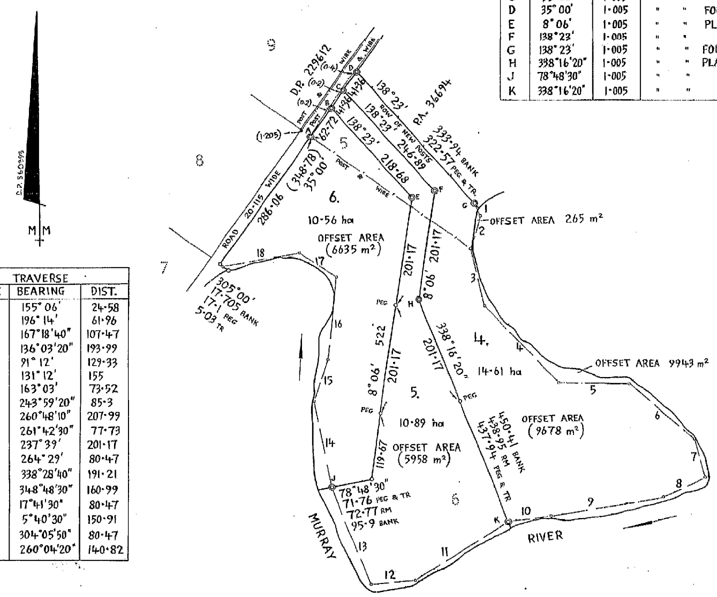
Department of the Environment and Energy (2021) [Online, accessed 9 December 2021] http://www.environment.gov.au/biodiversity/threatened/

Office of Environment and Heritage (NSW) (2021) BioNet Atlas of NSW Wildlife, [Online, accessed 9 December 2021] http://www.environment.nsw.gov.au/atlaspublicapp/UI_Modules/ATLAS_/AtlasSearch.aspx

Plan Form 3—TO BE USED WHERE IT IS INTENDED TO DEDICATE PUBLIC ROADS OR PUBLIC RESERVES OR CREATE DRAINAGE RESERVES, EASEMENTS, OR RESTRICTIONS AS TO USER.

DP560393 * OFFICE USE ONLY.

REFERENCE MARKS			
COR.	BEARING	DIST.	FROM
A	151°29'	3·72	G.I. PIPE FOUND [F.P. 86694]
B	35°00'	1·005	" " PLACED
C	35°00'	1·005	" " "
D	35°00'	1·005	" " FOUND [D.P. 560395]
E	8°06'	1·005	" " PLACED
F	138°23'	1·005	" " "
G	138°23'	1·005	" " FOUND [D.P. 560395]
H	338°16'20"	1·005	" " PLACED
J	78°48'30"	1·005	" " "
K	338°16'20"	1·005	" " "



TRAVERSE		
LINE	BEARING	DIST.
1	155°06'	24·58
2	196°14'	61·96
3	167°18'40"	107·47
4	136°03'20"	193·99
5	91°12'	129·33
6	131°12'	155
7	163°03'	73·52
8	243°59'20"	85·3
9	260°48'10"	207·99
10	261°42'30"	77·73
11	237°39'	201·17
12	264°29'	80·47
13	338°28'40"	191·21
14	348°48'30"	160·99
15	17°41'30"	80·47
16	5°40'30"	150·91
17	304°05'50"	80·47
18	260°04'20"	140·82

WARNING. Plan Drawing only to appear in this space.

D. P. 560393

Registered: RG 13-3-1973

C.A. Nº 7/1972 OF 10-10-1972

Title System: TORRENS

Purpose: SUBDIVISION

Ref. Map: PARISH

Last Plan: D.P. 560395

PLAN OF SUBDIVISION OF ~~PORTION 6 AND PART OF PORTION 5~~ LOT 3 IN D. P. 560395

LENGTHS ARE IN METRES
Scale: 1 : 4000 ~~to an inch~~

~~Mun.~~/Shire ~~City~~: MURRAY

Locality: MOAMA

Parish: TATAILA

County: CADELL

~~This is sheet 1 of my plan in ... sheets~~
Delete if inapplicable.

I, ROGER JAMES GRAEME CLEELAND of P.O. BOX 200 ECHUCA 3625 a surveyor registered under the Surveyors Act, 1929, as amended, hereby certify that the survey represented in this plan is accurate and has been made *(1) by me ~~(2) under my immediate supervision~~ in accordance with the Survey Practice Regulations, 1933, and was completed on † 7TH SEPTEMBER 1972.

Signature [signature]
Surveyor registered under Surveyors Act, 1929, as amended.
Datum Line of Azimuth. A – D – G
*Strike out either (1) or (2). †Insert date of survey.

Panel for use only for statements of intention to dedicate public roads or public reserves or create drainage reserves, easements, or restrictions as to user.

SIGNATURES AND SEALS ONLY.

Signed at Sydney the TWENTY FIFTH day of OCTOBER 1972 For Commonwealth Development Bank of Australia, by its duly appointed Attorney under Powers of Attorney No. 66964 (Miscellaneous Register) and No. 19008 (Land Titles Office) who declares that he has not received notice of revocation of the power

[signature] Witness [signature] Manager for New South Wales

[signature: J. T. Nichols]
[signature: Heather Nichols]

N 0 0 3 A 1 A

WARNING. CREASING OR FOLDING WILL LEAD TO REJECTION.

Council Clerk's Certificate.

I hereby certify that—

(a) the requirements of the Local Government Act, 1919 (other than the requirements for the registration of plans), and

~~*(b) the requirements of section 348 of the †Metropolitan Water, Sewerage, and Drainage Act, 1924, as amended, †Hunter District Water, Sewerage, and Drainage Act, 1938, as amended,~~

have been complied with by the applicant in relation to the proposed subdivision (insert "new road" or "subdivision") set out herein.

Subdivision No. 7/1972

Date 10.10.1972

(Signature) [signature] Acting Council Clerk.

*This part of certificate to be deleted where the application is only for the opening of a new road or where the land to be subdivided is wholly outside the areas of operations of the Metropolitan Water Sewerage and Drainage Board and the Hunter District Water Board.

†Delete if inapplicable.

WARNING. Plan Drawing only to appear in this space.

SURVEYOR'S REFERENCE. SN. 1444 A

I, Jack Hayward Watson, Registrar General for New South Wales, certify that this negative is a photograph made as a permanent record of a document in my custody this 8th day of December, 1976.

[signature]

Title Search

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 5/560393

SEARCH DATE	TIME	EDITION NO	DATE
17/11/2020	2:12 PM	13	17/11/2020

LAND

LOT 5 IN DEPOSITED PLAN 560393
AT MOAMA
LOCAL GOVERNMENT AREA MURRAY RIVER
PARISH OF TATAILA COUNTY OF CADELL
TITLE DIAGRAM DP560393

FIRST SCHEDULE

TASMAN TOURISM PROPERTY PTY LTD (T AQ559983)

SECOND SCHEDULE (3 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 AN74919 LEASE TO MEROOL PTY LTD EXPIRES: 30/6/2022. OPTION OF RENEWAL: 5 YEARS WITH 4 FURTHER PERIODS OF 5 YEARS.
3 AQ559984 MORTGAGE TO CBA CORPORATE SERVICES (NSW) PTY LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***