APPENDIX J

Aboriginal Cultural Heritage Assessment Report

Clarrie Hall Dam Raising EIS

Aboriginal cultural heritage assessment

Prepared for Tweed Shire Council

August 2024

Clarrie Hall Dam Raising EIS

Aboriginal cultural heritage assessment

Tweed Shire Council

E230038 RP#2

August 2024

Version	Date	Prepared by	Approved by	Comments
1	15 March 2024	Mikhaila Chaplin, Georgia Burnett	Alan Williams	Draft
2	30 May 2024	Mikhaila Chaplin	Alan Williams	Draft
3	14 June 2024	-	Alan Williams	Final draft for distribution
4	12 August 2024	Georgia Burnett	Alan Williams	Final

Approved by

Dr Alan Williams FSA FRSA FRSN MAACAI MEIANZ MAIATSIS
Technical Lead, Aboriginal Heritage
12 August 2024

Ground floor 20 Chandos Street
St Leonards NSW 2065
ABN: 28 141 736 558

This report has been prepared in accordance with the brief provided by Tweed Shire Council and, in its preparation, EMM has relied upon the information collected at the times and under the conditions specified in this report. All findings, conclusions or recommendations contained in this report are based on those aforementioned circumstances. The contents of this report are private and confidential. This report is only for Tweed Shire Council use in accordance with its agreement with EMM and is not to be relied on by or made available to any other party without EMM's prior written consent. Except as permitted by the Copyright Act 1968 (Cth) and only to the extent incapable of exclusion, any other use (including use or reproduction of this report for resale or other commercial purposes) is prohibited without EMM's prior written consent. Except where expressly agreed to by EMM in writing, and to the extent permitted by law, EMM will have no liability (and assumes no duty of care) to any person in relation to this document, other than to Tweed Shire Council (and subject to the terms of EMM's agreement with Tweed Shire Council).

© EMM Consulting Pty Ltd, Ground Floor Suite 01, 20 Chandos Street, St Leonards NSW 2065. [2024]

Content warning

Aboriginal and Torres Strait Islander peoples are advised that the following report contains reference to, and images of, people who have died.

Executive Summary

ES1.1 Project background

Clarrie Hall Dam was constructed in 1983 by the NSW Department of Public Works and is owned and operated by Tweed Shire Council for the primary purpose of providing a drinking water supply to the Tweed Shire region. Tweed Shire Council propose to raise the wall of Clarrie Hall Dam by 8.5 metres (m) to a height of 70 m Australian Height Datum (AHD) (RL 70 m). This will increase the capacity of the dam from 16,000 megalitres (ML) to approximately 42,300 ML (the Proposal).

Due to increasing demand for water as a result of projected population growth and the increasing uncertainty of water supply yield associated with climate change, there is a requirement to augment the Tweed District water supply by 2028.

The purpose of the Proposal is to ensure water security for the Tweed Shire region until at least 2065.

This Aboriginal cultural heritage assessment (ACHA) report forms part of the environmental impact statement (EIS) being developed to inform government decisions on whether the Proposal should be allowed to proceed. It documents the assessment methods, results and the initiatives built into the Project design to avoid and minimise Aboriginal cultural heritage impacts, and the additional mitigation and management measures proposed to address residual impacts which cannot be avoided.

ES1.2 Aboriginal consultation

The assessment adopted the processes and methods outlined in Heritage NSW's *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, 2010), as well as additional Proposal-specific communication strategies to promote transparent and frequent two-way dialogue between the Aboriginal community and the Proposal. Aboriginal consultation for the Proposal in various forms has extended over 14 years having been initially initiated by the Tweed Shire Council in 2009 as part of an options study, and then subsequently by Navin Officer Heritage Consultants (NOHC) in July 2017, continued by Eco Logical Australia (ELA) between 2020 and 2022, and most recently by EMM Consulting Pty Limited (EMM) since mid-2023. Over this period, a core group of local Bundjalung traditional owners and the Tweed-Byron Local Aboriginal Land Council (LALC) have been involved. These activities highlighted several issues associated with the Proposal, including a general concern over potential impacts, the need to consider cultural and intangible values, and the further exploration of several rockshelters on the edge of the proposed inundation area.

As a result of the length of the project, EMM restarted the consultation process in accordance with Heritage NSW guidelines in mid-2023. This included the re-registration of several of the local Aboriginal communities previously involved, and additional individuals more recently involved in cultural heritage management in the region (Table 2.5).

EMM has undertaken additional tasks to further explore the issues previously raised by NOHC (2018) and ELA (2021), and feedback on these issues has been generally positive. This includes undertaking a project specific cultural values mapping study and further consideration of key rockshelter sites.

Overall sentiment for the Proposal remains mixed, with an acknowledgment of the need for water security but continued concerns over impacts to cultural heritage.

ES1.3 Results and findings

The Proposal has been subject to three assessments over the last seven years, and includes cultural values mapping, field survey, test excavations to explore and document the Aboriginal objects, site and places within the project area and to align them within the regional context. Overall, the findings have found the Proposal to be situated within a rich cultural landscape with evidence of extensive but disparate human activity along Doon Doon Creek in the past, elements of which remain present about the existing dam and reservoir.

These various site validation activities undertaken over a seven-year period, have resulted in the duplication across these different activities and several sites have either been destroyed after being inundated due to the establishment of the dam, or re-assessed through previous investigations and/or this report. When combining and ratifying the findings of previous investigations conducted over the last seven years, some 14 discrete Aboriginal objects and sites are located within the proposed full supply level (FSL) and other development infrastructure activities amongst the continuous background distribution of surface and shallowly buried artefacts across the project area. These can be broken down as:

- Two rockshelter sites (#04-1-0286 [CHD-RS1] and #04-1-0090 (CHD BMP–05-0036]). #04-1-0286 reflects two closely spaced overhangs on the same sandstone outcropping and documented under the same AHIMS listing.

- Two culturally modified trees (#04-1-0285 [CHD-ST1] and #04-1-0303 [CHD-ST2]). A third potential tree was identified during the rockshelter investigations for this report (Section 2.4) but has been added to the listing of #04-1-0286.

- One natural chalcedony outcropping identified as a potential quarry (#04-1-0284 [CHD-G1]).

- Nine areas of past foci and activity #04-1-0238 [CHD-AS36], #04-1-0239 [CHD-AS37], #04-1-0249 [CHD A48], #04-2-0264 [CHD-AS17], #04-1-0280 [CHD A1], #04-1-0281 [CHD-A55], #04-1-0288 [CHD-PAD9], #04-1-0291 [CHD-PAD6], and #04-1-0296 [CHD PAD1]) characterised by high densities of sub-surface artefacts ($\bar{x}$ = ≥24/m^2) which are considered to reflect extensive and/or repeated visitation and occupation by people over the last few thousand years. Based on field observations and previous archaeological fieldwork, the average size of these sites is between 0.12 and 1.5 hectares (ha).

- A stone artefact background scatter that is predicted to occur intermittently across the project area and extending beyond its limits within which intermittent low to moderate artefact densities of 1–23/m^2 may be expected, intermixed with culturally sterile zones. This includes a large number of the previously recorded sites (n=65) currently documented across the project area and outlined in subsequent sections.

When considering the area between the proposed FSL and probable maximum flood (PMF) (70–77 m AHD)[1], the following additional three Aboriginal objects and sites would be encompassed within the Proposal:

- Two areas of past foci and activity (#04-1-0254 [CHD-A27] and #04-1-0295 [CHD-PAD2]) characterised by a high density of sub-surface artefacts which reflect extensive and/or repeated visitation and occupation by people over the last several thousand years.

- One grinding groove (#04-1-0261 [CHD-A20]).

[1] In the case of inundation between 70-77 m AHD, this will be affected less frequently as elevation increases. While values immediately above 70 m AHD may be affected in a higher probability event (e.g. a 5% AEP event, or 5% chance of occurring in a given year, elevations closer to 77 m AHD may only be during the PMF which has an exceedingly low chance of occurring in a given year.

- A continuation of the stone artefact background scatter outlined above that is predicted to occur across the project area and extending beyond its limits within which low to moderate artefact densities of 1 to 23/m^2 may be expected.

ES1.4 Significance summary

This assessment identified 14 discrete Aboriginal sites and places located within the proposed FSL, and 17 when considering the PMF. In addition to discrete sites and places, the entire project area was characterised by a low density background artefact scatter interspersed with occasional areas of denser material associated with past foci and/or repeat occupation.

The identified Aboriginal sites and places were assessed against four significance criteria, including scientific, historical, aesthetic and cultural. Some ten of these sites and places were considered of high archaeological significance, five of moderate significance, and two of low significance. The highly significant sites, which were also identified as of importance by the Aboriginal participants, included identified rockshelters, culturally modified trees and several of the dense surface and sub-surface stone artefactual sites (Section 7).

ES1.5 Potential impacts

The proposed activity would consist of the raising of an established dam, resulting in further inundation to 70 m AHD (from 61.5 m AHD) and with operational capacity to up to 77 m AHD (PMF) (Section 8.3), and ground disturbance impacts in the immediate vicinity of the dam. A number of ancillary requirements, such as the realignment of McCabes Bridge, construction camps and transmission lines are also expected (Table 1.1).

The works would result in the impact of some 297.6 ha, of which 209 ha would be solely affected by inundation from the proposed FSL operational impacts, 49.6 ha affected by construction impacts and an additional 39 ha potentially affected from the proposed PMF operational impacts. Potential impacts downstream of the dam along Doon Doon Creek are expected to be negligible, with geomorphological change predicted to be unlikely and flow regime change minimal.

Throughout the project, Council has undertaken design refinements and discussions with the RAPs, which has resulted in the avoidance or partial avoidance of two significant sites, CHD-RS1 (#04-1-0286) and CHD-ST1 (#04-1-0285). Of the 17 identified sites, 11 would be subject to direct impacts from inundation resulting in their complete (n=5) or partial (n=6) loss, four would be unaffected being outside of the FSL and two are entirely within the inundation zone (and which is considered a conservation outcome in this report). Overall, some 1.1 ha, or 22% of significant cultural deposits would be unaffected by the Proposal.

The potential impacts would result in cumulative impacts to some components of the regional cultural assemblage, notably to rockshelter and culturally modified tree site types. However, the opportunity for avoidance given the nature of the Proposal is limited. Archaeological mitigation, especially of subsurface cultural materials to further inform our understanding of the past, is proposed to offset some of these impacts.

ES1.6 Management and mitigation measures

Recommendations are proposed for inclusion in the EIS to guide post-approval requirements for Aboriginal heritage. These include (further discussion is presented in Section 9.2 and Appendix H):

- Prior to construction ground disturbance, an Aboriginal Cultural Heritage Management Plan (ACHMP) must be developed by a heritage specialist in consultation with the Registered Aboriginal Parties (RAPs) to provide the post-approval framework for managing archaeological mitigation and Aboriginal heritage within the project area. The Aboriginal Cultural Heritage Management Plan should include the following issues and consider guiding principles presented in Appendix H of this report:

- Processes, timing, communication methods and project involvement (e.g. on-site activities) for maintaining Aboriginal community consultation and participation through the remainder of the Proposal. This should include a grievance mechanism that is readily available and designed for use by the local Aboriginal community.

- If not previously completed, discuss and identify any areas of design optimisation with the RAPs to avoid or further minimise harm to identified Aboriginal sites, objects and places.

- Detail description and methods to conserve portions of CHD-RS1 (#04-1-0286) above the proposed FSL. This may include engineering solutions and/or ongoing monitoring to ensure the site's retention during, and following, the initial flooding of the Proposal.

- Detail descriptions and methods to avoid any inadvertent impacts to identified Aboriginal objects and/or sites and areas of archaeological sensitivity outside of the construction activities (e.g. CHD-ST1 [#04-1-0295)]. This should include, but not be limited to, cultural inductions for all personnel and subcontractors outlining their location and significance, fencing and clear marking of heritage sites and zones of interest in close proximity to proposed works, where needed appropriate screening for sensitive and gender-specific areas, and any additional requirements identified by the Aboriginal community. A suitable regime of monitoring these activities should also be outlined, including locations, methods, personnel and timing.

- Detail descriptions and methods of any additional investigative and/or mitigative archaeological actions that may be required prior to construction works commencing or during the Proposal. These should include, but not limited to, archival recording of all identified Aboriginal objects, sites and places, suitable recovery or relocation, documentation and analysis of any archaeological sites proposed for direct impacts (Table 8.1), recovery of CHD-ST2 (#04-1-0303) and management of any archaeological excavation of areas of significant buried cultural material (namely CHD-AS48 [#04-1-0249], CHD-A55 [#04-1-0281], CHD PAD 9 [#04-1-0288], CHD PAD2 [#04-1-0295], CHD PAD 1 [#04-1-0296] and inundated portions of CHD-RS1 [#04-1-0286] and CHD BMP 05-0036 [#04-1-0090] where supported by RAPs) and where direct impacts are proposed. Further details of these activities are presented in Section 9.2 and Appendix H. For these activities, details of location/s, methods, personnel, and timing should be included.

- Description and methods for undertaking further Aboriginal cultural heritage assessment, investigation and mitigation of any areas of the Proposal that have changed following completion of the ACHA and/or during the final design and construction phases of the Proposal.

- Description and methods of post-excavation analysis and reporting of the archaeological investigations and activities implemented as part of the ACHMP. For excavations, these should include suitable collection and processing of stone artefacts, and chronological, soil, and environmental samples.

- Procedures for managing the unexpected discovery of Aboriginal objects, sites and/or human remains during the Proposal.

- Procedures for the curation and long-term management of cultural materials recovered or relocated as part of the works outlined in the ACHMP and any preceding stages associated with the Proposal.

- Processes for reviewing, monitoring, and updating the ACHMP as the Proposal progresses.

- A heritage-interpretation strategy must be developed by a heritage specialist to identify the interpretive values of the Proposal, and specifically Aboriginal heritage values across the project area, and to provide direction for potential interpretive opportunities for the Proposal on/or off-site (e.g. at Uki and/or Murwillumbah). This strategy should be made available for consultation and feedback with the RAPs. Following consultation and feedback on the strategy, a heritage interpretation plan would refine the strategy with content (visual and textual) and design details in order to allow the implementation stage. The interpretation strategy and interpretation plan must include consideration of guiding principles presented in Appendix H.

- The Construction Environment Management Plan (CEMP), or equivalent, should reinforce how the cultural landscape is considered throughout the Proposal and detail the rehabilitation of the disturbance footprint. Rehabilitation of areas where infrastructure is not remaining after construction of the Proposal should be undertaken to determine suitable ecological communities and other factors in returning the cultural landscape as close to its current state as feasible.

- Consultation should be maintained with the RAPs during the finalisation of the assessment process and throughout the Proposal.

- A copy of the ACHA should be lodged with AHIMS and provided to each of the RAPs after finalisation.

- Where the heritage consultant changes through the Proposal, suitable hand over should be undertaken to minimise loss or mistranslation of the intent of the information, findings and future steps in heritage management occur.

TABLE OF CONTENTS

Executive Summary **ES.1**

1 Introduction **1**

1.1 Project background 1

1.2 Purpose and scope of this document 6

1.3 Legislative context 7

1.4 Other relevant reports 9

1.5 Limitations 9

1.6 Authorship and acknowledgements 10

2 Aboriginal consultation **11**

2.1 Key findings 11

2.2 The process 11

2.3 This Project 13

2.4 Aboriginal engagement and feedback 17

3 Existing environment **24**

3.1 Key findings 24

3.2 Summary of previous reports 24

3.3 AHIMS data 33

3.4 Predictive model 45

4 Cultural values mapping **46**

4.1 Key findings 46

4.2 Rationale and Methods 46

4.3 Results and findings 47

5 Field investigations **49**

5.1 Key findings 49

5.2 Archaeological survey 49

5.3 Archaeological test excavation 71

6 Archaeological resource **116**

6.1 Key findings 116

6.2 Results and synthesis 117

7 Significance assessment **125**

7.1 General 125

7.2 Statement of significance 126

8 Impact assessment 132
8.1 Key findings 132
8.2 Avoidance and minimisation of impacts through design refinements 132
8.3 Proposal impacts 133
8.4 Aboriginal heritage impact 134
8.5 Intergenerational loss/equity 135
9 Management strategy and recommendations 144
9.1 Key findings 144
9.2 Management strategy 144
9.3 Recommendations 146
References 148
Abbreviations 151
Glossary 153

Appendices

Appendix A Previous assessments undertaken for the project A.1
Appendix B Legislative context B.1
Appendix C Aboriginal community consultation C.1
Appendix D AHIMS data D.1
Appendix E Cultural values mapping report (confidential) E.1
Appendix F Historical research in recovered cultural material in the 1980s F.1
Appendix G ELA (2021) Archaeological excavation data G.1
Appendix H Aboriginal cultural heritage management plan guiding principles H.1

Tables

Table 1.1 Proposal summary 3
Table 1.2 Relevant matters raised in the SEARs (SSI-65020460) 7
Table 1.3 Commonwealth and NSW legislation relevant to the Proposal 8
Table 2.1 Summary of Aboriginal consultation undertaken by NOHC (2018) 14
Table 2.2 Summary of Aboriginal consultation undertaken by ELA (2021) 14
Table 2.3 Summary of Aboriginal consultation undertaken following ELA (2021) 15
Table 2.4 Summary of Aboriginal consultation undertaken for the Proposal by EMM 15
Table 2.5 List of registered Aboriginal parties for the Proposal 16
Table 3.1 Soil landscapes of the project area (Bannerman and Hazelton 1990) 26
Table 3.2 AHIMS search results (Client service ID#840897, undertaken on 17 November 2023) 34
Table 3.3 AHIMS sites within the proposed FSL and other development infrastructure activities 35
Table 3.4 AHIMS sites above the proposed FSL, but within the potential proposed PMF 37

Table 5.1	Landform summary by documented Aboriginal objects and sites (reproduced from Table 7.4 of NOHC [2018])	50
Table 5.2	Previously unidentified Aboriginal sites recorded by NOHC (2018)	51
Table 5.3	Summary of the identified cultural assemblage identified by NOHC (2018) and ELA (2021)	53
Table 5.4	Aboriginal stakeholder representatives present during the survey	61
Table 5.5	Survey coverage	64
Table 5.6	Landform summary – sampled areas	64
Table 5.7	Summary of the identified cultural assemblage identified as part of additional field survey for the Proposal	69
Table 5.8	Summary of archaeological excavations by ELA (2021)	72
Table 7.1	A summary of criteria used to assess the cultural significance (OEH 2011, 8–10)	125
Table 7.2	Significance of Aboriginal objects and/or sites identified within the FSL and PMF	128
Table 8.1	Summary of potential impacts to Aboriginal objects and/or sites by the Proposal	136
Table G.1	Test pit data, including size and artefacts numbers recovered	G.1
Table G.2	Test pits containing the highest cultural materials, and used to develop a threshold for occupation in the past	G.12

Figures

Figure 1.1	Regional context	4
Figure 1.2	Local context	5
Figure 3.1	Geology of the Proposal	30
Figure 3.2	Soil Landscapes of the Proposal	31
Figure 3.3	Hydrology of the Proposal	32
Figure 3.4	Previously documented Aboriginal objects and sites within the Proposal	41
Figure 5.1	Aboriginal objects and sites identified by NOHC (2018) and ELA (2021) within the Proposal	56
Figure 5.2	Recent field survey undertaken for the Proposal	65
Figure 5.3	Aboriginal sites identified as part of recent field survey for the Proposal	70
Figure 5.4	Test pit program of ELA (2021)	74
Figure 5.5	Test excavation results of ELA (2021)	78
Figure 5.6	Test excavation results of ELA (2021) applying extrapolated artefacts/m^2	97
Figure 6.1	The archaeological resource	120
Figure 8.1	Potential cultural heritage impacts by the Proposal	139

Plates

Plate 2.1	The lower rockshelter at 04-1-0286 during further investigations and discussions of their interaction with the Proposal in August 2023	20
Plate 2.2	The upper rockshelter at 04-1-0286 during further investigations and discussions of their interaction with the Proposal in August 2023	21

Plate 2.3	The rockshelter at 04-1-0090 during further investigations and discussions of their interaction with the Proposal in August 2023	21
Plate 3.1	A map showing the approximate alignment of Doon Doon Creek prior to inundation by the current Clarrie Hall Dam and how cultural materials appear to be prevalent along this corridor	40
Plate 4.1	Wollumbin looking north from Crams Farm, south of the Proposal. The Proposal would result in the water in the foreground being higher (closer to the road), but the view towards Wollumbin would be unaffected.	48
Plate 5.1	A landform map of areas investigated by NOHC (2018) and totalling some 87.5% of the project area. White areas were considered to unsafe to access and where subject to predictive modelling.	52
Plate 5.2	Hillslope along western boundary of SU1 along Clarrie Hall Dam Road	66
Plate 5.3	Hillslope with Stream Channel in foreground along eastern boundary of SU1	66
Plate 5.4	Hillslope and stream channel with low visibility, view north of SU1	66
Plate 5.5	Flooding of vehicle access track exposure in southern half of SU1, view east	66
Plate 5.6	Tributary of Doon Doon Creek in southern half of SU1	66
Plate 5.7	Vehicle access track cutting into hillslope along eastern boundary of SU1, view north	66
Plate 5.8	Stream channel with drain in foreground under Clarrie Hall Dam Road	67
Plate 5.9	Cattle track on hillslope, south-east of SU1	67
Plate 5.10	Flat plain with low visibility with cattle processing area in foreground, SU2 view north	67
Plate 5.11	Cattle processing area in south-east corner of SU2	67
Plate 5.12	Driveway within SU3, view east	67
Plate 5.13	Low and high grass cover, SU3 view north	67
Plate 5.14	Long grass present on hillslope in northern half of SU3, view north	67
Plate 5.15	Low visibility and evidence of the road cutting into the hillslope, SU7 view south	67
Plate 5.16	Long grass cover with no exposures, SU4 view south	68
Plate 5.17	Low order tributary of Doon Doon Creek travelling under road via concrete drain, SU4 view south	68
Plate 5.18	Evidence of ground exposure near an access track, SU4	68
Plate 5.19	Hillslope landform with low visibility due to grass cover, SU5 view north	68
Plate 5.20	Hillslope landform with low visibility, SU6 view west	68
Plate 5.21	Hillcrest landform with low visibility, SU6 view east	68
Plate 5.22	Mature trees and vegetation along edge of Doon Doon Creek, SU8 view south	68
Plate 5.23	Hillslope landform with low visibility, SU8 view east	68
Plate 5.24	Cattle track exposure and location of CHD AS1, SU6 view east	69
Plate 5.25	Potential stone artefact identified on cattle track, SU6	69
Plate 5.26	Location of silcrete artefact found on cattle track exposure, SU6 view west	69
Plate 5.27	Silcrete angular fragment, SU6	69

1 Introduction

1.1 Project background

Clarrie Hall Dam was constructed in 1983 by the NSW Department of Public Works and is owned and operated by Tweed Shire Council (Council) for the primary purpose of providing a drinking water supply to the Tweed Shire region. Tweed Shire Council propose to raise the wall of Clarrie Hall Dam by 8.5 metres (m) to a height of 70 m Australian Height Datum (AHD) (RL 70 m). This will increase the capacity of the dam from 16,000 megalitres (ML) to approximately 42,300 ML (the Proposal).

Due to increasing demand for water as a result of projected population growth and the increasing uncertainty of water supply yield associated with climate change, there is a requirement to augment the Tweed District water supply by 2028.

The purpose of the Proposal is to ensure water security for the Tweed Shire region until at least 2065.

The former Department of Planning and Environment (DPE) – now referred to as the Department of Planning, Housing and Infrastructure (DPHI) recently released the Far North Coast Regional Water Strategy (FNCRWS) (DPE, 2023), which provides a 20-year Far North Coast region-specific strategy to improve the security and certainty of water resources. The raising of Clarrie Hall Dam is discussed in the FNCRWS and would assist Council to achieve some of the objectives of the FNCRWS.

Clarrie Hall Dam is located on Doon Doon Creek, a third-order stream forming a tributary of the Tweed River. The dam is located in Doon Doon, approximately 15 kilometres (km) south-west of Murwillumbah and 4 km south-west of Uki in the Tweed Shire Local Government Area (LGA). The dam has a catchment area of approximately 60 square kilometres (m^2) and a storage capacity of 16,000 ML.

The Tweed District water supply is currently a run-of-river supply augmented by releases from Clarrie Hall Dam down Doon Doon Creek via release valves in the outlet structure within the dam to the Tweed River. Raw water is drawn from upstream of Bray Park Weir, effectively a saltwater barrage, in the Tweed River. In periods of low flow in the river, flows are augmented by releases from Clarrie Hall Dam to ensure availability of water for the Tweed District water supply.

Access to the dam wall and spillway area is from Clarrie Hall Dam Road, which runs south from Kyogle Road. The southern extent of Clarrie Hall Dam is accessed from Crams Farm, located off Commissioners Creek Road.

The majority of the Doon Doon sub-catchment of the Tweed River Catchment consists of rural and agricultural land uses (more than 70% of land is zoned 1a Rural).

An overview of the Proposal is shown in Figure 1.1.

1.1.1 Proposal overview

The Proposal would include the following main activities and elements:

- raising the dam wall by 8.5 m
- a new spillway channel constructed higher in the left abutment with a flip bucket at the downstream end
- re-establishment of the quarry used to construct the existing dam for the purpose of sourcing rock material to raise the dam wall
- construction of associated haul roads to transport quarry material for the proposed raising of the dam wall
- establishment of a construction area for plant, equipment, storage, material handling and offices

- establishment of stockpile sites associated with construction
- construction of work compounds and site offices
- establishment of materials storage and handling facilities
- construction of workers accommodation
- construction of a concrete batching plant
- realignment of Clarrie Hall Dam Road higher in the right abutment
- raising of the existing intake tower and bridge
- decommissioning of existing recreational facilities at the dam wall area
- construction of new dam operational facilities including signage, car parking, security fences, lighting, monitoring equipment and a boat ramp
- removing or reconstructing impacted recreational infrastructure and facilities at Crams Farm
- upgrading the Kyogle Road and Clarrie Hall Dam Road intersection
- replacing McCabes Bridge and realignment of Commissioners Creek Road
- relocating existing power and telecommunications utilities
- construction of new recreation facilities including an amenities block, public shelters, viewing areas, interpretation signage, paths, car parks, and landscaping.

The detailed design will need to check the existing tunnel, valves and control systems remain suitable for new design flow velocities and pressures from the raised dam and their condition is suitable for extended service life.

The upgraded dam operational footprint would increase the area of inundation to below the RL 70 m contour, which is the waterline boundary at full supply level (FSL).

An overview of the elements of the Proposal is provided in Figure 1.2 Further details of the Proposal are provided in Section 3 of the EIS. The construction disturbance area and associated activities include the dam wall area and ancillary areas (Table 1.1).

The construction disturbance area and associated activities include the dam wall area and ancillary areas (refer to Table 1.1 below).

The operational disturbance areas include the following:

- area of inundation increased to the area below the RL 70 m contour, which is the waterline boundary at FSL
- area between FSL and probable maximum flood (PMF)
- downstream areas due to changes in flow.

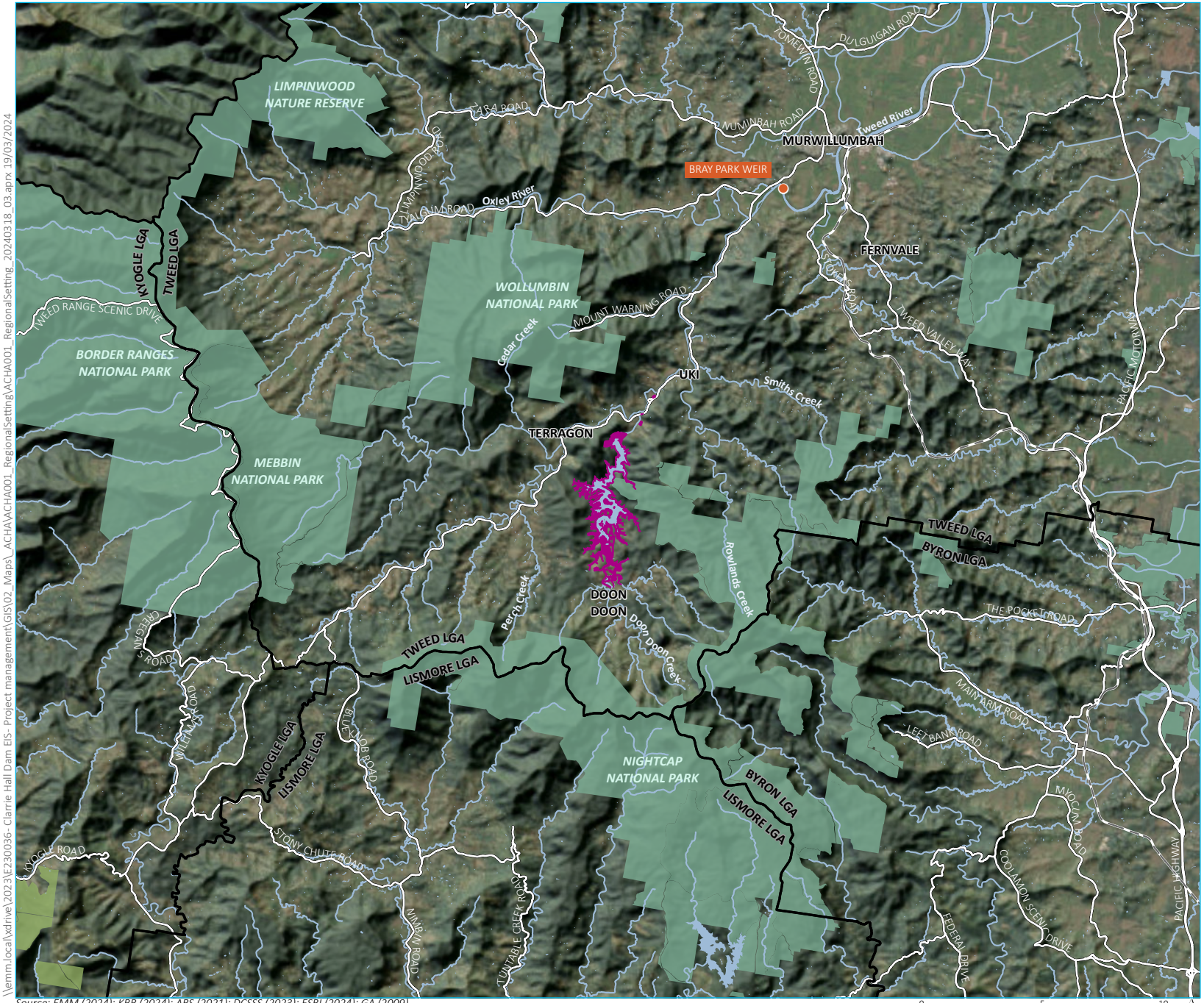
Table 1.1 Proposal summary

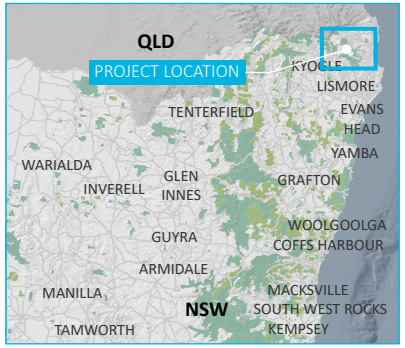
Proposal element	Summary of the Proposal
Operation	
Description	Raising the embankment wall of Clarrie Hall Dam by 8.5 m.
Operational footprint	Approximately 209 hectares (ha) for the proposed FSL. Approximately 248 ha for the area between the proposed FSL and the PMF.
Dam wall infrastructure	• Increasing the base width of the valley-side abutment and raising the crest of the concrete faced rockfill embankment to RL 70 m. • Constructing a new concrete lined spillway higher on the west abutment. • Extending the upstream concrete face to the new crest height. • Raising the intake tower and access bridge. • Constructing a new section of the Clarrie Hall Dam Road to provide access to the east abutment of the dam wall. • Establishing new recreation and operational facilities including an amenities block, public shelters, viewing areas, interpretation signage, paths, car parks, landscaping, security fences, lighting, monitoring equipment and a boat ramp.
Ancillary works	• Upgrading the intersection of Clarrie Hall Dam Road and Kyogle Road. • Replacing McCabes Bridge over Doon Doon Creek. • Realigning an approximately 1,000 m section of Commissioners Creek Road. • Removing or reconstructing impacted infrastructure and facilities at Crams Farm. • Realigning overhead power lines and Telstra assets.
Construction	
Construction impact area	Approximately 49.6 ha, consisting of 26.2 ha at the dam wall, 6.6 ha of construction compound and workforce accommodation areas and 16.8 ha of ancillary sites for road realignments and relocating overhead power lines. The removal of the existing overhead power line is not included in the impact area.
Workforce	Estimated peak of 180 persons at the main dam wall site.
Cut/fill	Approximately 100,000 cubic metres (m^3) deficit of fill material will be derived from the quarry that is located 300 m from the existing dam.
Ancillary works	• Constructing access roads to construction areas and establishing the construction site. • Re-establishing the quarry that was used to construct the existing dam. • Establishing a concrete batching plant and areas for materials stockpiling. • Establishing construction compounds including site offices and concrete batching plants. • Establishing workforce accommodation site compounds.
Dewatering	Lowering dam storage by 300 millimetres (mm) below FSL during construction.
Property	Permanent and temporary property adjustments and property access refinements.

It is anticipated that construction would start in 2026, subject to obtaining all necessary approvals.

The project is State significant infrastructure and is subject to approval by the NSW Minister for Planning under Part 5, Division 5.2 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act).

Further information on the location of the project, a description of the project and statutory context is provided in the environmental impact statement (EIS).





KEY

- Proposed construction disturbance footprint
- Bray Park weir

Existing environment

- Rail line
- Major road
- Named watercourse
- Waterbody
- NPWS reserve
- State forest
- Local government area

INSET KEY

- Major road
- NPWS reserve
- State forest

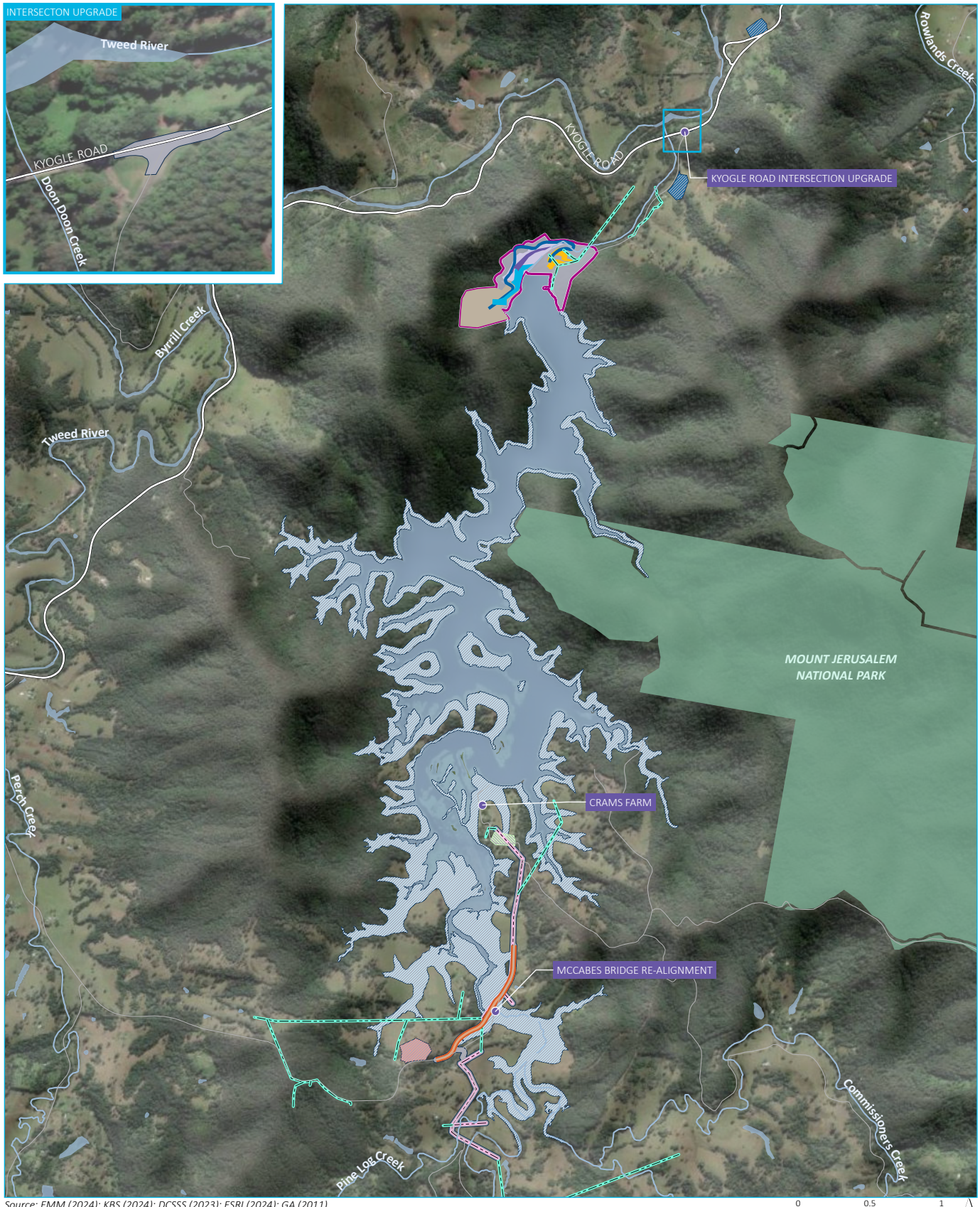
Source: EMM (2024); KBR (2024); ABS (2021); DCSSS (2023); ESRI (2024); GA (2009)

Regional context

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 1.1

EMM
creating opportunities

\\emm.local\xdrive\2023\E230036- Clarrie Hall Dam EIS- Project management\GIS\02_Maps_ACHA\ACHA001_RegionalSetting\ACHA001_RegionalSetting_20240318_03.aprx 19/03/2024



Source: EMM (2024); KBS (2024); DCSSS (2023); ESRI (2024); GA (2011)

0 0.5 1 km

GDA2020 MGA Zone 56

N

\\emm.local\xdrive\2023\E230036- Clarrie Hall Dam EIS- Project management\GIS\02_Maps_ACHA\ACHA002_ProjectFootprint\ACHA002_ProjectFootprint_20240723_02.aprx 3/08/2024

KEY

- Infrastructure upgrade location
- Construction footprint
- Proposed construction disturbance footprint
- Inundation to FSL (61.5- 70 m AHD)
- Haul road- option 1
- Haul road- option 2
- Office locations
- Potential McCabes Bridge stockpile and construction office complex
- Quarry impact area
- Proposed spillway
- Spillway impact area
- Concrete batching plant or workforce accommodation
- Potential McCabes Bridge stockpile and construction office
- McCabes Bridge realignment

Transmission line

- Existing
- New

Existing environment

- Major road
- Minor road
- Named watercourse
- Waterbody
- NPWS reserve

Local context

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 1.2

EMM
creating opportunities

1.2 Purpose and scope of this document

The EIS has been prepared to support an application for approval of the project in accordance with Division 5.2 of the EP&A Act (SSI-65020460). It addresses the environment assessment requirements of the Secretary's Environmental Assessment Requirements (SEARs).

This Aboriginal cultural heritage assessment (ACHA) report has been prepared as part of the EIS to assess the potential Aboriginal cultural heritage impacts from construction and operation of the Proposal. The report:

- addresses the relevant SEARs listed in Table 1.2
- describes the existing environment with respect to Aboriginal heritage
- describes the methodology for assessment of impact
- assesses the impacts during construction and operation of the project on Aboriginal heritage
- recommends measures to mitigate and manage the impacts identified.

The assessment adopted methods in accordance with the requirements of the following NSW government guidelines:

- *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH, 2011)
- *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010)
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010).

1.2.1 Previous Aboriginal cultural heritage investigations

The proposed raising of Clarrie Hall Dam was initially assessed in 2009 when Council commissioned an options study to augment the Tweed District water supply (MWH, 2009). The options study used a multi-criteria analysis (MCA) to assess nine potential options for water supply augmentation. The MCA included a desktop assessment of Aboriginal heritage as one of the criteria in selecting three shortlisted options. These options were further explored and included liaison with the Aboriginal community on a preferred option. This included on-site inspections and discussion over the three options (MWH, 2010). Numerous investigations and assessments have occurred since that time, and most notably since 2017 (see below). While the Proposal has been slightly modified and developed from the design during the previous assessments, these were conducted across much of the current Proposal area.

In relation to Aboriginal heritage, two previous ACHA reports have been undertaken by Navin Officer Heritage Consultants Pty Ltd (NOHC) in 2018, and Eco Logical Australia Pty Ltd (ELA) in 2021. The former included consultation with the local Aboriginal community and a field survey of the proposed inundation areas. This investigation identified previously unrecorded Aboriginal sites, which included a number of potential archaeological deposits (PADs) around the project area. Eco Logical's study involved the archaeological excavation of the PADs previously identified by NOHC and developed some management recommendations to guide future Aboriginal heritage requirements in the event the project was approved.

To avoid unnecessary duplication, this ACHA utilises NOHC (2018) and ELA's (2021) studies and builds on them. The majority of the desktop and field investigation components of this report are summaries of the activities and findings of these previous reports, which are also provided in full in Appendix A. However, this ACHA has undertaken additional tasks to fill any gaps due to changes in the footprint of the Proposal, and to implement further activities to resolve issues or concerns that were raised in earlier correspondence from RAPs.

Ultimately, the tasks undertaken for this ACHA included:

- re-starting the Aboriginal consultation process in accordance with Heritage NSW guidelines due to extended gaps in previous activities and assessments
- undertaking a project specific cultural values mapping study with the local Aboriginal community to investigate intangible values (e.g. Dreaming places, stories, etc) within or near the project area
- undertaking additional on-Country discussions and investigations of three rockshelters considered significant by the local Aboriginal community and located on the edge of the proposed inundation area
- consideration of any downstream impacts to Doon Doon Creek from the Proposal
- undertaking additional field survey of areas of the Proposal that had not been previously captured by the earlier investigations.

Table 1.2 Relevant matters raised in the SEARs (SSI-65020460)

SEARs	Where addressed
1. The Proponent must identify and assess any direct and/or indirect impacts (including cumulative impacts) to the heritage significance of: a) Aboriginal places and objects, as defined under the *National Parks and Wildlife Act 1974* and in accordance with the principles and methods of assessment identified in the current guidelines b) Aboriginal places of heritage significance, as defined in the Standard Instrument – Principal Local Environmental Plan c) environmental heritage, as defined under the *Heritage Act 1977* d) items listed on the National and World Heritage lists.	Section 8 of this report, and Appendix A. 1c is addressed in the historical heritage assessment for the Proposal.
4. The EIS must identify and describe the Aboriginal cultural heritage values that exist across the whole area that will be affected by the proposal and document these in an Aboriginal Cultural Heritage Assessment Report (ACHAR). This may include the need for surface survey and test excavation. The investigation, assessment and reporting of Aboriginal cultural heritage values must be conducted in accordance with the current Code of Practice and Guide and in consultation with Heritage NSW regional branch officers. Impacts on Aboriginal cultural heritage values are to be assessed and documented in the ACHAR. The ACHAR must demonstrate attempts to avoid impact on cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the ACHAR must outline measures proposed to mitigate impacts. Any objects recorded as part of the assessment must be documented and notified to Heritage NSW.	Entire report, and with specific reference to Section 6 that provides a summary of the cultural materials encountered. Section 8 that includes avoidance efforts and Section 9 that outlines mitigation measures.
5. Consultation with Aboriginal people must be undertaken and documented in accordance with the current consultation requirements for proponents. The significance of cultural heritage values for Aboriginal people who have a cultural association with the land must be documented in the ACHAR.	Section 2 and Appendix C

1.3 Legislative context

There are several Commonwealth and NSW Acts (and associated regulations) that manage and protect Aboriginal cultural heritage (Appendix B). These are summarised in Table 1.3.

Table 1.3 Commonwealth and NSW legislation relevant to the Proposal

Legislation	Description	Relevant to the Proposal?	Details
Commonwealth			
Environment Protection and Biodiversity Conservation Act 1999	Recognises sites with universal value on the World Heritage List (WHL). Protects Indigenous heritage places with outstanding heritage value to the nation on the National Heritage List (NHL), and significant heritage value on the Commonwealth Heritage List (CHL).	No	There are no Indigenous heritage places within the Proposal area that are listed on the WHL, NHL, or the CHL.
Native Title Act 1993	Administers rights and interests over lands and waters by Aboriginal people. Provides for negotiation and registration of Indigenous Land Use Agreements (ILUAs). Often used in NSW to identify relevant stakeholders for consultation.	No	There are no active native title applications or determinations that encompass the Proposal area. An updated search of the National Native Title Tribunal registers was undertaken on 13 February 2024. The search identified that the Tweed River Bundjalung People lodged a native title claim (Tribunal No NC2020/002) on 4 August 2020 over a vast area of land that encompassed the project area. This claim was not accepted for registration (dated 16 September 2020).
Aboriginal and Torres Strait Islander Heritage Protection Act 1984	Preserves and protects areas and objects of particular significance to Aboriginal people that are under threat from injury or desecration.	No	There are no areas or objects within the Proposal area subject to a Declaration under the Act.
NSW			
Environmental Planning and Assessment Act 1979	Requires environmental impacts, including to Aboriginal heritage, to be considered in land use planning. Provides for the development of environmental planning instruments, including State Environmental Planning Policies and Local Environmental Plans.	Yes	The proposed development is being assessed as an SSI project under Part 5, Division 5.2, of this Act, and is subject to project-specific environmental assessment and reporting requirements. These requirements (SEARs) stipulate that Aboriginal heritage impact assessment is required (in accordance with standard Heritage NSW procedures and guidelines) to assess whether the Proposal has the potential to impact on Aboriginal objects, sites, or places of Aboriginal heritage significance.
National Parks and Wildlife Act 1974	Provides blanket protection for all Aboriginal objects and declared Aboriginal places. Includes processes and mechanisms for development where Aboriginal objects are present, or where Aboriginal Places are proposed for harm.	Yes	While elements of this Act do not apply to SSI projects, the potential impact on Aboriginal objects generally still requires consideration as a part of the assessment needs of such projects. Further regulations of this Act outline the adoption of guidelines, which have been adopted in the case of Aboriginal consultation (Chapter 2), desktop research (Chapter 3), and on-site activities (Chapter 5).

Table 1.3 Commonwealth and NSW legislation relevant to the Proposal

Legislation	Description	Relevant to the Proposal?	Details
Aboriginal Land Rights Act 1983	Establishes Local Aboriginal Land Councils (LALCs). Allows transfer of ownership of vacant crown land to a Local Aboriginal Land Council. The Office of the Registrar, *Aboriginal Land Rights Act 1983 (ORALRA)*, registers Aboriginal land claims and maintains the Register of Aboriginal Owners. Often used in NSW to identify relevant stakeholders for consultation.	No	A request to search the Register of Aboriginal Owners was made to the ORALRA on 15 May 2023. The Proposal area does not appear to have Registered Aboriginal Owners pursuant to Division 3 of the Act. The relevant Local Aboriginal Land Council (LALC) has been consulted extensively on the Proposal.

1.4 Other relevant reports

This report makes reference to other technical studies undertaken for the EIS, the results of which inform the potential impacts and management of the cultural landscape. These include:

- NOHC, 2018. *Proposed Raising of Clarrie Hall Dam, Murwillumbah NSW Archaeological Assessment and Aboriginal Cultural Heritage Assessment*. Prepared for Tweed Shire Council.
- ELA, 2021. *Clarrie Hall Dam Raising EIS – Aboriginal Cultural Heritage Assessment and Management Plan.* Unpublished report to Tweed Shire Council.
- Kellogg Brown & Root (KBR), 2023a. *Clarrie Hall Dam Raising State Significant Infrastructure Application – Scoping Report.* Prepared for Tweed Shire Council.
- KBR, 2023b. *Clarrie Hall Dam raising – Flood impact assessment* Prepared for Tweed Shire Council.
- EMM, 2023a. Doon Doon Creek and Tweed River – geomorphology modelling. Prepared for Tweed Shire Council.
- EMM, 2023b. Clarrie Hall Dam raising – surface water assessment. Prepared for Tweed Shire Council.

1.5 Limitations

This report is based on existing and publicly available environmental and archaeological information (including AHIMS data) and reports about the project area. The background research did not include any independent verification of the results and interpretations of externally sourced existing reports. The report further makes archaeological predictions based on these existing data and targeted ground-truthing, and which may contain errors depending on the accuracy of these third-party studies and the extent of ground-truthing investigations.

This report does not consider historical (non-Aboriginal) or built heritage unless specifically indicated.

1.6 Authorship and acknowledgements

This report was prepared by:

- Georgia Burnett (EMM Senior Archaeologist)
- Mikhaila Chaplin (EMM Archaeologist).

This report was reviewed by:

- Dr Alan Williams (EMM Associate Director/Technical Lead – Aboriginal Heritage).

EMM would like to thank the registered Aboriginal parties (RAPs) for their involvement in ongoing consultation, knowledge sharing and fieldwork assistance.

2 Aboriginal consultation

2.1 Key findings

- The assessment adopted the processes and methods outlined in Heritage NSW's *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, 2010), as well as additional Proposal-specific communication strategies to promote transparent and frequent two-way dialogue between the Aboriginal community and the Proposal. These latter activities included several Aboriginal focus group meetings (face-to-face) throughout the assessment process, extensive on-Country investigations, and a cultural values mapping investigation with Elders and key-knowledge-holders.

- Aboriginal consultation for the Proposal in various forms has extended over eight years having been initiated by Council in 2016, followed by NOHC in July 2017, continued by ELA between 2020 and 2021, and most recently by EMM since mid-2023. Over this period, a core group of local Bundjalung traditional owners and the Tweed-Byron Local Aboriginal Land Council (LALC) have been involved. These activities highlighted several issues associated with the Proposal, including a general concern over potential impacts, the need to consider cultural and intangible values, and the further exploration of several rockshelters on the edge of the inundation area.

- As a result of the length of the project, EMM -restarted the consultation process in accordance with Heritage NSW guidelines in mid-2023. This included the re-registration of several of the local Aboriginal communities previously involved, and additional individuals more recently involved in cultural heritage management in the region (Table 2.5).

- EMM has undertaken additional tasks to further explore the issues previously raised by NOHC (2018 and ELA (2021), and feedback on these issues has been generally positive. This includes undertaking a Proposal specific cultural values mapping study and further consideration of key rockshelter sites. Overall sentiment for the Proposal remains mixed, with an acknowledgment of the need for water security, but continued concerns over impacts to cultural heritage.

A summary of the consultation process is provided below, and full documentation of the consultation process is provided in Appendix C.

2.2 The process

Two parallel and overlapping consultation processes were undertaken as part of the Proposal. As a requirement of the SEARs, consultation was undertaken in accordance with Heritage NSW guidelines (Section 2.2.1). In addition, numerous other communication strategies were employed to improve and maintain dialogue with the local Aboriginal community over the last eight years (Section 2.2.2).

2.2.1 Heritage NSW guidelines

Aboriginal consultation for this Proposal has been undertaken in accordance with procedures set out in the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW, 2010). These guidelines identify a five-stage process:

1. Pre-notification – identification of the Aboriginal individuals and/or communities relevant to the project area by contacting several state government agencies.

2. Notification – contacting all Aboriginal individuals and/or communities identified in Stage 1 to determine their interest in being consulted during the project. This includes direct communication and the placement of advertisements in local media seeking further expressions of interest from Aboriginal individuals and/or communities that may have been missed through Stage 1. Those Aboriginal individuals and/or communities that wish to be consulted become a 'registered' Aboriginal party (RAP).

3. Presentation of Proposal information/assessment methodology – briefing RAPs about the Proposal and scope of any Aboriginal heritage assessment and investigations. This is usually undertaken through written correspondence, but can include meetings, and may undergo several iterations throughout the Proposal as the nature of the assessment changes (e.g. surface ground-truthing may lead to a requirement for test excavations).

4. Impacts and mitigation strategies – discussion of potential impacts to cultural materials and mitigation options with the RAPs prior to developing the ACHA. This is often undertaken either onsite at the end of any field program and/or as part of Stage 5.

5. Report review – the RAPs are provided an opportunity to review and comment upon the draft ACHA, to contribute input into the overall findings, significance and management of cultural heritage.

The consultation process for the Proposal had two aims:

- to comply with the Heritage NSW consultation procedures to obtain input on the ACHA process
- to identify cultural places and intangible values that may be affected by the Proposal.

2.2.2 Other communication strategies

In addition to the required steps outlined in Section 2.2.1, Council, NOHC (2018), ELA (2021) and EMM implemented a range of other strategies to promote transparent and frequent two-way dialogue between the Aboriginal community and the Proposal and its earlier iterations.

Specifically, the strategy included the following additional activities:

- Face-to-face meetings – Aboriginal focus group (AFG) meetings were held to promote two-way dialogue, allow Proposal flexibility and to maintain regular interaction with the RAPs. This included specific exploration of key issues raised in ELA (2021) as part of recent interactions.
- Regular catch ups – Council routinely employs and liaises with the local Bundjalung traditional owners and Tweed-Byron LALC as part of broader cultural heritage and socio-economic opportunities across the Local Government Area. This enables ongoing consultation that has extended over the course of several years and enables regular liaison and discussion to be undertaken.
- Field investigation participation – all RAPs were offered the opportunity to attend a range of field survey and test excavation activities carried out across the Proposal as part of the three ACHAs (Table 2.5).
- Cultural values mapping – a dedicated investigation of intangible and cultural places, stories and values by an experienced anthropologist in consultation with several Elders and/or knowledge-holders across the Tweed Shire region. This enabled a broader number of the local Aboriginal community that would otherwise have been unable to provide input to the Proposal.

2.3 This Project

2.3.1 Previous Aboriginal consultation

Initial consultation between the local Aboriginal community and Council begun in 2010 during the assessment of the three shortlisted options for augmentation of the water supply. This includes on-site inspections of these options and discussions about the preferred options (MWH, 2010) (refer to Section 1.2.1). Subsequent consultation included a meeting on 3 June 2016 to discuss and provide background information on the proposed raising of CHD, followed by an Aboriginal Cultural Heritage workshop held on 20 July 2016 to discuss the proposed raising of CHD project timeline as well as the Preliminary Archaeological Overview for the Proposed Raising of CHD report completed by Ian Fox.

Notably, discussion of strategic need of the Proposal was a focus of this early consultation with Aboriginal stakeholders, and included a number of presentations, workshops, and written correspondence dating from 2016 through to 2021. Notably, this included close consultation with the Tweed Shire Council Aboriginal Advisory Committee, members of which include representatives from Tweed Byron Local Aboriginal Land Council and other key stakeholders relevant to this assessment. Evidence of this consultation is provided in Appendix C.7. As outlined in Section 1.2.1, earlier iterations of the Proposal included the development of one Aboriginal Cultural Heritage Assessment, NOHC (2018) and one Aboriginal Cultural Heritage Assessment and Management Plan ELA (2021). These both undertook consultation with the local Aboriginal community.

In the case of NOHC (2018), consultation was undertaken in accordance with the Heritage NSW guidelines and extended between July 2017 – May 2018 (Table 2.1 and Appendix A). This included initial identification of Aboriginal parties, their notification and subsequent involvement in the assessment process. In addition to these standard steps, three in-person workshops were also undertaken at key points to discuss the assessment, its findings and mitigation measures. Overall, this process registered six Aboriginal parties:

- Tweed Byron LALC
- The McDonald-Buxton family, namely Jackie McDonald, Paul Buxton and Jason McDonald
- Kyle Slabb
- Tweed Aboriginal Co-operative Society.

NOHC's (2018) ACHA was finalised through April and May 2018 both via in-person discussions and several opportunities for the provision of written comment (Table 2.1). The ACHA outlines several additional requirements and next steps either to occur during and/or following the EIS process, including the development of an Aboriginal cultural heritage management plan (ACHMP) and the need for identified mitigation measures if the Proposal obtained approval.

ELA (2021) resumed consultation with the RAPs identified in NOHC (2018) in late January 2020 (Table 2.2 and Appendix A). Activities initially consisted of additional field survey undertaken in March 2020, followed by a substantial test excavation program that investigated a series of previously identified PADs (NOHC 2018) between June and August 2020. Another additional field survey was also undertaken in early 2021 following minor design changes. The finalisation of the ELA (2021) report occurred between February and June 2021. This included two meetings/workshops with RAPs to discuss the findings and outcomes of the report.

Following the completion of the ELA (2021) ACHA/Aboriginal cultural heritage management plan (ACHMP), there has been sporadic consultation undertaken directly by Council and later EMM. This consultation was focused on providing project status updates to the RAPs, and included Proposal updates issued on 15 March 2021, 28 September 2022, 10 February 2023 and 18 May 2023 (Table 2.3 and Appendices C.1 and C.2).

Table 2.1 Summary of Aboriginal consultation undertaken by NOHC (2018)

Consultation stage	Description	Date initiated	Date completed
1	Government Agency Pre-Notification	11 July 2017	
	Advertisement in Tweed Daily News and Tweed Link	26 July 2017 8 August 2017	
	Notification and registration of potential Aboriginal stakeholders	11 August 2017	25 August 2017
2/3	Presentation of information about the proposed project and gathering information about cultural significance	19 September 2017	17 October 2017
	Workshop 1 – to discuss preliminary survey methodology	7 September 2017	
	Workshop 2 – to discuss survey methodology and survey fieldwork logistics	9 October 2017	
	Fieldwork – survey	16 October 2017	27 October 2017
4	Review of draft ACHA report	15 March 2018	21 May 2018
	Workshop 3 – to discuss Draft ACHA	10 April 2018	
	Workshop 4 – to review existing site mapping from the archaeological field survey to inform the predictive model	26 September 2018	

Table 2.2 Summary of Aboriginal consultation undertaken by ELA (2021)

Consultation stage	Description	Date initiated	Date completed
2/3	Introductions, Proposal update and proposed future activities	29 January 2020	-
	Invitation to participate in field surveys	31 March 2020	
	Fieldwork – survey	19 April 2020 5 May 2020	22 April 2020 7 May 2020
	Proposal information and distribution of a proposed test excavation methodology	18 May 2020	1 June 2020
	Invitation to participate in excavation	10 June 2020	
	Fieldwork – test excavation	29 June 2020	28 August 2020
	Invitation to participate in additional field survey for design changes	4 March 2021	
	Fieldwork – survey	19 April 2021	22 April 2021
4	First review of draft ACHA/ACHMP report	4 February 2021	5 March 2021
	Workshop 4 – initial discussions of findings, Proposal rationale and mitigation measures	22 April 2021	
	Second review of draft ACHA/ACHMP report	21 May 2021	18 June 2021
	Workshop 5 – to discuss Draft ACHA	3 June 2021	-

Table 2.3 Summary of Aboriginal consultation undertaken following ELA (2021)

Consultation stage	Description	Date initiated	Date completed
2/3	Proposal update by Council advising that gap analysis of works to date was being completed	15 March 2022	-
	Proposal update by Council advising that engagement of a consultant for continuing the Proposal was imminent and would be in touch as this progressed	28 September 2022	-
	Proposal update by EMM providing introductions and next steps for the assessment process	10 February 2023	-
	Proposal update by EMM advising that a new formal consultation process would be undertaken due to gaps in some available data	18 May 2023	-

2.3.2 Consultation undertaken for this ACHA

Based on a review of the previous Aboriginal consultation (Section 2.3), it was noted that there were several time gaps that were close to, or extended beyond, six months – a maximum timeframe permitted under the Heritage NSW guidelines. In addition, some documentary evidence of the key consultation stages from NOHC (2018) and ELA (2021) had been omitted from their reports and could not be sourced. As such, EMM re-started the consultation process outlined in Heritage NSW's guidelines (Section 2.2.1) to ensure all stages could be robustly demonstrated.

Initial identification and notification of Aboriginal individuals and organisations was undertaken in May and June 2023 (Table 2.4 and Appendix C). This process identified 10 registered Aboriginal parties (Table 2.5), which included those previously involved (Section 2.3), as well as other individuals and organisations in the local or broader region interested in the Proposal. Additional information on the Proposal and specific activities were provided in July and August 2023 and implemented throughout the end of 2023. Finalisation of the report was undertaken in early 2024.

Table 2.4 Summary of Aboriginal consultation undertaken for the Proposal by EMM

Consultation stage	Description	Date initiated	Date completed	Notes
1	Government Agency Pre-Notification	18 May 2023		Additional details provided in Appendix C.3
	Advertisement in *Tweed Valley Weekly*	1 June 2023		A tearsheet advert is provided in Appendix C.4
	Notification and registration of potential Aboriginal stakeholders	31 May 2023	14 June 2023	Additional details are provided in Appendix C.4
	Advising Heritage NSW and Tweed Byron LALC of RAPs	4 July 2023		Additional details are provided in Appendix C.4
2/3	Presentation of information about the proposed project and additional tasks	18 July 2023	14 August 2023	Additional details are provided in Appendix C.5
	Cultural values mapping study invitation	31 July 2023		Additional details are provided in Appendix E

Table 2.4 Summary of Aboriginal consultation undertaken for the Proposal by EMM

Consultation stage	Description	Date initiated	Date completed	Notes
	Fieldwork – rockshelter management site visit	14–15 August 2023		Additional details are provided in Appendix C.7
	Fieldwork – cultural values mapping	25 September 2023	26 September 2023	Additional details are provided in Appendix E
	Fieldwork – additional survey	17 January 2024	18 January 2024	Additional details are provided in Section 5.2.2
4	Review of draft ACHA report	17 June 2024	19 July 2024	Additional details are provided in Appendix C.6

Table 2.5 List of registered Aboriginal parties for the Proposal

Organisation	Contact	Location	Date of registration
Consultation prior to 18 May 2023			
Tweed Byron Local Aboriginal Land Council	Maurice Gannon		25 August 2017
	Jackie McDonald		25 August 2017
	Jason McDonald		25 August 2017
	Kyle Slabb (c/o Tweed Byron LALC)		25 August 2017
	Paul Buxton		25 August 2017
Tweed Aboriginal Co-Operative Society Pty	Mleeka Hart		25 August 2017
Consultation after 18 May 2023			
Tweed Byron Local Aboriginal Land Council	Maurice Gannon, Warren Phillips	Tweed Heads	31 May 23
-	Jackie McDonald	Tweed Heads	20 May 23
-	Jason McDonald	Tweed Heads	26 May 23
-	Paul Buxton	Tallebudgera	21 May 23
Tweed Aboriginal Co-operative Society Pty Ltd	Tina Pidcock, Nicole Rotumah	Tweed Heads South	*
AT Gomilaroi Cultural Consultancy	Aaron Talbott, Natalene Mercy	Gunnedah	31 May 23
Minjungbal Cultural Museum	-	Tweed Heads South	31 May 23
-	Arabella Douglas	Tweed Heads	1 June 23
-	Rachael Cavanagh	Tweed Heads	31 May 23

Table 2.5 List of registered Aboriginal parties for the Proposal

Organisation	Contact	Location	Date of registration
Consultation prior to 18 May 2023			
-	Kyle Slabb	Tweed Heads	*

Notes: * denotes a previous Aboriginal individual or organisation from earlier phases of work and included despite not receiving a response during notification processes.

2.4 Aboriginal engagement and feedback

2.4.1 Previous Aboriginal stakeholder feedback

A review of NOHC (2018) and ELA (2021) identified a number of key points and concerns raised by the RAPs. The detail of these is provided in Appendix A, and summarised as follows:

- NOHC (2018)
  - Concerns over the level of field survey coverage being inadequate, with some parts of the project area not being inspected. Additional concerns raised about the need to understand and characterise potential archaeological deposits.
  - The lack of consideration of cultural and intangible values, especially in consideration of significance and the broader cultural landscape.
  - Requirement for additional details for management and mitigation of key sites, including CHD-A20, CHD-ST1, and CHD-G1, and the management of PADs once characterised.
  - Further clarification of the impacts to, management of and mitigation to identified rockshelter, CHD-RS1 (#04-1-0286[2]). This extended into the specific nature of any subsurface excavations of the site/s.
- ELA (2021)
  - The need to protect CHD-ST1 (#04-1-0285), a culturally modified tree near the current dam wall. Reference was also made to a further tree, CHD-ST2, which was within the inundation zone.
  - The need to avoid impacts to a previously identified rockshelter (#04-1-0090), which has high cultural significance. This site is outside the previous and current Proposal footprint.
  - Continued concerns over the impacts and management to a previously identified rockshelter (#04-1-0286), with a preference for avoidance and/or archaeological excavations. A preference for further characterisation of the sites, prior to a project approval, was also articulated.

[2] There are several references in NOHC (2018) and ELA (2021) to this site being listed as #04-1-0014. This site number actually relates to DD6, which was originally identified in the late 1970s and was inundated as part of the original establishment of the dam. It would not have been accessible during the 2018-2021 investigations. Further, photographs of the site in NOHC (2018) are clearly CHD-RS1 (#04-1-0286) based on observations by EMM personnel.

- Concerns over the potential impacts from water to CHD-A20 – a site consisting of sandstone pitting and holes. Further investigation indicated permanent inundation was unlikely to result in impacts to the site, and that the site would only be inundated in flood periods.

- General opposition to the project from the McDonald family due to close historical connections to the locale.

A number of these issues were addressed during NOHC (2018) and ELA (2021) as part of their finalisation processes. Of note was the re-design of the Proposal, and its avoidance of CHD-ST1, which was identified as a highly significant culturally modified tree. The implementation of test excavations by ELA (2021) to further characterise potential archaeological deposits outlined in NOHC (2018) also addressed initial concerns.

Further, a number of the issues could not be resolved as part of the ACHA. For example, rockshelters cannot be archaeologically excavated without an Aboriginal Heritage Impact Permit or other approval. While detailed mitigation measures for several of the sites are more suitably discussed as part of an ACHMP following a project approval since they typically require Heritage NSW input and discussion. Although it is acknowledged that ELA's (2021) report attempted to meet these concerns being both an addendum to NOHC (2018) and an initial attempt at an ACHMP.

Several of the issues remained unresolved, and these formed a focus of this ACHA (Section 2.4.2).

2.4.2 Feedback and comments for this ACHA

Following review of the previous Aboriginal consultation for the project (Section 2.3.1) and feedback (Section 2.4.1), several key concerns and issues were observed. These included:

1. mixed views on the quantum, effectiveness, and coverage of previous field campaigns

2. the poor management of previous recovered cultural materials as part of the original dam work and their current location

3. the need to consider cultural and intangible values, notably in relation to nearby Wollumbin (Mount Warning) – a highly significant and visible mountain

4. further consideration of the management and mitigation of three identified rockshelters.

In relation to (1), additional field investigation was undertaken (Section 5) to infill observed gaps, and notably the banks of Doon Doon Creek. However, overall, it is considered that survey coverage by NOHC (2018) and ELA (2021) is comprehensive. In the case of the former, some 80% of an earlier iteration of the footprint (which is extremely similar to the current Proposal) was achieved. Only a small portion of moderate and steep slopes immediately around the existing dam were omitted from the field program, presumably as a result of access and safety. Given the slope of these locations, colluvial processes and erosions are likely to have resulted in the movement of any cultural materials downslope (i.e. within the current reservoir), and as such they would not be expected to survive in situ. ELA's coverage activities are not as clear, but a nine-week test excavation program between 29 June to 28 August 2021 was carried out across key locales within the project area. Overall, it is considered that the level of investigation has been able to robustly inform the cultural assemblage within the Proposal. Subsequent discussions with the RAPs during the recent ACHA process suggests the views of adequate versus inadequate coverage is mixed.

In relation to (2), a previously identified culturally modified tree and a set of grinding grooves were recovered during the original construction. Based on information panels at the current dam – one of the only sources of information on these sites – they were housed at a viewing area near the dam. A comprehensive investigation was carried out by the historian Ian Fox and was provided to EMM by Auntie Jackie McDonald. It is included here in Appendix F and shows considerable efforts to track down the cultural materials, but without success. Since the

1980s, various upgrade and beautification works have occurred around the dam, and it is considered probable that the viewing area (a shed structure) has been removed along with the cultural materials. No further information beyond this could be found by EMM, and they are considered lost. While this remains a concern by the RAPs, it is highlighted that few personnel at Council were involved in the original project and significant attempts have been made by Council in the improved management of cultural heritage across the LGA in recent years.

Cultural values mapping was implemented for this report to address (3). This is presented in Appendix E and summarised in Section 4.

In relation to (4), this is discussed below.

i Further consideration of rockshelters, #04-1-0090 and #04-1-0286

As outlined in Section 2.4.1, several comments were raised in relation to three rockshelters and their potential impact by the Proposal. These sites consisted of two closely spaced rockshelters found on the same sandstone outcrop near Lone Pine Road and identified as 04-1-0286. This was initially recorded as a single rockshelter, with the field investigations by NOHC (2018) and ELA (2021) identifying and documenting a smaller overhang in the same vicinity. The third site consisted of a small rockshelter, #04-1-0090, within the same locale, and some 300 m south-west of #04-1-0286.

To further investigate these sites, their potential impacts and mitigation measures, an on-Country inspection was undertaken on the 15 August 2023 with Council, EMM, Tweed Byron LALC (Warren Phillips), Auntie Jackie McDonald and Paul Buxton (Plate 2.1, Plate 2.2 and Plate 2.3). At the centre of the inspection was:

1. The identification of the boundary of the site/s by the Aboriginal participants in their view. Specifically, it was acknowledged that the cultural landscape of the rockshelters extended beyond the overhang and immediate deposits, and it was for the Aboriginal participants to determine the spatial extent of this boundary.

2. The detailed mapping of these boundaries with high-resolution survey equipment to understand the exact location of these boundaries in relation to the Proposal.

It was determined during the inspection that while the upper rockshelter of #04-1-0286 and portions of the lower sandstone outcropping containing the lower rockshelter – considered a significant part of the cultural landscape by the participants – were above the proposed FSL of 70 m AHD, the lower rockshelter of #04-1-0286 and #04-1-0090 were a considerable distance below this value. A 'marker' tree identified by one of the participants was also documented and appended to #04-1-0286 and is similarly beneath the FSL. In the case of #04-1-0090, the site was some 7 m below the FSL, and would be some distance from the edge of the reservoir. All of the sites are below the Proposal's probable maximum flood (PMF) level, but this is consistent with the current situation with all rockshelters within the PMF of the current dam.

Following refinement of the information and various discussions (Appendices C.1 and C.7), a series of proposed management and mitigation measures were developed with the RAPs, including the following:[3]

- Retention and protection of upper rockshelter at #04-1-0286. At this stage, it remains unclear whether any direct intervention would be warranted or needed given it currently sits just above the proposed FSL. However, all were supportive of the retention and protection of this site into the future, therefore the suitable and careful management of this site will inform a recommendation. This would include the details

[3] Appendix C.7 provides the correspondence and summary information with the RAPs. It must be noted that in these discussions 'site 1' is used in reference to #04-1-0286, while 'site 2' relates to #04-1-0090.

of how the site would be managed prior to, and during inundation and whether physical barriers, etc, are implemented.

- Archaeological investigation and recovery of cultural materials. There is a preference for the archaeological test/salvage excavation of the lower site at #04-1-0286 and #04-1-0090 prior to inundation. This would increase understanding about the timing and activities of past Aboriginal people on Doon Doon Creek and ensure the recovery and future accessibility of any cultural materials present within the sites.

- Interest in developing heritage interpretation using data and information from the sites, which may include a replica/reproduction of the feature in another location. Interpretation at the actual location of the sites was not supported, as the area was not regularly visited. This would therefore not be proposed for regular visitation in the future as the area would only be accessible by boat if the dam is raised and would limit any unattended access or visitation to the culturally sensitive upper #04-1-0286 rockshelter. Suggestions of locating such interpretation at Crams Farm were made, but further exploration of a suitable location would be proposed.

These findings and perspectives of the RAPs have been integrated into Section 9 of this report.

Plate 2.1 The lower rockshelter at 04-1-0286 during further investigations and discussions of their interaction with the Proposal in August 2023

Plate 2.2 **The upper rockshelter at 04-1-0286 during further investigations and discussions of their interaction with the Proposal in August 2023**

Plate 2.3 **The rockshelter at 04-1-0090 during further investigations and discussions of their interaction with the Proposal in August 2023**

ii ACHA report feedback

This ACHA was provided to the RAPs for a 28-day period between 17 June and 19 July 2024 (32 days) for their inputs and comments. An open invitation for an on-Country meeting was provided to all RAPs along with the report, with the meeting ultimately undertaken on 15 July. A reminder for the comment period was provided on 25 June 2024, and an extension of the comment period was provided to account for NAIDOC week (8-12 July).

Where received, these are provided in Appendix C and summarised below:

- Maurice Gannon (TBLALC) provided a written response on 11 July 2024, which is provided in full in Appendix C.6. A number of key issues were raised:
  - A significant portion of the response related to questioning the overall rationale for the dam raising. While outside the remit of the ACHA processes, this rationale would be discussed further in the main EIS and as part of the broader assessment and approval process. It is noted however, that Tweed Shire Council has presented to TBLALC on a number of occasions throughout the Proposal's lifespan, regarding the justification for the project (Section 2.3.1).
  - The Proposal area has been subject to extensive archaeological investigation as a result of the compliance-based investigations undertaken for the Proposal, particularly in relation to the rest of the Tweed area which has not seen robust investigations. It was highlighted that while 14 sites have been documented in the FSL, this may translate to a high number of discrete Aboriginal objects. This documents a similar discussions and views that have been maintained by many RAPs throughout the project.
  - Specifically regarding management, the response highlighted that any culturally modified trees are to be avoided and preserved and, preferably, stone axes should be salvaged. The future preservation and management of the rock shelters culturally modified trees and salvaged artefacts remains to be resolved and recorded in written management plan to be agreed to by all RAPs. This comment is captured in the management recommendations of this ACHA (Section 9) and the guiding principles for the ACHMP (Appendix H).
- Arabella Douglas provided written responses during this period on two occasions (26 June and 5 July 2024), both of which are provided in full in Appendix C.6. This feedback primarily related to concerns around who speaks for Country, lack of involvement in the project to date, and regional water management issues. Repeated invitations were extended to discuss the Proposal in person, however ultimately no invitation was accepted.
- As outlined above, in addition to the responses received above, a meeting was held in the Tweed area to discuss the project on 15 July 2024. While a meeting invitation was extended to all RAPs, ultimately the meeting was attended by Alan Williams and Georgia Burnett (EMM), Maurice Gannon (Tweed-Byron LALC), Jackie McDonald, and Paul Buxton. The meeting minutes are provided in Appendix C and key issues discussed are summarised below:
  - The meeting highlighted strong opposition of the Proposal given the impacts to cultural heritage, which have now been well documented in the project area as a result of the Proposal, and less so in the region more widely. While avoidance of some areas, such as Byrill Creek, was well received, it was highlighted that this did not mean support for the Proposal was the result.
  - Extensive discussions on who speaks for Country and concerns around the broader dissemination of sensitive cultural information. This has been addressed through redactions and omissions of information from public versions of this report, where relevant.

- There was some discussion on rockshelters in the region, and noting that several such sites may have been mistakenly referenced in some of the earlier assessments; and had been disentangled in this ACHA. Only two of the rockshelters discussed (#04-1-0090 and #04-1-0286) are inside the Proposal area, and strong support was continued to be given to engineering solutions to prevent these being submerged. Similar discussions and views have been maintained throughout the Proposal.

3 Existing environment

3.1 Key findings

- The project area has a diverse geological and geomorphological landscape providing a range of environments and ecotones which would have resulted in attractive resources being available to past Aboriginal populations. The project area contains several significant water resources that were likely utilised by Aboriginal people in the past. Notably Doon Doon Creek runs through the project area but has been inundated by the current reservoir. ELA (2021) mapped its original alignment and showed that some of its banks and terraces may still be present above the current FSL.

- Past land use of the project area focused on pastoral and low intensity farming activities, the construction of Clarrie Hall Dam which commenced in 1979, and logging activities that occurred in the early 20th century. The establishment of the dam and the inundation of a large portion of Doon Doon Creek has resulted in the probable loss or impact of cultural materials beneath the FSL - a culturally modified tree and grinding stones have been noted as lost by Aboriginal participants during the consultation process.

- There have been several previous archaeological investigations of the project area as part of various components of the Clarrie Hall Dam development in the 1970s through to present day. These have documented 65 (32 within the proposed FSL and 33 when including the proposed PMF) Aboriginal objects and sites within the Proposal, including rockshelters, culturally modified trees, grinding grooves, and various densities of surface and subsurface stone artefactual material. Spatial distribution of these cultural materials appears to suggest a general prevalence of areas that would have been close to Doon Doon Creek prior to its inundation and on less steep slopes to the south of the project area.

- The project area is in close proximity to Wollumbin, a highly significant place for the Bundjalung people. A plethora of Dreaming places and stories extend across the region and frequently intersect Wollumbin.

3.2 Summary of previous reports

The following sections are a summary of desktop information developed in NOHC (2018) and ELA (2021) and provided in Appendix A. This has been supplemented with new information where relevant.

Section 5.2.1 and Section 5.2.3 provide further details regarding the fieldwork activities and results identified in these assessments.

3.2.1 Environmental context

Understanding environmental context assists with predictions of archaeological potential, such as the likelihood of archaeological material being present in the landscape, its spatial distribution and its preservation. Landscape features were an important factor for the choice of camping and transitory and ceremonial areas used by Aboriginal people. Similarly, these landscape features and historical land-use play a role in the level of preservation and the integrity of archaeological sites.

A landscape consisting of suitable topography, hydrology, geology and soils has strong links with natural resources that would have been available to, and sought after, by Aboriginal people. Flora and fauna would have provided food, tools and ceremony (culturally modified trees), proximity to fresh water was necessary for life and growing crops, as well as gathering fish and eels. Landscape features, such as sandstone overhangs, were useful for shelter, stone artefacts were manufactured from raw stone material that was collected from quarry sites and stone arrangements relied on the landscape.

The following summary has been summarised from Sections 5 and 6 of NOHC (2018):

- The project area is located within the eastern margin of the Clarence-Moreton Basin which is situated within the remnant caldera of the Mount Warning shield volcano. The northern portion is characterised by narrow creek gullies and steeped-sided gullies, whilst the southern portion of the project area is characterised by broad, moderate to low gradient spur lines that transition to low gradient valley floors and soak ways with permanent stream flow.

- The underlying geology of the project area is split across two formations (Figure 3.1). These include the Chillingham Volcanics across the northern portion of Clarrie Hall Dam which was formed in the Triassic period and characterised by rhyolite, rhyolitic tuff and claystone. The Bundamba Group formation underlies the southern portion of the project area which was formed during the Triassic-Jurassic period and characterised by sandstone, siltstone, claystone and conglomerate.

- Late Tertiary volcanism and folding has influenced drainage across the region and rock types. Lithic resources in the area of a suitable material for Aboriginal modification include outcrops of fine-grained volcanic rocks, quartz vein outcrops and fluvial pebble gravels. Distribution of river gravels determined by Late tertiary and Quaternary River diversions influenced locations of host mineral bodies and alluvial terrace sites that were preferred areas of Aboriginal camp sites.

- Doon Doon Creek, a fifth order watercourse, is located centrally within the project area with its lower order tributaries scattered in its surrounds (Figure 3.3). In 1979, the construction of Clarrie Hall Dam begun, and was later completed in 1983 which saw an increase of the water levels in the Doon Doon Creek catchment area. A significant portion of the creek within the project area is now inundated. Tweed River is located 810 m north of the project area.

- The topography and drainage networks of the region are structurally defined by the geology of Wollumbin (Mount Warning). The topography around the site is characterised mostly by a range of landforms such as steep hills, undulating rolling hills, alluvial plains, terraces and major channels., with elevations ranging from 5–400 m AHD.

- Four dominant soil landscapes are present across the project area (Figure 3.2). These include Frogs Hollow (fh), Kunghur (kub), Oxley (ox) and Terania (te) (Bannerman and Hazelton 1990). The soil landscapes of the project area and a summary of their implications for cultural material are described in Table 3.1.

- Most of the original native eucalypt forest, with the exception of localised areas, has been cleared from the project area as a result of agricultural and timber getting activities that occurred across the valley since the area was occupied by Europeans. NOHC (2018) noted the vegetation in the project area is predominantly no more than 50 years of age. However, several culturally modified trees may suggest disparate remnant trees of patches of vegetation, particularly on the north-eastern side of the dam.

- Previous land use activities across the project area involved low-intensity farming and pastoral activities, primarily cattle grazing and dairying, and timber getting activities involving logging which resulted in localised clearing of vegetation across the region. Further details on the past land use practices across the project area can be found in EMM's corresponding historical assessment (EMM 2024).

Table 3.1 Soil landscapes of the project area (Bannerman and Hazelton 1990)

Soil landscape	Landform pattern and hydrology	Landform elements	Slope and relief	Geology	Soil summary	Location within project area
Frogs Hollow	Ridge tops, upper slopes, mid slopes, lower slopes, steep hills.	Brown Podzolic soils and Brown Earths on ridges and upper slopes, and well drained Red Podzolic Soils and Red Clays.	Slopes 40–50%, relief 250–300 m and elevation 300–400 m.	Chillingham Volcanics from the Triassic period, which predates Mount Warning, and includes rhyolite, rhyolitic tuff, claystone.	Dark sandy clay loam topsoil (to depths of <50 cm) with deeper red brown clays (A horizon), overlying yellow and red brown clay subsoils (B horizon).	Located in the northern section of project area.
Kunghur	Undulating rolling hills.	Well drained Yellow Podzolic soils on ridges, upper slopes, slopes, and lower slopes. Red Podzolic soils and Red Earths on slopes. Poorly drained Gleyed Podzolic soils on lower slopes.	Slopes 5–30%, relief is 100–150 m, and elevation 100–300 m.	Bundamba Group from the Triassic period and includes sandstone, siltstone, claystone, conglomerate.	Dark sandy clay loam, sandy clay topsoil <50 cm and dark coarse sand (A horizon), overlying reddish brown clay and yellow mottled silty clay subsoils (B horizon).	Situated from the mid north section down to the southern section of the project area.
Oxley	Undulating alluvial plains and terraces.	Imperfectly drained Alluvial Soils and/or Prairie Soils on floodplain/bar plain. Moderately well drained Prairie Soils and Alluvial Clays on alluvial plain.	Slopes <2%, relief is <9 m, and elevation 5–20 m.	Deep Quaternary alluvium including clay, sand, gravel, and silt. Sediment derived from lithologies such as basalts, metasediments, rhyolites, gabbro, dolerite, sandstone, siltstone, coal, and shales.	Sandy clay loam (10–30 cm) may overlie dark clay (A and B horizon).	Located 2 km north-east of Clarrie Hall Dam along Tweed River.
Terainia	Narrow alluvial plains and major channels.	Well drained Dark Alluvial Clays on alluvial plains. Poorly drained Weisenboden and Black Earths on floodplains. Rapidly drained Earthy Sands on major channels.	Slopes 0–3%, relief is <5 m, and elevation 60–80 m.	Quaternary sediments including river gravel, alluvium, sand, and clay.	Dark brown clay loam topsoils (<20 cm depth) (A horizon), overlying brown sandy clay subsoils (B horizon).	Located in the southern section of Clarrie Hall Dam along Doon Doon and Griers Creek.

3.2.2 Ethno-historical context

The following summary has been summarised from Section 5.1 of NOHC (2018) and Section 4 of ELA (2021). Further consideration of cultural values is outlined in Section 4:

- The project area is situated within the tribal boundaries of the Bundjalung people and associated with the dialects of the Nganduwal/Nagondowal language. With specific reference to the significant Wollumbin, the Moorung-Moobar clan were known to occupy this locale.

- The region retains a number of significant Dreaming places and stories, including:
    - The *Ngunthungulli* story about a supreme being that travelled from Byron Bay westwards, and included Wollumbin and Woodenbong.
    - *The Sisters* story about a cultural hero, *Gwyala,* a hunter who had two dogs important to him. The dogs were killed and buried at Wollumbin. Two peaks, Ningeroongun and Barrajanda, reflect the names of the dogs.
    - *Black Bean trees* story in relation to the use of the black bean tree (*Castanospermum australe*), which was considered a sacred plant. The story includes the death of a young man at the hands of witches that protected the trees.
- Early historical references to the Aboriginal people of the Tweed region and surrounding districts are rare.
- On 15 May 1770, it is recorded that Captain James Cook 'discovered smoke in many places and saw a group of natives' located 25 km south of Tweed River (Cousins 1933, pg.9).
- Lieutenant John Oxley made the first contact with the Aboriginal population along the northern coast of NSW on 31 October 1823. The contact was described as including 200 Aboriginal men located approximately 5 km from the mouth of Tweed River (Uniake 1825, pg. 40).
- Prior to the 1860s, interactions with European was limited to various squatting, exploration and informal timber-getting. Following the 1860s, land grants and legislation increased the influx of Europeans into the region and led to frequent frontier violence and the introduction of disease.

3.2.3 Archaeological context

i Regional overview

The first peopling of Australia occurred approximately 50,000 years ago (50 ka), and likely consisted of reasonably large groups of technologically advanced hunter-gatherers (Bradshaw et al. 2019, O'Connell et al. 2018). The peopling of the continent was rapid, with sites such as Devil's Lair (WA), Warratyi (SA), and Lake Mungo (NSW) all occupied within a few thousand years of arrival (Bowler et al. 2003, Hamm et al. 2016, Turney et al. 2001).

Genomic research has shown that following these initial explorations of the continent, regional populations or nomadic sedentism, was established by ~40 ka (Tobler et al. 2017). These small populations were highly mobile, but remained within a broad spatial geographic area, dictated in general by the nature of resources and water availability. In the case of some of the arid parts of the continent, mobility encompassed thousands of square kilometres (Gould 1977), while major riverine corridors had near permanent settlements (Pardoe 1995).

In NSW, the earliest evidence of Aboriginal people are human remains recovered from the lunette in Lake Mungo and dating to ~42 ka (Bowler et al. 2003, O'Connell et al. 2018). The presence of red ochre covering the remains represents a society with significant cultural and symbolic complexity (Langley et al. 2011). Near the coastal edge, the earliest populations were found at Cranebrook Terrace, near Penrith (western Sydney). Here, a handful of rudimentary stone tools were found in an alluvial unit, some 8 m below the current surface, and which were dated to ~40–45 ka (Williams et al. 2017). However, it is not until ~35 ka, that regional populations appear to have become established in the Sydney Basin, and which appeared to consist of small bands of people focussed mainly along major river systems, including the Hawkesbury-Nepean River, Georges River, and Hunter River (AAJV 2020, Hughes et al. 2014, Williams et al. 2012, 2014). These rivers formed key ecological refuges that hunter-gatherer groups used to survive major climatic events such as the Last Glacial Maximum (21±3 ka) – a cool and arid climatic period. Well established archaeological models suggest populations experienced a major reduction in size (by as much as 60%), and settlement contraction and abandonment across much of the continent during this time

(Veth 1993, Williams 2013), although recent research suggests that the story may be more complex than this (e.g. Tobler et al. 2017).

The terminal Pleistocene and early Holocene (~18–8 ka) was characterised by significant environmental change, notably the rapid inundation of much of the coastal shelf, resulting in the reduction of the continent by ~21% (~2 million km^2) (Williams et al. 2018), in tandem with improving climatic conditions – the Holocene climatic optimum (Williams et al. 2015a, Williams et al. 2015b). More broadly, these conditions resulted in increasing population growth, expansion of ranging territories, increasing sedentism (longer patch residence time) and the beginnings of low-level food production (e.g. aquaculture), and ultimately the initiation of social and cultural groupings observed in the late Holocene (Williams et al. 2015b). We see a much broader range of archaeological site types occurring, such as the Roonka Flat burial ground on the banks of the Murray River within which some 147 individuals were interred through the Holocene (Pate 1998), and the increasing use of marine resources.

Many of the previous refuges were subject to abandonment or a re-structuring of land use (Dortch 1979; Fitzsimmons et al. 2019). These activities suggest the ability to undertake large-scale movements to mitigate environmental distress was becoming increasingly difficult and was addressed through diversification of hunter-gathering behaviours and, at least in part, technological advances, and investment (Williams et al. 2015b).

The late Holocene saw significant population increase, with hunter gatherers reaching their zenith of ~1.2 million at 0.5 ka, a tenfold increase on Pleistocene levels (Williams 2013). Data suggests that the highest populations during this time were in the southeast of Australia. Williams et al. (2015b) suggest that this increase was likely a result of intensification of earlier technological advancements, including hafting technology, plant and seed processing, and localized landscape management (using fire), allowing climatic downturns to be successfully weathered. These included strong arid El Nino Southern Oscillation (ENSO) conditions between 4–2 ka, and increasingly turbulent climatic conditions during the Medieval Climatic Anomaly (1.3–1 ka) (generally wetter) and Little Ice Age (0.3–0.5 ka) (generally drier) (Williams et al. 2015b). A result of these denser populations was the decreased freedom of movement and the formation of strong classificatory kinship systems, complex cultural and symbolic landscapes based on geographic totemism (the 'Dreaming'), distinctive graphic art systems, land rights in the form of ritual property, and formalized exchange networks (Williams et al. 2015b).

ii Local studies

The following summary has been summarised from Section 5.2 of NOHC (2018). Three archaeological assessments were completed prior to NOHC (2018) and ELA (2021). The findings of these assessments are summarised below:

- Eight Aboriginal objects and sites were recorded as part of the field survey undertaken by Sullivan and Dallas in 1978 across Doon Doon Creek. They noted, but typically did not record isolated cultural materials. The project area for their assessment was located up to the current FSL. The sites identified by Sullivan and Dallas included five artefact scatters (DD1, DD2, DD3, DD4 and DD7), two rock shelters (DD5 and DD6) and a grinding groove site (DD8). All but DD5 (#04-1-0013), were located within the impact area. At the time of Sullivan and Dallas's assessment, DD6 (#04-1-0014) retained several flake stone artefacts across its ground surface and one flake stone artefact from subsurface investigations. Sullivan and Dalla's 1978 assessment stated the rock shelter site DD6 had low archaeological significance and limited research potential.

- Another three sites were recorded by Piper in 1979 as part of their assessment for Doon Doon Creek after conducting an archaeological survey over the area. These sites included a culturally modified tree (DD9), an artefact scatter (DD10) and an isolated find (DD11). Little further information on these sites is available, and they do not appear to have been listed in the AHIMS database (Section 3.2.3). It is likely that they would be beneath the current FSL, given that the study was undertaken, in part, to revisit Sullivan and Dallas' (1978) assessment.

- A preliminary archaeological overview of the proposed Clarrie Hall Dam was prepared by Southern Cross University (SCU) in 2008. The survey area included locales proposed to be permanently inundated with an FSL of up to 80 m AHD (compared with 70 m AHD proposed for this Proposal) and impacts from the construction of the dam wall. At the time of SCU's assessment, they noted that 21 Aboriginal sites were already previously recorded in the region, with five considered lost by the construction of the dam. Eight new Aboriginal sites were recorded as a result of SCU's field survey (CH1, CH2, CH3, CH4, CH5, CH6, CH7 and CH8). Six of these sites were identified as open artefact scatters, with the remaining two sites noted as isolated stone artefacts. None of these appear to be recorded within the AHIMS database, and information on their location is limited since the subsequent report is not available in public repositories.

- In 2006, the Aboriginal community in conjunction with Ian Fox and Southern Cross University (SCU) undertook radiocarbon dating across a selection of rock shelter sites in Tweed Valley. One site included the Byrill Ridge Rock shelter/DD5 (AHIMS #04-1-0013), located within the Doon Doon Creek catchment some 3.2 km east of the project area. Samples from this site returned dates up to ~3,000 years ago (ka). Comparatively, some of the earliest sites recorded in the Tweed region were recovered from the analysis of shellfish remains (7.4 ka) from Banora Point (Fox & Slabb 2016). Although more recent work by EMM at Kingscliff Public School suggests Aboriginal activity by at least 13 ka in the coastal region.

Source: EMM (2024); KBR (2024); DCSSS (2023); DPIE (2021); ESRI (2024)

0 0.5 1 km

GDA2020 MGA Zone 56

N

\\emm.local\xdrive\2023\E230036- Clarrie Hall Dam EIS- Project management\GIS\02_Maps_ACHA\ACHA013_SurfaceGeology\ACHA013_SurfaceGeology_20240318_02.aprx 25/07/2024

KEY

- Proposed construction disturbance footprint
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Infrastructure upgrade location

Geological unit- NSW seamless geology

Quaternary
- Anthropogenic stored water, pondage, reservoirs, canals (Q_hw)
- Alluvial floodplain deposits (QH_af)
- Alluvial valley deposits (Q_av)

Tertiary
- Mount Warning Igneous Complex- dolerite and basalt (NMmw__d)
- Mount Warning Igneous Complex- monzonite (NMmw__m)
- Mount Warning Igneous Complex- basalt (NMmw__b)
- Mount Warning Igneous Complex- trachyte (NMmw__t)

Jurassic
- Walloon Coal Measures (Jinw)
- Heifer Creek Sandstone Member (Tbmkh)
- Ma Ma Creek Member (Tbmkm)
- Gatton Sandstone (Tbmw)

Triassic
- Ripley Road Sandstone (Tbwi)
- Chillingham Volcanics (Tutc)

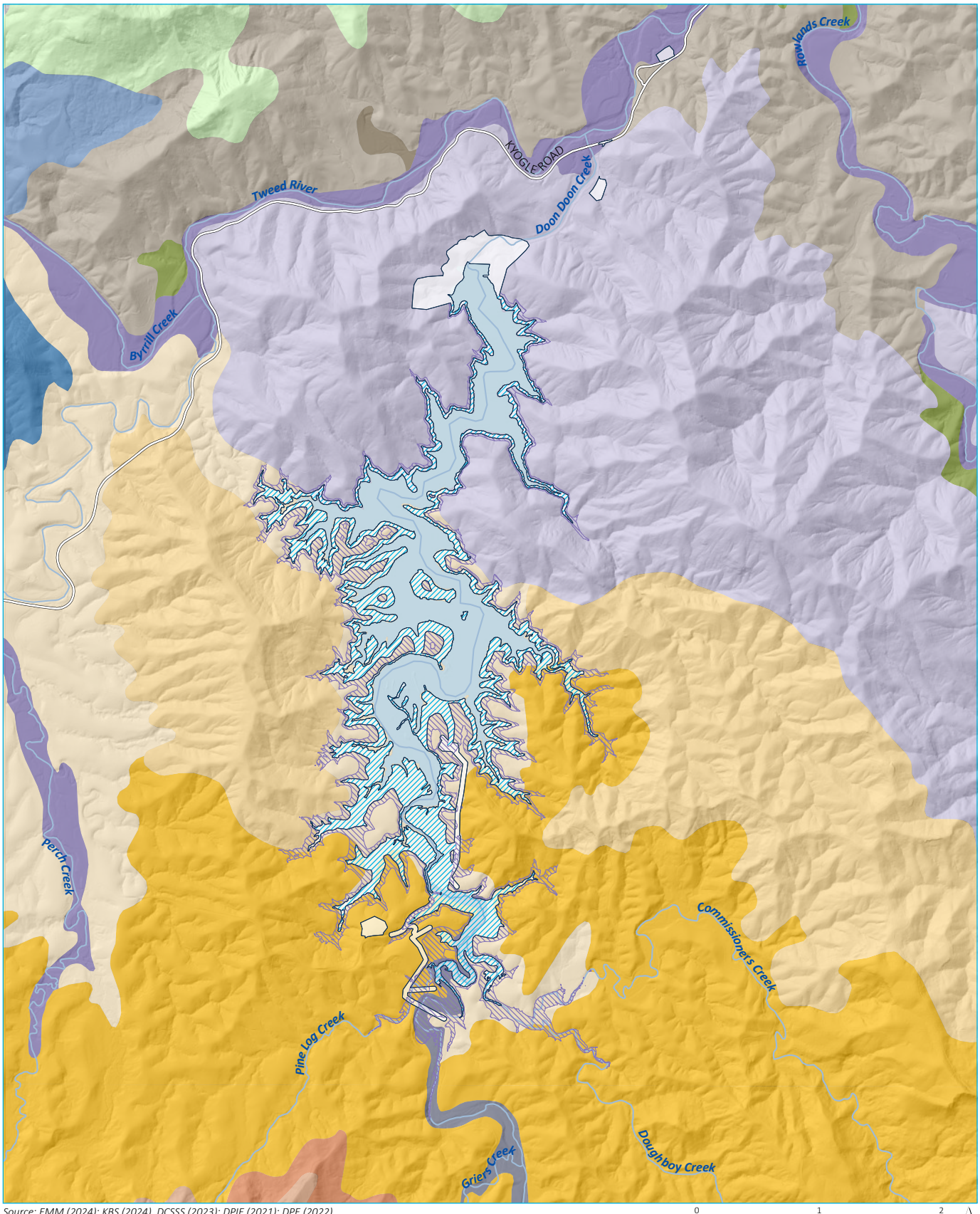
Silurian
- Neranleigh-Fernvale beds (C__n)

Existing environment
- Major road
- Minor road
- Named watercourse
- 50 m contour

Geology for the Proposal

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 3.1

EMM
creating opportunities



Source: EMM (2024); KBS (2024), DCSSS (2023); DPIE (2021); DPE (2022)

0 1 2 km

GDA2020 MGA Zone 56

N

\\emm.local\xdrive\2023\E230036- Clarrie Hall Dam EIS- Project management\GIS\02_Maps_ACHA\ACHA014_SoilLandscapes\ACHA014_SoilLandscapes_20240318_02.aprx 25/07/2024

KEY

- Proposed construction disturbance footprint
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)

NSW Soil Landscapes- name

- Billinudgel
- Billinudgel variant c
- Burringbar
- Frogs Hollow
- Kunghur
- Kunghurvariant a
- Kunghur variant b
- Mount Terragon
- Mount Terragon variant a
- Mount Warning
- Ophir Glen
- Oxley
- Terania
- Water

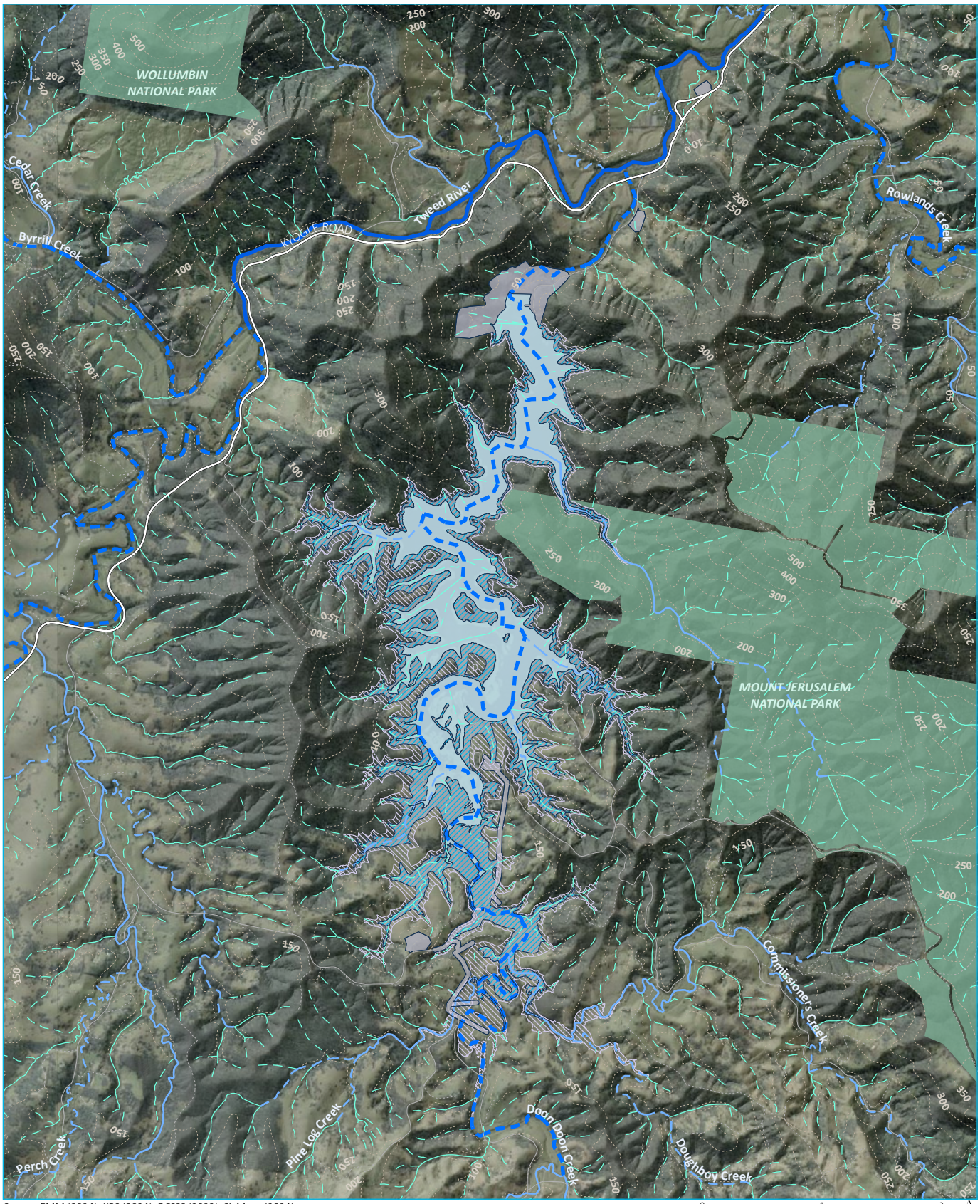
Existing environment

- Major road
- Named watercourse

Soil landscapes of the Proposal

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 3.2

EMM
creating opportunities



\\emm.local\xdrive\2023\E230036- Clarrie Hall Dam EIS- Project management\GIS\02_Maps_ACHA\ACHA006_EnvironmentalContext\ACHA006_EnvironmentalContext_20240218_03.aprx 25/07/2024

Source: EMM (2024); KBS (2024), DCSSS (2023); SixMaps (2024)

0 1 2 km

GDA2020 MGA Zone 56

N

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 4th order
- 5th order
- 6th order

Existing environment

- Major road
- Minor road
- Vehicular track
- 50 m contour
- NPWS reserve

Hydrology of the Proposal

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 3.3

EMM
creating opportunities

3.3 AHIMS data

The Aboriginal Heritage Information Management System (AHIMS) database is managed by Heritage NSW and includes a location and description of Aboriginal objects and sites recorded through academic research and cultural heritage management.

3.3.1 Previous AHIMS searches

NOHC (2018) identified 24 previously recorded sites within or near the project area, including seven artefact scatters (#04-1-0012, #04-1-0025, #04-1-0027, #04-1-0089, #04-1-0129, #04-1-0130, and #04-1-0050), seven isolated stone artefacts (#04-1-0009, #04-1-0010, #04-1-0011, #04-1-0017, #04-1-0130, #04-1-0188 and #04-1-0194), five rockshelters (#04-1-0013, #04-1-0014, #04-1-0090, #04-1-0113 and #04-1-0114), one culturally modified tree (#04-1-0026), one stone arrangement (#04-1-0115), a shell midden (#04-1-0026), a mythological burial (#04-1-0001) and one grinding groove (#04-1-0016). While the report indicates these sites are near the Proposal, a review of the data indicates that some are a considerable distance – the burial is some 1.5 km north-west of the project area, the shell midden is ~1.2 km east of the project area, and several of the rockshelters are >2 km from the project area.

Of these, a number are considered to have been inundated – and potentially destroyed – notably #04-1-0011, #04-1-0016, #04-1-0025, #04-1-0026, #04-1-0027, and #04-1-01888. NOHC (2018) indicate that #04-1-0012 and #04-1-0015 were subject to intermittent inundation but remained extant. NOHC (2018) misidentify DD6 (#04-1-0014) and a new discovery CHD-RS1 (#04-1-0286) in several parts of the report – the former is documented as being within the inundation zone by Dallas and Sullivan.

Only DD1–DD7 of those previously recorded Aboriginal objects and sites outlined in Section 3.2.3 are within the AHIMS database. Those sites recorded by Piper (1979), DD7-DD10, and SCU (2008), CH1-8 inclusive, do not appear within the AHIMS database (at least under those identifiers). NOHC (2018) documented spatial co-ordinates for CH1-8 inclusive, and which has been used for Figure 3.4. With limited information from the reports, further resolution is of these sites is unfeasible, and it is assumed that the extensive coverage (Section 5) has re-documented these sites if they are present above the FSL.

3.3.2 Updated AHIMS searches

EMM conducted a search on the AHIMS database on 17 November 2023 (ID 840897) which displays the frequency and distribution of Aboriginal site types in the broader landscape.

The AHIMS search results identified 107 previously registered Aboriginal sites within a 10 km search area centred on the project area (Figure 3.4, Appendix D). All sites are extant (valid) within the database, despite several likely having been lost as a result of the operation of the existing Clarrie Hall Dam. Of these 107 sites, 73 reflect recordings of cultural materials by NOHC (2018) and ELA (2021) as part of earlier iterations of the Proposal. Some 32 of these sites are within the FSL and associated with other development infrastructure activities (Table 3.3), with a further 33 within the PMF (Table 3.4). Those within the FSL are a mixture of those previously documented in Section 3.3.1 and identified as part of the NOHC (2018) and ELA (2021) studies. Those within the PMF are dominated by the works undertaken by NOHC (2018) and described further in Section 5. Several others are in close proximity, but above the proposed FSL or dam infrastructure.

Several site types are represented, including grinding grooves, artefact scatters, culturally modified trees, habitation structures, art sites, stone arrangement, potential archaeological deposits (PADs), Aboriginal resource and gathering, ceremonial sites, stone quarries, isolated finds, and shell midden sites (Table 3.2). Various densities of stone artefact sites are the most common site type in the search area (n=55, 51.4%), followed by PADs (n=25, 23.36%). A total of 11 restricted sites were identified in this AHIMS search. Two of these are within the project area, including DD6 (#04-1-0014) and a mythological burial (#04-1-0001). Discussions with Heritage NSW indicate that no others are present within the project area (David Gordon pers. comm. 6 March 2024).

Spatially, the documentation of Aboriginal sites appears to be largely influenced by the location of previous compliance-based archaeological investigations centred on Doon Doon Creek and the various assessments of the Clarrie Hall Dam project. They are prevalent in areas where Doon Doon Creek would have flowed and/or its associated tributaries. Notably, encountered cultural materials appear to be more frequent where within close proximity to the original alignment of Doon Doon Creek (Plate 3.1) and where landforms are less steep in the south of the project area. Given the moderate to steep slopes surrounding the current dam, cultural materials are likely to be more limited in these portions of the project area.

Table 3.2 AHIMS search results (Client service ID#840897, undertaken on 17 November 2023)

Site type	Number of sites		% of total	
	Category total	Sub-category total	Category total	Sub-category total
Artefactual site	75		70.09	
High density artefact scatter (51-100)		1		1.33
Moderate density artefact scatter (21-50)		1		1.33
Low density artefact scatter (2-20)		1		1.33
Isolated find		1		1.33
Undefined artefactual site		52		69.33
High density artefact scatter (51-100) with potential archaeological deposit (PAD)		6		8
Moderate density artefact scatter (21-50) with PAD		4		5.33
Low density artefact scatter (2-20) with PAD		5		6.66
Isolated find with PAD		1		1.33
Undefined artefact site with PAD		3		4
Rockshelters	1		0.93	
Art site (pigment or engraved) with undefined artefact site		1		100
Ceremony and Dreaming site	1		0.93	
Culturally modified tree (scarred or carved)	5		4.67	
Culturally modified tree with undefined artefact site		2		40
Grinding groove	3		2.80	
Potential archaeological deposit (PAD)	6		5.60	
Resource and gathering	2		1.86	

Table 3.2 AHIMS search results (Client service ID#840897, undertaken on 17 November 2023)

Site type	Number of sites		% of total	
	Category total	Sub-category total	Category total	Sub-category total
Resource and gathering site with habitation structure		1		50
Resource and gathering site with habitation structure and culturally modified tree		1		50
Restricted AHIMS site	11		10.28	
Shell	1		0.93	
Stone arrangement	1		0.93	
Stone quarry	1		0.93	
Total	**107**	**-**	**100**	**-**

Table 3.3 AHIMS sites within the proposed FSL and other development infrastructure activities

AHIMS ID	Site name	Site type	Description	Documented in
04-1-0280	CHD-A1	Moderate density artefact scatter (21–50)	See Section 5 and Appendix A for further information	NOHC 2018, ELA 2021
04-1-0235	CHD-A30	Low density artefact scatter (2–20)	See Section 5 and Appendix A for further information	NOHC 2018, ELA 2021
04-1-0232	CHD-A31	Low density artefact scatter (2–20)	See Section 5 and Appendix A for further information	NOHC 2018, ELA 2021
04-1-0238	CHD-A36	Moderate density artefact scatter (21–50)	See Section 5 and Appendix A for further information	NOHC 2018, ELA 2021
04-1-0239	CHD-A37	Moderate density artefact scatter (21–50)	See Section 5 and Appendix A for further information	NOHC 2018, ELA 2021
04-1-0277	CHD-A4	Low density artefact scatter (2–20)	See Section 5 and Appendix A for further information	NOHC 2018
04-1-0242	CHD-A40	Low density artefact scatter (2–20)	See Section 5 and Appendix A for further information	NOHC 2018
04-1-0244	CHD-A42	Isolated stone artefact	See Section 5 and Appendix A for further information	NOHC 2018
04-1-0246	CHD-A44	Isolated stone artefact	See Section 5 and Appendix A for further information	NOHC 2018
04-1-0250	CHD-A45	Isolated stone artefact	See Section 5 and Appendix A for further information	NOHC 2018
04-1-0274	CHD-A7	Isolated stone artefact	See Section 5 and Appendix A for further information	NOHC 2018

Table 3.3 AHIMS sites within the proposed FSL and other development infrastructure activities

AHIMS ID	Site name	Site type	Description	Documented in
04-1-0284	CHD-G1	Chalcedony geological outcrop (natural resource) identified elsewhere as quarry or knapping site	See Section 5 and Appendix A for further information	NOHC 2018
04-1-0292	CHD-PAD5	Low density artefact scatter (2–20)	See Section 5 and Appendix A for further information	NOHC 2018, ELA 2021
04-1-0291	CHD-PAD6	Moderate density artefact scatter (21–50)	See Section 5 and Appendix A for further information	NOHC 2018, ELA 2021
04-1-0290	CHD-PAD7	Not a site	See Section 5 and Appendix A for further information	NOHC 2018, ELA 2021
04-1-0289	CHD-PAD8	Low density artefact scatter (2–20)	See Section 5 and Appendix A for further information	NOHC 2018, ELA 2021
04-1-0288	CHD-PAD9	Very high-density artefact scatter (100+)	See Section 5 and Appendix A for further information	NOHC 2018, ELA 2021
04-1-0286	CHD-RS1	Rockshelter with PAD (associated with #4-1-0014)	See Section 5 and Appendix A for further information	NOHC 2018
04-1-0285	CHD-ST1	Culturally modified tree	See Section 5 and Appendix A for further information	NOHC 2018
04-1-0249	CHD A48	High density artefact scatter (51–100)	See Section 5 and Appendix A for further information	NOHC 2018, ELA 2021
04-1-0231	CHD A51	Isolated stone artefact	See Section 5 and Appendix A for further information	NOHC 2018
04-1-0296	CHD PAD1	High density artefact scatter (51–100)	See Section 5 and Appendix A for further information	NOHC 2018
04-1-0090	Clarrie Hall Dam BMP-05-0036	Rockshelter and PAD	See Section 5 and Appendix A for further information	Mr.Ian Fox, NOHC 2018
04-1-0011	Midginbill DD3 BMP-050031	Isolated stone artefact	See Section 5 and Appendix A for further information	Mr.H Sullivan and Mr.Ian Fox, NOHC 2018
04-1-0303	CHD_ST2	Culturally modified tree	See Section 5 and Appendix A for further information	ELA 2021
04-1-0281	CHD-A55	Very high-density artefact scatter (100+)	See Section 5 and Appendix A for further information	NOHC 2018
04-1-0012	Midginbill DD4	Undefined artefact site	See Section 5 and Appendix A for further information	Mary Dallas Consulting Archaeologists (MDCA) and Mr.Ian Fox, NOHC 2018
04-1-0015	Byill Range DD7 BMP-05-0037	Undefined artefact site	See Section 5 and Appendix A for further information	Mr.H Sullivan and Mr.Ian Fox, NOHC 2018

Table 3.3 AHIMS sites within the proposed FSL and other development infrastructure activities

AHIMS ID	Site name	Site type	Description	Documented in
04-1-0016	Midjinbill BMP-05-0038	Grinding Groove	See Section 5 and Appendix A for further information	H Sullivan and Mr.Ian Fox, NOHC 2018
04-1-0025	Mt Misery Byrrill, BMP-05-0070	Undefined artefact site	See Section 5 and Appendix A for further information	Mr.Adrian Piper and Mr.Ian Fox, NOHC 2018
04-1-0026	Mt Misery Byrrill	Culturally modified tree	See Section 5 and Appendix A for further information	Mr.Adrian Piper, NOHC 2018
04-1-0027	Mt Misery Byrrill BMP-05-0072	Undefined artefact site	See Section 5 and Appendix A for further information	Mr.Adrian Piper and Mr.Ian Fox, NOHC 2018

Table 3.4 AHIMS sites above the proposed FSL, but within the potential proposed PMF

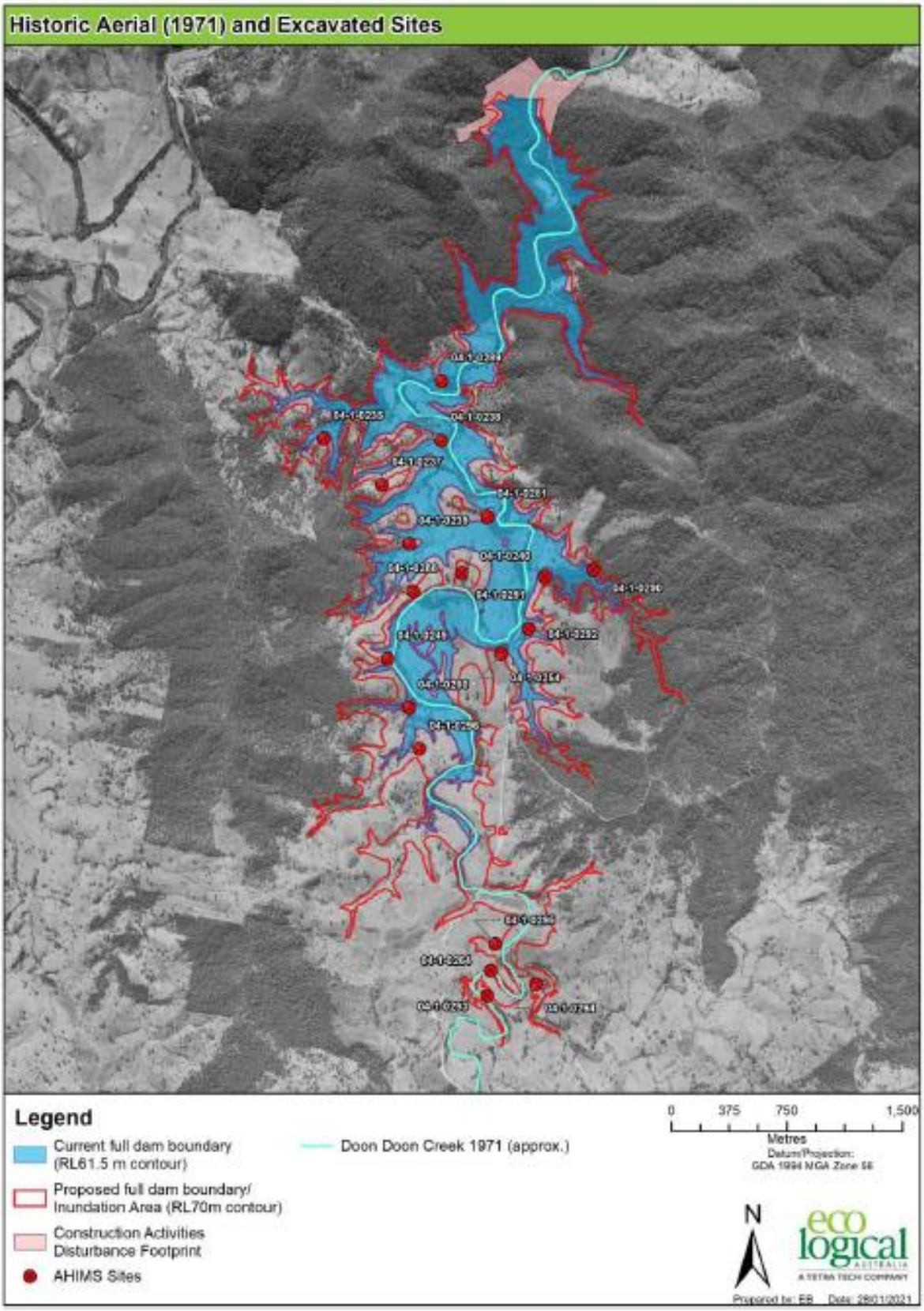
AHIMS ID	Site name	Site type	Description	Documented in
04-1-0194	Byrrill Ridge 4 Tweed ACH Artefacts	Undefined artefact site	See Section 5 and Appendix A for further information	Mr.H Sullivan and Mr.Ian Fox, NOHC 2018
-	CH6	Undefined artefact site	See Section 5 and Appendix A for further information	SCU 2008, NOHC 2018
-	CH7	Undefined artefact site	See Section 5 and Appendix A for further information	SCU 2008, NOHC 2018
-	CH8	Undefined artefact site	See Section 5 and Appendix A for further information	SCU 2008, NOHC 2018
04-1-0271	CHD-A10	Isolated stone artefact	See Section 5 and Appendix A for further information	NOHC, 2018
04-1-0270	CHD-A11	Isolated stone artefact	See Section 5 and Appendix A for further information	NOHC, 2018
04-1-0269	CHD-A12	Isolated stone artefact	See Section 5 and Appendix A for further information	NOHC, 2018
04-1-0279	CHD-A2	Isolated stone artefact	See Section 5 and Appendix A for further information	NOHC, 2018
04-1-0261	CHD-A20	Grinding groove (natural holes and pitting in bedrock, may be more suitably identified as a natural resource feature)	See Section 5 and Appendix A for further information	NOHC, 2018
04-1-0260	CHD-A21	Isolated stone artefact	See Section 5 and Appendix A for further information	NOHC, 2018
04-1-0259	CHD-A22	Low density artefact scatter (2–20)	See Section 5 and Appendix A for further information	NOHC, 2018

Table 3.4 AHIMS sites above the proposed FSL, but within the potential proposed PMF

AHIMS ID	Site name	Site type	Description	Documented in
04-1-0257	CHD-A24	Low density artefact scatter (2–20)	See Section 5 and Appendix A for further information	NOHC, 2018
04-1-0256	CHD-A25	Isolated stone artefact	See Section 5 and Appendix A for further information	NOHC, 2018
04-1-0254	CHD-A27	High density artefact scatter (51–100)	See Section 5 and Appendix A for further information	NOHC 2018, ELA 2021
04-1-0253	CHD-A28	Isolated stone artefact	See Section 5 and Appendix A for further information	NOHC, 2018
04-1-0252	CHD-A29	Isolated stone artefact	See Section 5 and Appendix A for further information	NOHC, 2018
04-1-0234	CHD-A33	Isolated stone artefact	See Section 5 and Appendix A for further information	NOHC, 2018
04-1-0237	CHD-A35	Low density artefact scatter (2–20)	See Section 5 and Appendix A for further information	NOHC 2018, ELA 2021
04-1-0240	CHD-A38	Low density artefact scatter (2–20)	See Section 5 and Appendix A for further information	NOHC 2018, ELA 2021
04-1-0241	CHD-A39	Isolated stone artefact	See Section 5 and Appendix A for further information	NOHC, 2018
04-1-0243	CHD-A41	Low density artefact scatter (2–20)	See Section 5 and Appendix A for further information	NOHC, 2018
04-1-0230	CHD-A52	Isolated stone artefact	See Section 5 and Appendix A for further information	NOHC, 2018
04-1-0251	CHD-A53	Isolated stone artefact	See Section 5 and Appendix A for further information	NOHC, 2018
04-1-0282	CHD-A54	Isolated stone artefact	See Section 5 and Appendix A for further information	NOHC, 2018
04-1-0273	CHD-A8	Low density artefact scatter (2–20)	See Section 5 and Appendix A for further information	NOHC, 2018
04-1-0301	CHD-AS1	Low density artefact scatter (2–20)	See Section 5 and Appendix A for further information	NOHC, 2018
04-1-0302	CHD-1	Isolated stone artefact	See Section 5 and Appendix A for further information	ELA 2021
04-1-0295	CHD-PAD2	High density artefact scatter (51–100)	See Section 5 and Appendix A for further information	NOHC 2018, ELA 2021
04-1-0293	CHD-PAD3	Not a site	See Section 5 and Appendix A for further information	NOHC 2018, ELA 2021
04-1-0294	CHD-PAD4	Low density artefact scatter (2–20)	See Section 5 and Appendix A for further information	NOHC 2018, ELA 2021
04-1-0130	Clarrie Halll Dam 2 BMP-05-0112	Isolated stone artefact	See Section 5 and Appendix A for further information	Mr.Ian Fox, NOHC 2018

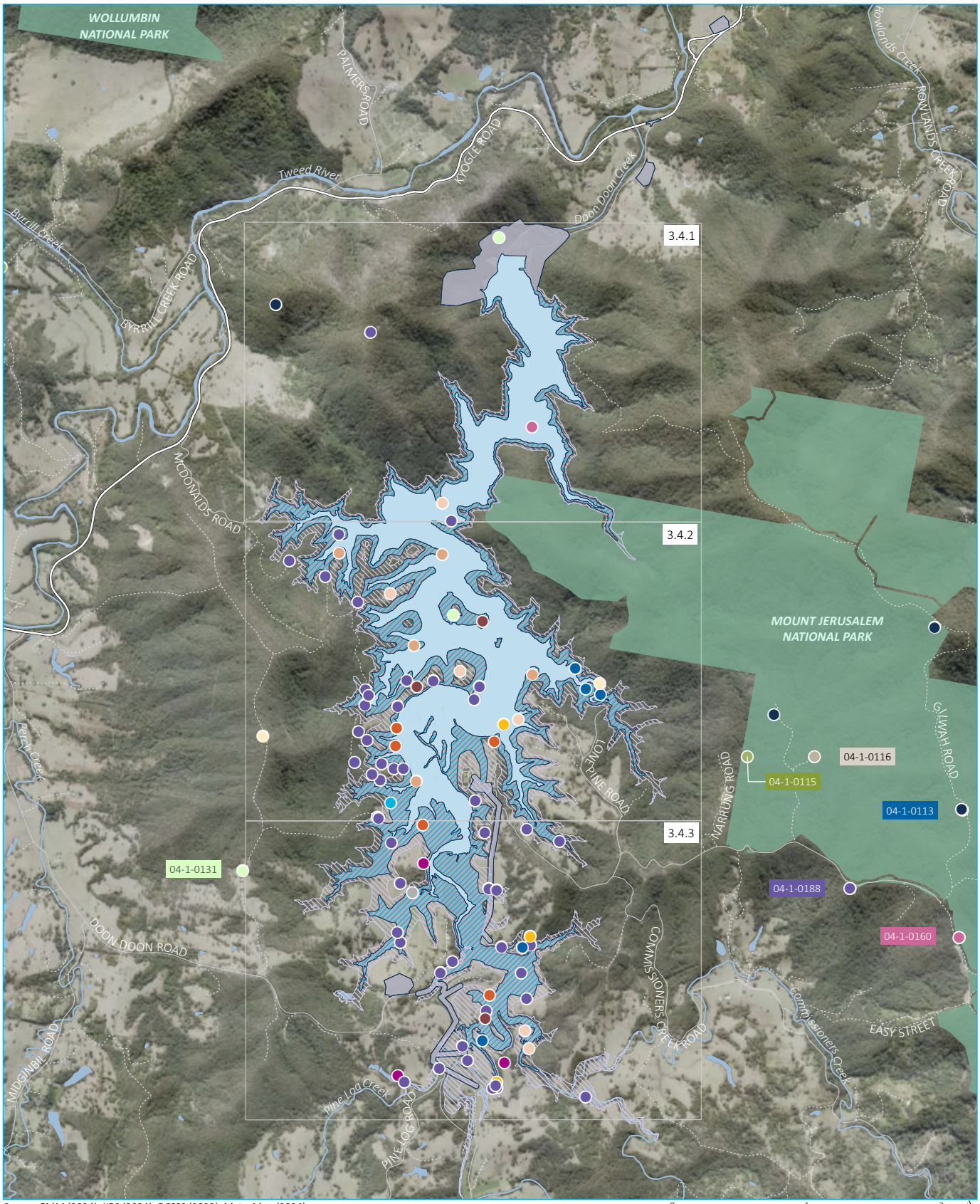
Table 3.4 AHIMS sites above the proposed FSL, but within the potential proposed PMF

AHIMS ID	Site name	Site type	Description	Documented in
04-1-0009	Midginbill DD1 BMP-05-0029	Isolated stone artefact	See Section 5 and Appendix A for further information	Mr.H Sullivan and Mr.Ian Fox, NOHC 2018
04-1-0010	Midginbill DD2 BMP-05-0030	Isolated stone artefact	See Section 5 and Appendix A for further information	Mr.H Sullivan and Mr.Ian Fox, NOHC 2018



Source: ELA (2021)

Plate 3.1 **A map showing the approximate alignment of Doon Doon Creek prior to inundation by the current Clarrie Hall Dam and how cultural materials appear to be prevalent along this corridor**



Source: EMM (2024); KBS (2024); DCSSS (2023); MetroMap (2024)

0 1 2 km
GDA2020 MGA Zone 56

N

\\emm.local\xdrive\2023\E230036- Clarrie Hall Dam EIS- Project management\GIS\02_Maps_ACHA\ACHA003_AHIMS\ACHA003_AHIMS_Overview_20240318_01.aprx 25/07/2024

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Page reference

AHIMS site type

- Aboriginal ceremony and dreaming
- Aboriginal resource and gathering site including habitation structure
- Artefact scatter- very high density (100+)
- Artefact scatter- high density (51-100)
- Artefact scatter- moderate density (21-50)
- Artefact scatter- low density (2-20)
- Art site (pigment or engraved) and undefined artefact site
- Culturally modified tree
- Grinding groove
- Isolated find
- PAD
- Quarry
- Restricted
- Shell midden site
- Stone arrangement
- Undefined artefact site
- Undefined artefact site and culturally modified tree
- Undefined artefact site and culturally modified tree and PAD

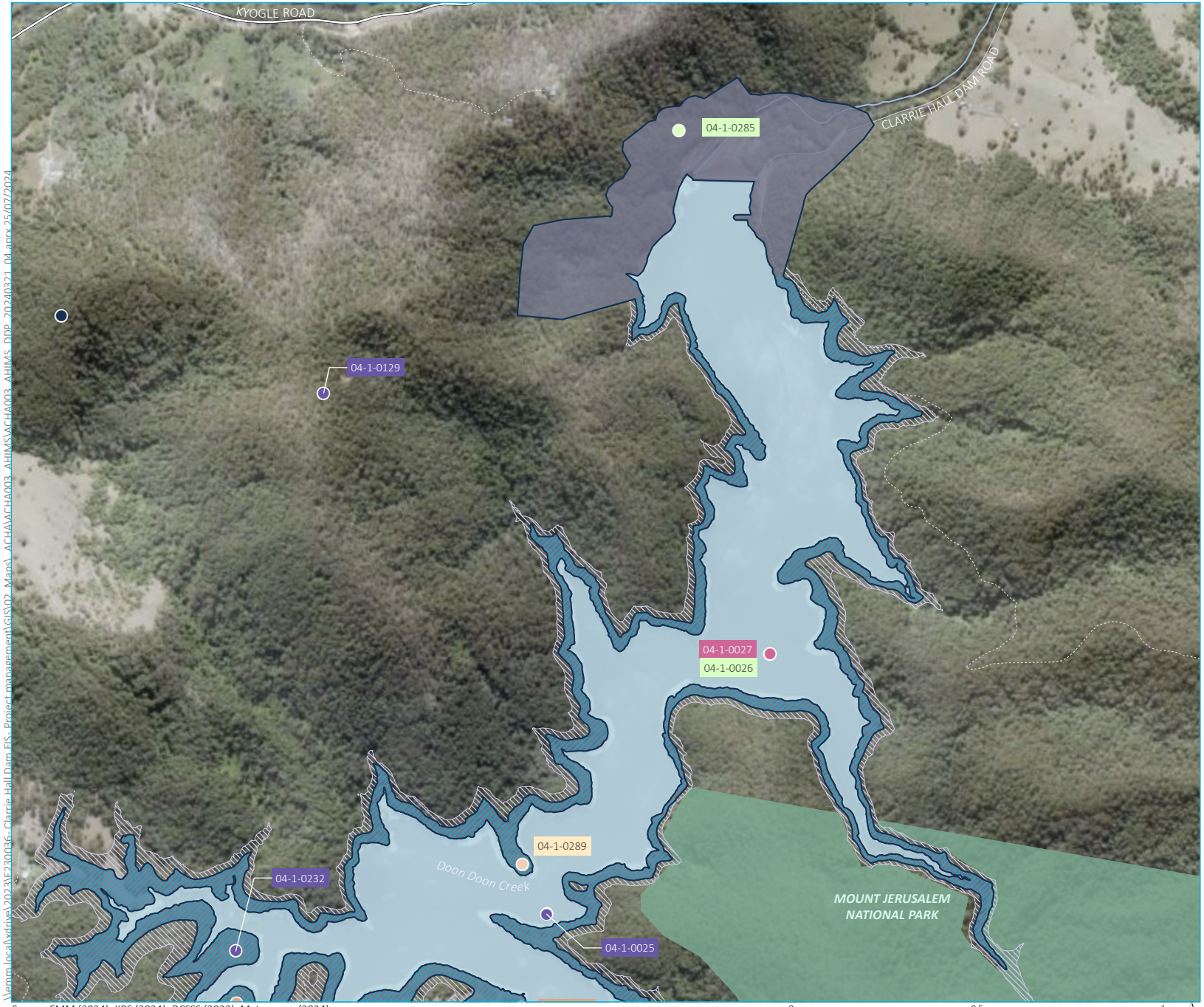
Existing environment

- Major road
- Minor road
- Vehicular track
- Named watercourse
- Waterbody
- NPWS reserve

Previously documented Aboriginal objects and sites within the Proposal

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 3.4

EMM
creating opportunities



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)

AHIMS site type

- Artefact scatter- moderate density (21-50)
- Artefact scatter- low density (2-20)
- Culturally modified tree
- Restricted
- Undefined artefact site
- Undefined artefact site and culturally modified tree

Existing environment

- Major road
- Minor road
- Vehicular track
- Named watercourse
- NPWS reserve

\\emm.local\xdrive\2023\E230036- Clarrie Hall Dam EIS- Project management\GIS\02_Maps_ACHA\ACHA003_AHIMS\ACHA003_AHIMS_DPP_20240321_04.aprx 25/07/2024

Source: EMM (2024); KBS (2024); DCSSS (2023); Metromaps (2024)

0 0.5 1 km

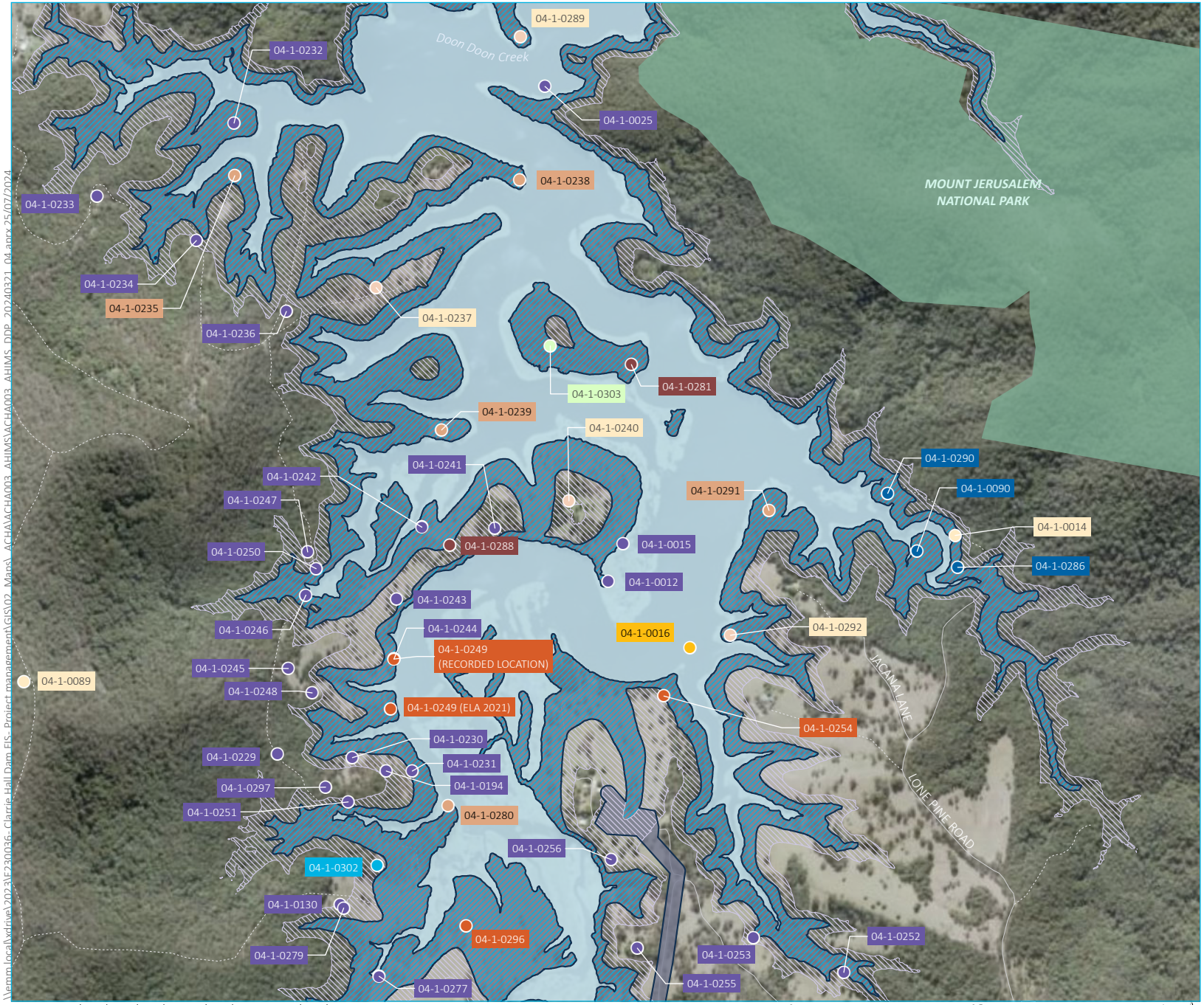
GDA2020 MGA Zone 56

N

Previously documented Aboriginal objects and sites within the Proposal

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 3.4.1

EMM creating opportunities



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)

AHIMS site type

- Aboriginal resource and gathering site including habitation structure
- Artefact scatter- very high density (100+)
- Artefact scatter- high density (51-100)
- Artefact scatter- moderate density (21-50)
- Artefact scatter- low density (2-20)
- Culturally modified tree
- Grinding groove
- Isolated find
- PAD
- Undefined artefact site

Existing environment

- Minor road
- Vehicular track
- NPWS reserve

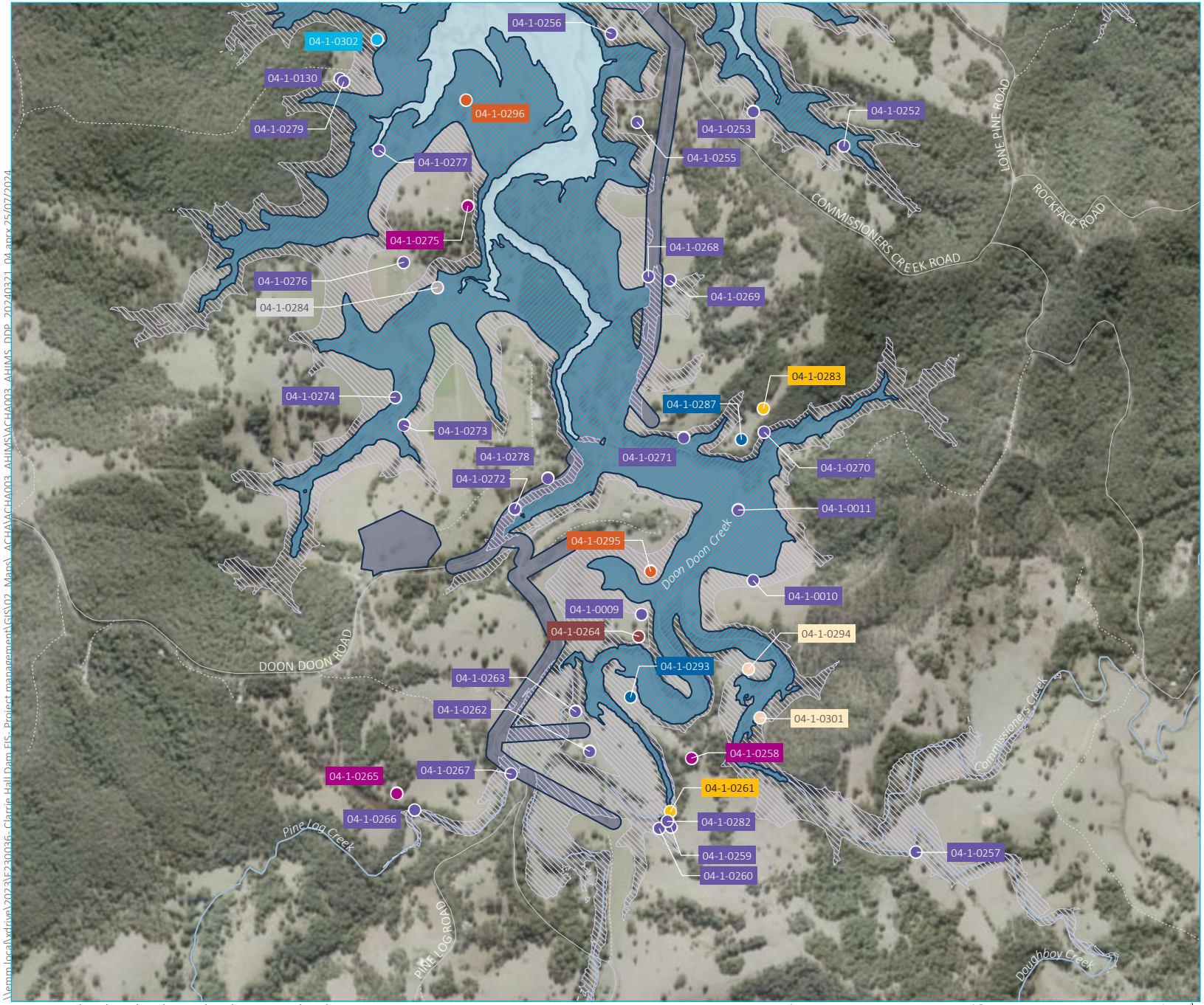
Source: EMM (2024); KBS (2024); DCSSS (2023); Metromaps (2024)

\\emm.local\xdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA003_AHIMS\ACHA003_AHIMS_DPP_20240321_04.aprx 25/07/2024

Previously documented Aboriginal objects and sites within the Proposal

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 3.4.2

EMM
creating opportunities



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)

AHIMS site type

- Artefact scatter- very high density (100+)
- Artefact scatter- high density (51-100)
- Artefact scatter- low density (2-20)
- Grinding groove
- Isolated find
- PAD
- Quarry
- Undefined artefact site
- Undefined artefact site and culturally modified tree and PAD

Existing environment

- Minor road
- Vehicular track
- Named watercourse

Source: EMM (2024); KBS (2024); DCSSS (2023); Metromaps (2024)

0 0.5 1 km

GDA2020 MGA Zone 56

N

\\emm.local\xtdrive\2023\E230036_Clarrie Hall Dam EIS_Project management\GIS\02_Maps_ACHA\ACHA003_AHIMS\ACHA003_AHIMS_DDP_20240321_04.aprx 25/07/2024

Previously documented Aboriginal objects and sites within the Proposal

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 3.4.3

EMM
creating opportunities

3.4 Predictive model

On the basis of the cultural materials registered in the region, a review of previous archaeological studies and the environmental context, the following conclusions can be drawn regarding the potential presence and location of Aboriginal sites within the project area (see also NOHC 2018 & ELA 2021):

- Artefact scatter sites, isolated finds, and potential archaeological deposits are the most common sites within the region and can occur across most landforms, even in disturbed contexts. Open stone artefact sites in the project area are usually found close to the former alignment of Doon Doon Creek (<250 m), and on elevated, level to gently inclined landforms such as hill crests and hill spur crests, ridgelines, and alluvial terraces. The most common site type is likely to be surface and/or subsurface stone artefactual material reflective of past visitation and/or occupation. High density artefact scatters are more common in close proximity to permanent watercourses.

- A common theme with the location of cultural materials, and particularly campsites, in the project area are their direct view lines towards Wollumbin (Mount Warning) (SCU 2008).

- Rock shelters and/or rock art and engravings are likely to occur in areas with sandstone outcropping or near vertical escarpments. Within the context of the project area, this site type is present along steep slopes off narrow valleys located along tributaries of Doon Doon Creek.

- Culturally modified trees may exist where native vegetation has been retained or can remain present in the landscape for a considerable time where dead or felled trees have been left. Given the past use of the region, such sites (where present) are likely to be disparate and/or localised.

- Grinding grooves and engraving sites are most likely to be present on outcropping sandstone in stream beds or adjacent to streams. Given the existing inundation of the project area, such locations are limited within the Proposal.

- Stone arrangements are most likely to occur on elevated and relatively flat landforms (e.g. crests, terraces, ridges) near sources of outcropping cobbles or small boulders capable of being moved manually. Such sites are not common in the region and are not expected in the project area.

- Middens of bone, charcoal, stone and freshwater shells may occur along extensive and reliable river systems. If present, they are most likely to occur in association with open camp sites on waterways. Given the inundation of Doon Doon Creek – the largest creek line in the project area – it is considered unlikely that such sites would be present within the Proposal.

- Burials can occur anywhere in the landscape but are notably more likely on watercourses or under rock ledges, their identification in the landscape is rare. Generally, they would be identified by mounds of earth, carved trees or stone markers. Evidence of burials is generally rare because human bodies are susceptible to the acidic Australian environments and other taphonomic processes. Where sub-surface burial is not performed, human bodies can have limited preservation in the archaeological record. Such sites and their component parts are also more susceptible to the impacts of low-level development (such as farming) than other sites.

4 Cultural values mapping

4.1 Key findings

- A project specific cultural values mapping study was undertaken by Dr Philip Clarke with the participation of several identified Bundjalung Elders and/or knowledge-holders. This included interviews and on-Country activities to identify intangible places and stories within, or near, the project area.
- The investigation identified two areas of cultural value to the Aboriginal participants, Byrrill Creek and Commissioners Creek. Neither would be adversely affected by the Proposal. Notably Byrill Creek was an earlier location for a proposed dam and was discontinued in favour of the Proposal in part due to cultural heritage reasons.
- A desktop review of ethnographic information was also undertaken and demonstrated a number of well-known Dreaming places and stories across the region, and of continued importance to the Bundjalung people. Many of these stories involve nearby Wollumbin. However, no discussion indicated the Proposal would have an adverse impact to Wollumbin, which is observable from several points of the project area.
- Continued access to the project area into the future to allow visitation and management of cultural materials was a finding of the study and is integrated into the recommendations in Section 9.

4.2 Rationale and Methods

In response to RAP concerns (Section 2.4) and to address the SEARs (Table 1.1), further exploration of cultural and intangible views was undertaken for the Proposal. A full report is provided in Appendix E, with a summary outlined in subsequent sections.

Cultural values mapping is described more fully as cultural resource mapping or cultural landscape mapping, and it refers to an eclectic range of research techniques and scholarly tools that are employed to 'map' the tangible and intangible cultural assets of people within the local landscape. It involves the application of a wide variety of techniques and activities, from community-based participatory data collection and management to the use of sophisticated mapping based on Geographic Information Systems (GIS), in order to come to terms with cultural resources for communities and places. Proponents of cultural mapping as cultural inquiry have claimed that:

> From this perspective, cultural mapping is regarded as a systematic tool to involve communities in the identification and recording of local cultural assets, with the implication that this knowledge will then be used to inform collective strategies, planning processes, or other initiatives. These assets are both tangible, or quantitative (e.g., physical spaces, cultural organizations, public forms of promotion and self-representation, public art, cultural industries, natural and cultural heritage, architecture, people, artifacts, and other material resources) and intangible, or qualitative (e.g., values and norms, beliefs and philosophies, language, community narratives, histories and memories, relationships, rituals, traditions, identities, and shared sense of place). Together, these assets help define communities (and help communities define themselves) in terms of cultural identity, vitality, sense of place, and quality of life. (Duxbury et al. 2015:2).

To apply these concepts and further understand traditional and contemporary cultural values associated with the project area and surrounds, cultural mapping was undertaken by Dr Philip Clarke, a highly experienced anthropologist, with the participation of key knowledge holders and/or elders (Appendix E). The knowledge-holders: Jackie McDonald, Paul Buxton and Kyle Slabb (Tweed/Byron Local Aboriginal Land Council), were identified during the consultation process when the cultural mapping was being discussed and organised. The fieldwork for this activity was undertaken over four days (24–27 September 2023) and included field support from Dr Alan Williams (EMM Associate Director) and Georgia Burnett (EMM Senior Archaeologist).

A detailed report of the cultural mapping and Dr. Clarke's original field notes are included in Appendix E. The report included a brief review of existing anthropological and ethnobotanical data for the region with which to compare provided oral histories and the findings of a field investigation with the key knowledge holders identifying sites, locations and values across the project footprint. The method undertaken in the current cultural mapping exercise was to record all places that the Aboriginal participants have declared to have some significance to them, and to determine whether there exists any sense of spatial boundaries. Through documenting the proposed sites an attempt would be made to determine the extent to which the stated importance is based on existing experience and knowledge of the Aboriginal informant, and to ascertain whether this is likely to be a shared opinion with other Aboriginal participants.

4.3 Results and findings

Overall, the cultural values mapping identified two places of importance to the participants in the vicinity of the project area, Byrrill Creek and Commissioners Creek. Neither would be adversely affected by the project. Commissioners Creek joins with Doon Doon Creek upstream of the project area but would not be inundated by the Proposal. Further, discussions suggest the values of this creek and surrounds are further southwards and some distance from the project area. It is highlighted that Byrrill Creek was an initial site explored for a future dam by Council prior to the Proposal. It was discontinued in part as a result of cultural heritage in this locale - a result now borne out by discussions with the Aboriginal participants.

The report also reviewed desktop information for the region and found the following:

- When Europeans first arrived, the region surrounding the project area was occupied by Aboriginal people whose descendants later became collectively known as the Bundjalung people. At the time of European colonisation, members of clans within this large group all spoke a related language and shared many cultural attributes, and today their descendants are still based in north-east New South Wales and are actively involved in managing the local Aboriginal heritage.

- At the time of European settlement, the region of the project area would have been comprised of numerous estates associated with clans as landowning groups within the Bundjalung peoples: such as the Goodjinburra people for the Tweed Coastal area, the Tul-gi-gin people for the North Arm and the Moorung-Moobar people for the Southern and Central Arms around Wollumbin (Mt Warning).

- Upon the breakdown of the clan system in the late-19th century, due to the negative impacts of European settlement, Aboriginal people with connections to the region surrounding the project area chiefly lived in settlements and large pastoral properties, where they have built and maintained identities as Bundjalung peoples.

- The main mythologies documented for the Bundjalung cultures at the time of European settlement were dominated by supreme beings, such as Baiame, Three Brothers and Dirangan the Spirit Giantess, with totemic ancestors also being of some importance. Contemporary Bundjalung people consider that these stories, along with others such as Wollumbin the Warrior Chief and the Bush Turkey, Robin Fire Story and the Coloured Bird or Old Man Pelican Story, remain important today. There are Bora Grounds and major camping grounds that are known to have existed along Byrrill Creek and Commissioners Creek in the valleys surrounding the project area.

- The ethnographic and historical records relating to the Bundjalung peoples are extensive, and, while they are incomplete, it can reasonably be expected that any highly significant cultural heritage concerning the project area would have been recorded if it had existed there.

While Wollumbin features prominently in desktop review, and it has been mentioned in a large number of Dreaming stories across the region, discussion with the Aboriginal participants did not seem to indicate that the Proposal would result in an adverse impact to the place. Views towards the mountain appear to be the most significant, and while prevalent across the project area, the Proposal would not substantively alter such view-lines with the proposed FSL changes (e.g. Plate 4.1).

Based on the above information, it was recommended that the present close working relationship between the project team and the RAPs is maintained in order to ensure that contemporary Bundjalung people continue to have access to Country, which is required for managing their cultural heritage. This finding has been incorporated in Section 9 below.

Plate 4.1 **Wollumbin looking north from Crams Farm, south of the Proposal. The Proposal would result in the water in the foreground being higher (closer to the road), but the view towards Wollumbin would be unaffected.**

5 Field investigations

5.1 Key findings

Several field surveys were undertaken for the Proposal:

- NOHC (2018) undertook an extensive field survey in 2017 as part of an earlier iteration of the Proposal. This included investigation of ~87.5% of the project area and identified some 60 previously unidentified Aboriginal objects and sites (including 21 artefact scatters, 33 isolated stone artefacts, two grinding grooves, a rockshelter, a culturally restricted site, a potential culturally modified tree, and a chalcedony knapping resource) and 10 PADs.

- ELA (2021) undertook additional field survey through minor re-designs and through extended time on site during a test excavation program. They identified a further artefact scatter, culturally modified tree and isolated stone artefact.

As part of the current Proposal, EMM undertook a short field survey of Doon Doon Creek downstream of the existing dam, proposed temporary construction camp sites, proposed concrete batching plant sites and new proposed linear infrastructure. A further low-density artefact scatter was identified south of the project area. ELA (2021) undertook archaeological test excavations of 19 of the sites identified within NOHC (2018) as having potential for subsurface cultural materials. These investigations included some 582 test pits totalling 146.5 m^2. Some 1,117 artefacts dominated by chalcedony and silcrete raw materials were recovered primarily from 20 cm below ground surface. The excavations suggest that ~24/m^2 reflects an average density were past foci of visitation and/or activity is evident, with values beneath these reflective of ephemeral or transient use. These past foci were typically ~0.81 ha in size and totalled some 8.11 ha across the project area.

5.2 Archaeological survey

As part of the earlier iterations of the Proposal, both NOHC (2018) and ELA (2021) undertook archaeological field survey of various portions of the project area. NOHC (2018) undertook an extensive field campaign that encompassed ~87.5% of the project area (up to 77 m AHD), while ELA (2021) in-filled design changes and amendments. The full details of these activities are presented in Appendix A with relevant summaries provided in subsequent sections.

5.2.1 Previous field survey by NOHC (2018)

i Survey methods

Section 7.6 of NOHC (2018) outlines the field survey for the project (Appendix A). The archaeological field survey was undertaken between 16–27 October 2017, and comprised of pedestrian field transects within defined landform units (Plate 5.1 to Plate 5.4). NOHC's survey team involved 5–8 people (RAPs and archaeologists) with each survey participant spaced ~5 m apart across the survey areas. The site location of Aboriginal sites observed during the site inspection had their location marked with a handheld non-differential GPS unit. The aim of the survey was to identify Aboriginal sites and PADs across the project area.

Overall, the archaeological field survey included 188 survey units and sample strategy areas covering 4,360,688 m^2. Of this, some 87.5% (~3,816,775 m^2) was subject to inspection (Plate 5.1), while the remaining 12.5% was modelled using existing data. This latter component totalling ~543,913 m^2 was located in close proximity to the existing dam and was considered generally too steep to access or investigate safely. Overall, effective coverage was limited (<1%) due to dense grass and bush cover across the areas investigated.

ii Results

The field investigations identified 70 previously unidentified Aboriginal objects and sites in the project area (Table 5.1, Figure 5.1). The field survey also re-examined previously documented Aboriginal objects and/or sites. It re-examined three rockshelter sites, #04-1-0013, #04-1-0014, and #04-1-0090. It was shown that #04-1-0013 was some 500 m from the project area, while the other two are discussed in Section 2.4.2. However, 15 other known sites and places where not re-found, with several previously inundated (#04-1-0025, #04-1-0026/#04-1-0027, #04-1-0012, #04-1-0014, #04-1-0016.

The sites identified were predominantly discovered on crest (n=23) and mid-slope (n=23) landforms (Table 5.1). Given the limited investigation of crests compared with mid-slope landforms, it suggests the former was more attractive for visitation and use in the past. Basal slopes, drainage lines and stream bank landforms identified low density artefact scatters, which NOHC (2018) noted was potentially a result of low visibility and exposure during the investigations.

The complex geology of the region (Section 3.2.1) heavily influenced the nature of the cultural assemblage recovered, with over 10 different types of raw material encountered. Of note was the use of greywacke for ground edge-axes, at least one of which was observed during the current investigations.

Table 5.1 Landform summary by documented Aboriginal objects and sites (reproduced from Table 7.4 of NOHC [2018])

Landform	Landform area (m^2)	Area effectively surveyed (m^2)	% Landform effectively surveyed	Site identified (n)	Number of artefacts or features
Crest	533,655	14,520.76	2,72	23	89
Mid-slope	1,544,077	13,112.44	0.85	23	43
Basal slope	352,149	2,587.78	0.73	2	7
Flats	295,703	273.28	0.09	0	0
Drainage line	1,002,864	5,425.23	0.54	4	4
Stream bank/channel	88,327	482.27	0.55	2	2
Total	**3,816,775**	**36,401.76**	**0.95**	**54**	**145**

Notes: Sites exclude PADs, grinding grooves, culturally modified trees and culturally restricted sites.

iii Additional Aboriginal sites identified

The cultural assemblage documented consists of 21 artefact scatters, 33 isolated finds, two grinding grooves, 10 PADs, one rock shelter, one culturally modified tree, one culturally restricted site and one quarry listed as a chalcedony knapping resource. These are summarised in Table 5.2 and Table 5.3, with detailed descriptions in Appendix A.

NOHC (2018) documented a further 17 Aboriginal objects and sites from previous investigations to give an overall cultural assemblage of 87 for the Proposal. They further noted that five of these were inundated at time of investigation.

Table 5.2 Previously unidentified Aboriginal sites recorded by NOHC (2018)

Site type	Number of sites	Site name
Artefact scatter	21	CHD-A4, CHD-A6, CHD-A8, CHD-A16, CHD-A17, CHD-A19, CHD-A22, CHD-A26, CHD-A27, CHD-A30, CHD-A31, CHD-A32, CHD-A34, CHD-A36, CHD-A40, CHD-A41, CHD-A43, CHD-A48, CHD-A49, CHD-A50, CHD-A55
Isolated find	33	CHD-A1, CHD-A2, CHD-A3, CHD-A5, CHD-A7, CHD-A9, CHD-10, CHD-11, CHD-12, CHD-13, CHD-A14, CHD-15, CHD-A18, CHD-A21, CHD-A23, CHD-A24, CHD-A25, CHD-A28, CHD-A29, CHD-A33, CHD-A35, CHD-A37, CHD-A38, CHD-A39, CHD-A42, CHD-A44, CHD-A45, CHD-A46, CHD-47, CHD-A51, CHD-A52, CHD-A53, CHD-A54
Grinding groove	2	CHD-A20, CHD-A57
PADs	10	CHD-PAD1, CHD-PAD2, CHD-PAD3, CHD-PAD4, CHD-PAD5, CHD-PAD6, CHD-PAD7, CHD-PAD8, CHD-PAD9, CHD-PAD10
Rock shelter	1	CHD-RS1
Culturally modified tree	1	CHD-ST1
Restricted site	1	CHD-A56
Quarry	1	CHD-G1
Total	**70**	

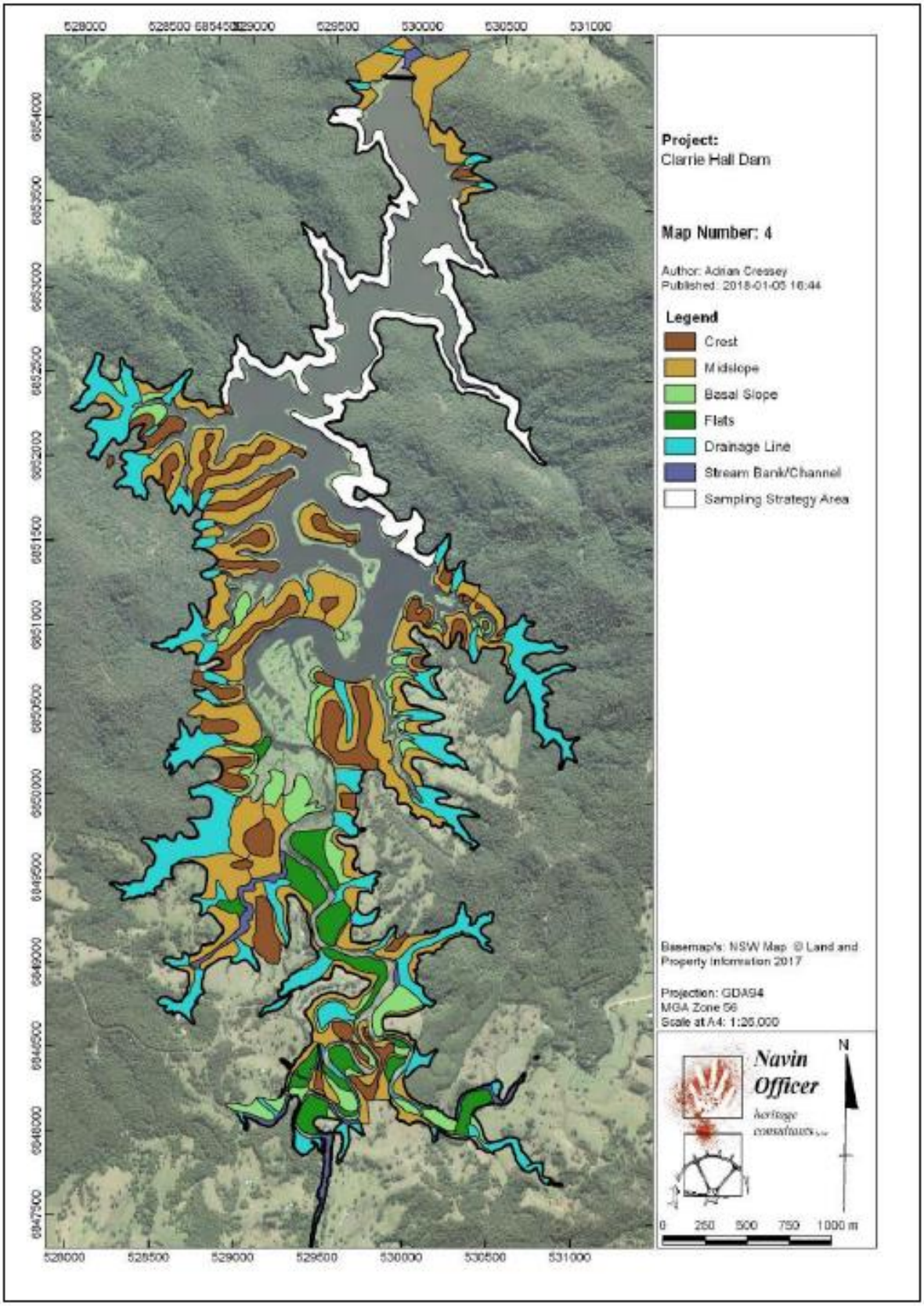


Plate 5.1 **A landform map of areas investigated by NOHC (2018) and totalling some 87.5% of the project area. White areas were considered to unsafe to access and where subject to predictive modelling.**

5.2.2 Previous field survey by ELA (2021)

i Survey methods

Information on the exact methods and location of the field survey by ELA (2021) is not provided in the ELA (2021) report. However, several sections indicate that field investigations occurred with the Aboriginal participants resulting from both Proposal design changes, and that additional field survey occurred as an indirect result of being on site for nine weeks, while archaeological excavations were being undertaken (i.e., while transiting to/from the various excavation areas). It is assumed that similar methods of inspection and recording as NOHC (2018) were adopted by ELA.

The locations of the identified sites from these works suggest that the focus of the field survey was on the southern portions of the project area near Crams Farm, and may have focused on roads, transmission or other infrastructure where relatively good access, and good ground surface visibility, was identified.

ii Additional sites identified

ELA (2021) documented three further Aboriginal sites from their field survey works (Table 5.3). These included:

- CHD-AS 1 (#04-1-0301) -seven artefacts found in an erosion feature on Billabong Farm, and including silcrete, chalcedony and silcrete flakes.
- CHD-1 (#04-1-0302) – a hand axe found on a farming track on Commissioners Creek Road.
- CHD-ST2 (#04-1-0303) – a potential culturally modified tree found on an island within the current dam reservoir during the works. An irregular, 1.3 m long scar was found on a dead mahogany tree.

Table 5.3 Summary of the identified cultural assemblage identified by NOHC (2018) and ELA (2021)

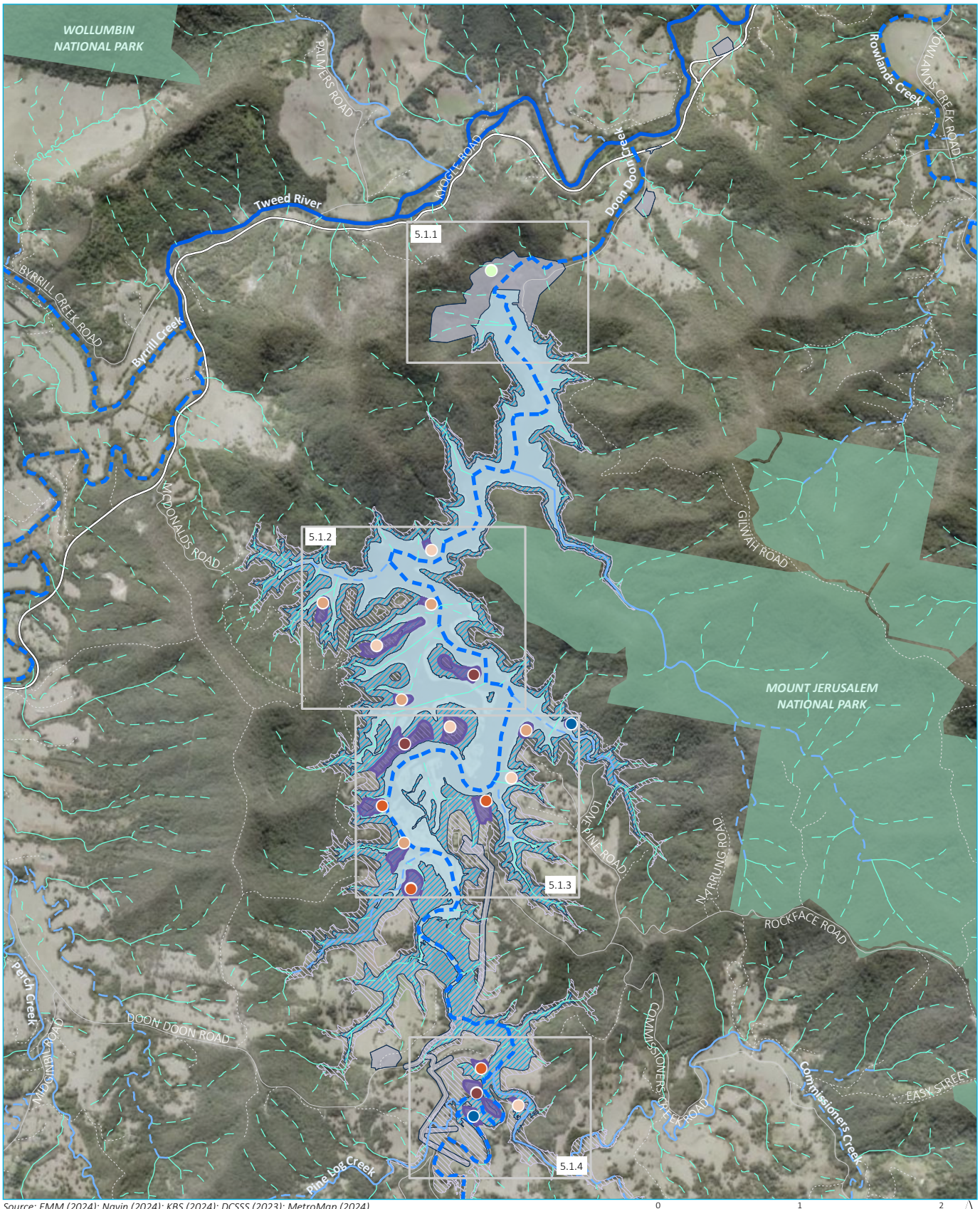
AHIMS ID	AHIMS site name	Site type
04-1-0229	CHD-A50	Low density artefact scatter (2-20)
04-1-0230	CHD-A52	Isolated stone artefact
04-1-0231	CHD A51	Isolated stone artefact
04-1-0232	CHD-A31	Low density artefact scatter (2-20)
04-1-0233	CHD-A32	Low density artefact scatter (2-20)
04-1-0234	CHD-A33	Isolated stone artefact
04-1-0235	CHD-A30	Low density artefact scatter (2-20) and PAD
04-1-0236	CHD-A34	Low density artefact scatter (2-20)
04-1-0237	CHD-A35	Isolated stone artefact and PAD
04-1-0238	CHD-A36	Low density artefact scatter (2-20) and PAD
04-1-0239	CHD-A37	Isolated stone artefact and PAD
04-1-0240	CHD-A38	Isolated stone artefact and PAD
04-1-0241	CHD-A39	Isolated stone artefact
04-1-0242	CHD-A40	Low density artefact scatter (2-20)

Table 5.3 Summary of the identified cultural assemblage identified by NOHC (2018) and ELA (2021)

AHIMS ID	AHIMS site name	Site type
04-1-0243	CHD-A41	Low density artefact scatter (2-20)
04-1-0244	CHD-A42	Isolated stone artefact
04-1-0245	CHD-A43	Low density artefact scatter (2-20)
04-1-0246	CHD-A44	Isolated stone artefact
04-1-0247	CHD-A46	Isolated stone artefact
04-1-0248	CHD-A47	Isolated stone artefact
04-1-0249	CHD A48	Low density artefact scatter (2-20) and PAD
04-1-0250	CHD-A45	Isolated stone artefact
04-1-0251	CHD-A53	Isolated stone artefact
04-1-0252	CHD-A29	Isolated stone artefact
04-1-0253	CHD-A28	Isolated stone artefact
04-1-0254	CHD-A27	Moderate density artefact scatter (21–50) and PAD
04-1-0255	CHD-A26	Low density artefact scatter (2–20)
04-1-0256	CHD-A25	Isolated stone artefact
04-1-0257	CHD-A24	Isolated stone artefact
04-1-0258	CHD-A23	Isolated stone artefact and PAD
04-1-0259	CHD-A22	Low density artefact scatter (2–20)
04-1-0260	CHD-A21	Isolated stone artefact
04-1-0261	CHD-A20	Grinding groove (natural holes and pitting in bedrock, may be more suitably identified as a natural resource feature)
04-1-0262	CHD-A19	Low density artefact scatter (2–20)
04-1-0263	CHD-A18	Isolated stone artefact
04-1-0264	CHD-A17	Moderate density artefact scatter (21–50) and PAD
04-1-0265	CHD-A16	Low density artefact scatter (2–20) and PAD
04-1-0266	CHD-A15	Isolated stone artefact
04-1-0267	CHD-A14	Isolated stone artefact
04-1-0268	CHD-A13	Isolated stone artefact
04-1-0269	CHD-A12	Isolated stone artefact
04-1-0270	CHD-A11	Isolated stone artefact
04-1-0271	CHD-A10	Isolated stone artefact
04-1-0272	CHD-A9	Isolated stone artefact
04-1-0273	CHD-A8	Low density artefact scatter (2–20)

Table 5.3 Summary of the identified cultural assemblage identified by NOHC (2018) and ELA (2021)

AHIMS ID	AHIMS site name	Site type
04-1-0274	CHD-A7	Isolated stone artefact
04-1-0275	CHD-A6	Low density artefact scatter (2–20) and PAD
04-1-0276	CHD-A5	Isolated stone artefact
04-1-0277	CHD-A4	Low density artefact scatter (2–20)
04-1-0278	CHD-A3	Isolated stone artefact
04-1-0279	CHD-A2	Isolated stone artefact
04-1-0280	CHD-A1	Isolated stone artefact and PAD
04-1-0281	CHD-A55	Low density artefact scatter (2–20) and PAD
04-1-0282	CHD-A54	Isolated stone artefact
04-1-0283	CHD A57	Grinding groove (n=1)
04-1-0284	CHD-G1	Chalcedony geological outcrop (natural resource) identified elsewhere as quarry or knapping site
04-1-0285	CHD-ST1	Culturally modified tree
04-1-0286	CHD-RS1	Rockshelter (associated with #4-1-0014)
04-1-0287	CHD-PAD10	PAD
04-1-0288	CHD-PAD9	PAD
04-1-0289	CHD-PAD8	PAD
04-1-0290	CHD-PAD7	PAD
04-1-0291	CHD-PAD6	PAD
04-1-0292	CHD-PAD5	PAD
04-1-0293	CHD-PAD3	PAD
04-1-0294	CHD-PAD4	PAD
04-1-0295	CHD-PAD2	PAD
04-1-0296	CHD PAD1	PAD
04-1-0297	CHD-A49	Low density artefact scatter (2–20)
04-1-0301	CHD-AS1	Low density artefact scatter (2–20)
04-1-0302	CHD-1	Isolated find
04-1-0303	CHD_ST2	Culturally modified tree



Source: EMM (2024); Navin (2024); KBS (2024); DCSSS (2023); MetroMap (2024)

0 1 2 km

GDA2020 MGA Zone 56

N

\\emm.local\xdrive\2023\E230036- Clarrie Hall Dam EIS- Project management\GIS\02_Maps_ACHA\ACHA008_NavinSurvey\ACHA008_NavinSurveyOverview_20240318_01.aprx 25/07/2024

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeolgical deposit
- Page reference

AHIMS site type

- Artefact scatter- very high density (100+)
- Artefact scatter- high density (51-100)
- Artefact scatter- moderate density (21-50)
- Artefact scatter- low density (2-20)
- Culturally modified tree
- PAD

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 4th order
- 5th order
- 6th order

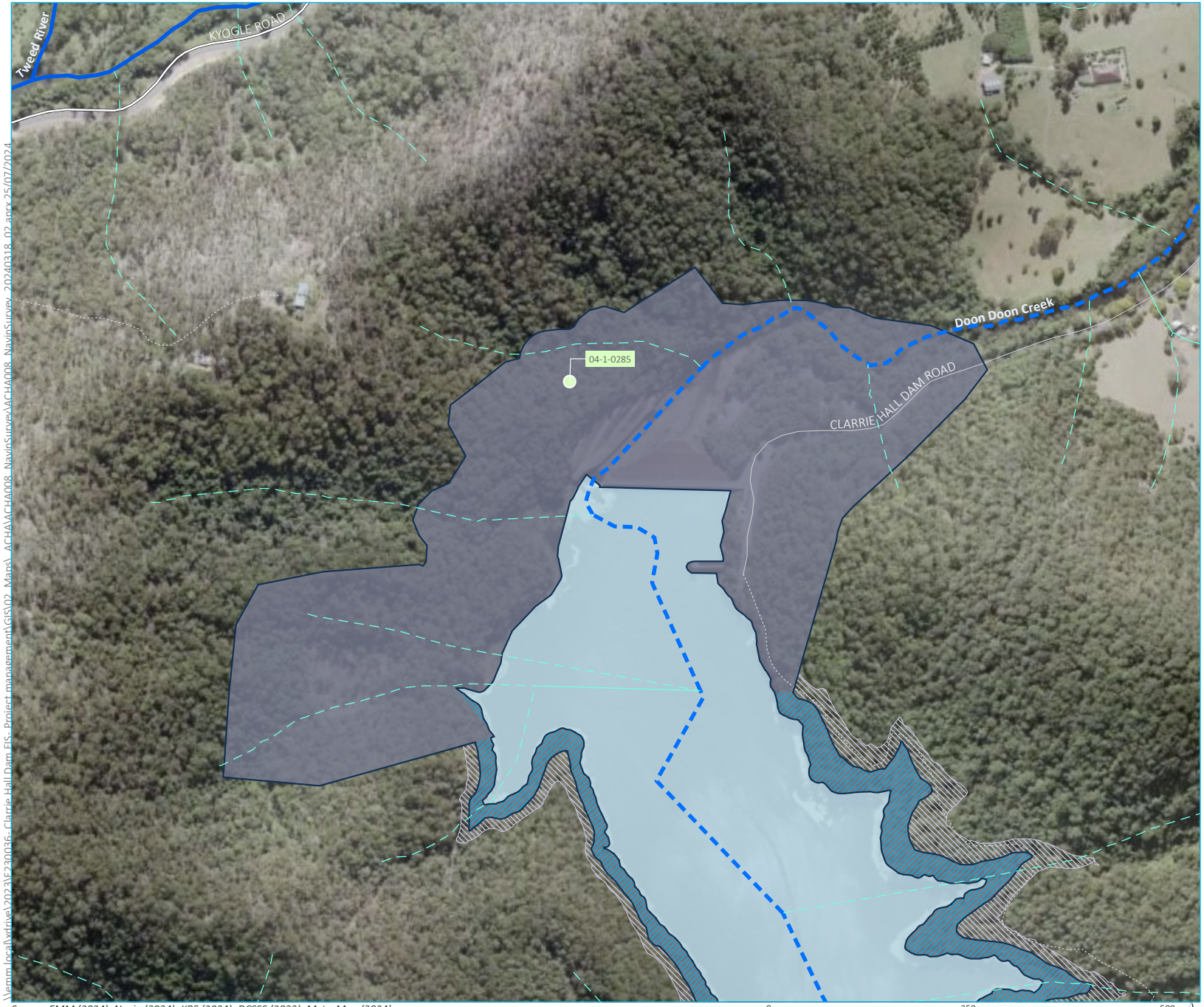
Existing environment

- Major road
- Minor road
- Vehicular track
- NPWS reserve

Aboriginal objects and sites identified by NOHC (2018) and ELA (2021) within the Proposal

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.1

EMM
creating opportunities



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeological deposit

AHIMS site type

- Culturally modified tree

Strahler stream order

- 1st order
- 2nd order
- 5th order
- 6th order

Existing environment

- Major road
- Minor road
- Vehicular track

Source: EMM (2024); Navin (2024); KBS (2024); DCSSS (2023); MetroMap (2024)

0 250 500 m

GDA2020 MGA Zone 56

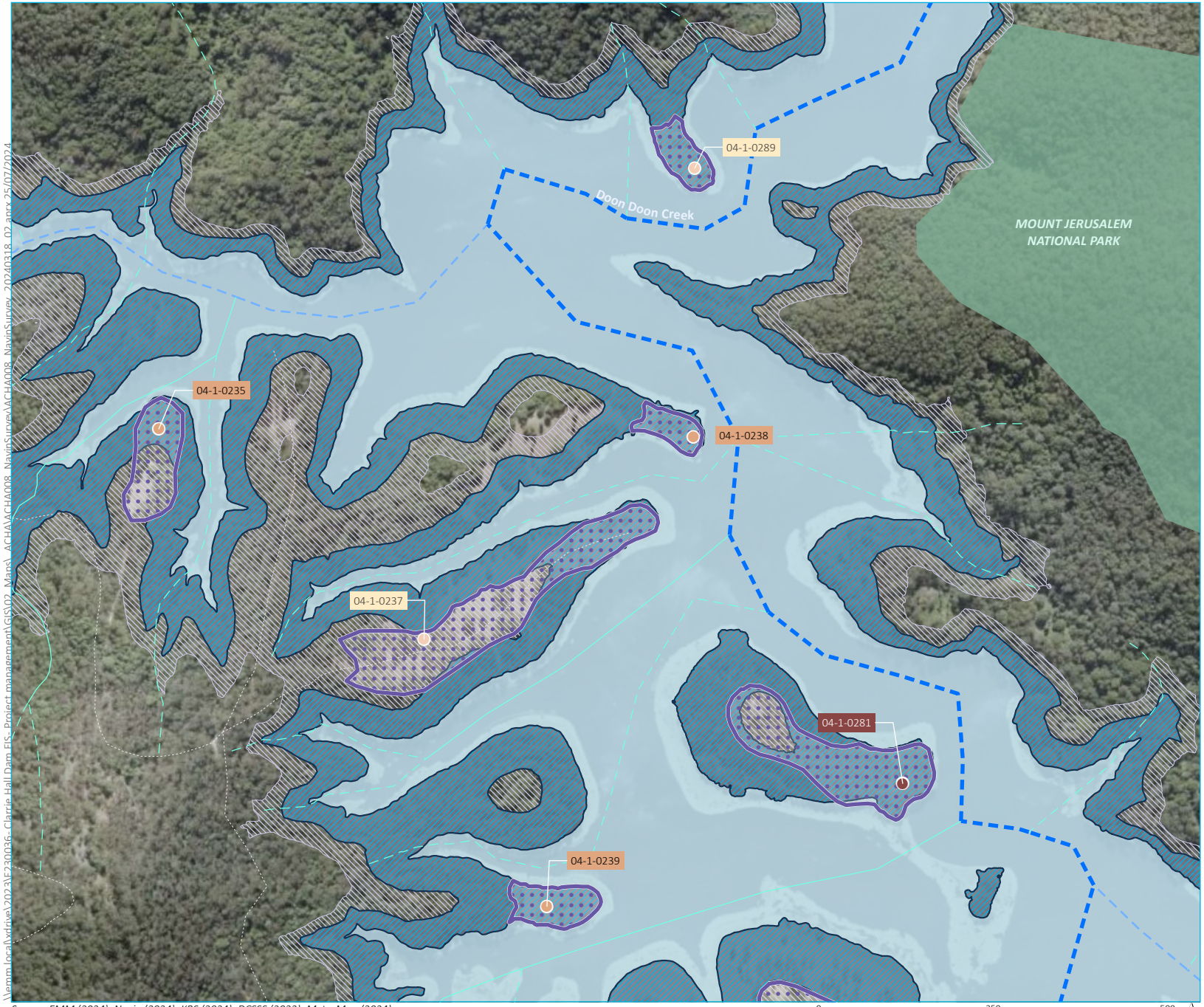
N

\\emm.local\vdrive\2023\E230036_Clarrie Hall Dam EIS_Project management\GIS\02_Maps_ACHA\ACHA008_NavinSurvey\ACHA008_NavinSurvey_20240318_02.aprx 25/07/2024

Aboriginal objects and sites identified by NOHC (2018) and ELA (2021) within the Proposal

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.1.1

EMM
creating opportunities



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeological deposit

AHIMS site type

- Artefact scatter- very high density (100+)
- Artefact scatter- moderate density (21-50)
- Artefact scatter- low density (2-20)

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track
- NPWS reserve

Source: EMM (2024); Navin (2024); KBS (2024); DCSSS (2023); MetroMap (2024)

0 250 500 m

GDA2020 MGA Zone 56

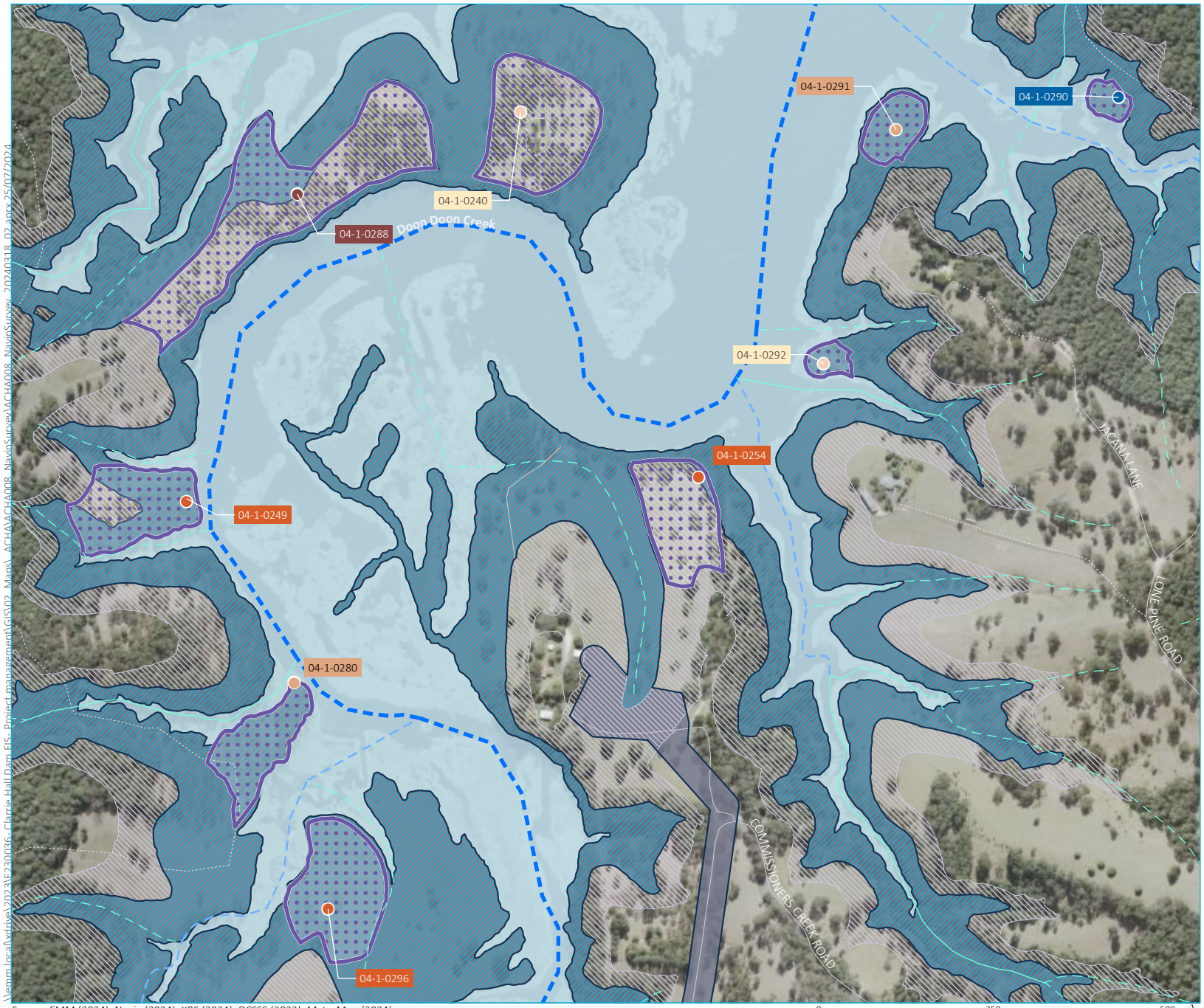
N

\\emm.local\xdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA008_NavinSurvey\ACHA008_NavinSurvey_20240318_02.aprx 25/07/2024

Aboriginal objects and sites identified by NOHC (2018) and ELA (2021) within the Proposal

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.1.2

EMM
creating opportunities



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeological deposit

AHIMS site type

- Artefact scatter- very high density (100+)
- Artefact scatter- high density (51-100)
- Artefact scatter- moderate density (21-50)
- Artefact scatter- low density (2-20)
- PAD

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Source: EMM (2024); Navin (2024); KBS (2024); DCSSS (2023); MetroMap (2024)

0 250 500 m

GDA2020 MGA Zone 56

N

\\emm.local\xdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA008_NavinSurvey\ACHA008_NavinSurvey_20240318_02.aprx 25/07/2024

Aboriginal objects and sites identified by NOHC (2018) and ELA (2021) within the Proposal

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.1.3

EMM
creating opportunities

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeological deposit

AHIMS site type

- Artefact scatter- very high density (100+)
- Artefact scatter- high density (51-100)
- Artefact scatter- low density (2-20)
- PAD

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 4th order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

\\emm.local\vdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA008_NavinSurvey\ACHA008_NavinSurvey_20240318_02.aprx 25/07/2024

Source: EMM (2024); Navin (2024); KBS (2024); DCSSS (2023); MetroMap (2024)

0 250 500 m

GDA2020 MGA Zone 56

N

Aboriginal objects and sites identified by NOHC (2018) and ELA (2021) within the Proposal

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.1.4

EMM creating opportunities

5.2.3 Additional field survey undertaken for the Proposal

A small number of areas were subject to additional field survey as part of the Proposal for this ACHA. These areas fell outside the investigations of NOHC (2018) and ELA (2021). They primarily included new infrastructure elements, such as proposed construction camp sites, proposed concrete batching plant sites and transmission lines to the south of the project area, and further consideration of Doon Doon Creek downstream of the dam. While EMM (2023a, 2023b) indicated no visible or material changes to the creek, inspection of the banks was undertaken to ensure a comprehensive assessment.

The field survey was conducted by EMM archaeologists with the assistance of RAP representatives (Table 5.4) between 17 and 18 January 2024. The survey was completed over a total of two field days and was directed by Mikhaila Chaplin with the assistance of Courtney Culley (EMM Archaeologists).

The primary aims of the survey were to:

- identify Aboriginal archaeological sites and/or Aboriginal places with the assistance of Aboriginal knowledge holders
- characterise the landscape to aid predictions of archaeological potential
- identify sites or areas that would require further investigation if planned for development as part of the Proposal
- identify sites or areas to be avoided by development, where possible
- identify areas with minor or negligible Aboriginal cultural heritage values that are most suitable for development.

Table 5.4 Aboriginal stakeholder representatives present during the survey

Organisation	Representative
Jackie McDonald	Kalib Nicholis
Paul Buxton	Paul Buxton
Tweed Byron LALC	Maurice Gannon

i Survey methods

The archaeological survey and data collection methods followed Section 2.2 of the Code (DECCW 2010a). The survey involved pedestrian field transects within defined landform units. The survey team included two EMM archaeologists and the participation of three locally based RAPs and traditional owners each day (Table 5.4). An overview of the survey tracks completed is visible on Figure 5.2.

Each survey participant was spaced ~5 m apart across the survey areas. This method was considered to be suitable for a landscape with areas to capture areas of high exposure and visibility whereby suitable ground exposures were easy to identify and targeted this spacing. The project area consisted of primarily hillslope landforms interspersed with stream channels, hillcrest, and plains with generally low exposure and ground visibility for identifying cultural materials or their potential to be present.

The effectiveness of the survey is determined through recording and analysing survey coverage data. It is evaluated for its effectiveness in identifying the distribution of Aboriginal objects across the landscape, taking into account the potential for archaeological deposits. The percentage of ground surface exposed in each landform and the visible ground surface with exposures (as ground exposures are often obscured by vegetation and gravels, etc.) influences the survey results. For example, an archaeologically sensitive landform surface that is highly exposed by erosion is likely to reveal Aboriginal objects, whereas a similar landform that is thickly grassed will obscure surface artefacts if they are present. Overall, calculation of effective survey coverage is used to estimate not only how much area was physically surveyed, but also how favourable the survey conditions were for the identification of Aboriginal sites.

Site recording was completed in accordance with the Code (DECCW 2010a). Site locations and their details were recorded with digital tablets using site recording forms created by EMM on the Survey123 application for ArcGIS (Esri© software). The digital tablets had a location accuracy of up to ±3 m which is similar to hand-held non-differential GPS units. The Survey123 forms allowed for a site's location, details, and representative photographs to be linked together, which avoided potential post-fieldwork issues around data integrity.

All Aboriginal site locations observed during the site inspection had their location marked with a handheld non-differential GPS unit and site locations and details were checked and finalised using ArcGIS software Collector and ArcMap post-fieldwork. These locations were linked to the Survey123 site locations and assisted in defining site boundaries during the post-fieldwork phases of this ACHA.

Survey transects were recorded on separate Survey123 form created by EMM. The Survey123 form allowed for survey transects starting points, details, and representative photographs to be recorded. The course of survey transects were recorded as tracks on hand-held non-differential GPS units which were linked to the Survey123 forms.

ii Results

The field survey involved targeted investigation of the project area for the newly proposed construction compound, workforce accommodation and Conductor CH 11KV areas and portions of Doon Doon Creek downstream of the current dam. EMM surveyed areas of the targeted development footprint that were not included as part of the previous survey conducted by NOHC (2018) or ELA (2021) between 16–27 October 2017.

Overall, the archaeological field survey included eight survey units (SU) covering 85,853 m^2 of effective coverage. Overall, exposure was relatively low (n=10-20%) with an average visibility of ~20%, and average effective coverage of ~22.5% (Table 5.5). The survey encountered low visibility due to low and dense grass and vegetation coverage, as well as localised flooding of access tracks and exposures.

The project area is positioned within the regional setting of mountains, with the survey area situated on hillslopes, hillcrests, plains, and stream channels (Plate 5.2 – Plate 5.23). Areas have been extensively cleared for farming and construction of road corridors. A total of one Aboriginal site (composed of two stone artefacts) were documented in survey unit 6 (Table 5.6) and discussed further in Section 5.3.

Approximately 1 km north-west of Clarrie Hall Dam, SU1 was located across a portion of Lot 76 DP755730 and Lot 29 DP 755730, at 45 Clarrie Hall Dam Road, where a construction compound/workforce accommodation is proposed to be located adjacent to Doon Doon Creek. A first order tributary of Doon Doon Creek runs directly through SU1 on a north to south orientation and enters the site along the western boundary via a concrete drain that allows water to pass under Clarrie Hall Dam Road to Doon Doon Creek. At the time of the field survey, this watercourse had flooded after a period of rain in the region which made inspecting areas with exposures below impossible. The environment consisted of steep hillslopes to the north and south of the stream channel and in the north-east corner of the survey area with a hillcrest present entering the survey area from the east. Soil profiles displayed a dark brown sandy clay loam that is characteristic of the Frogs Hollow soil landscape in the area. The survey unit was heavily vegetated in the south-east corner and included consistent low grass coverage across the SU. Visibility and exposure were low as a result of this, although exposures were present along cattle tracks due to

livestock activities. The SU was subjected to pastoral activities, and included localised disturbance such as vehicle tracks, construction of an ancillary structure in the southern half of SU1, fence installation, construction of Clarrie Hall Dam Road and the establishment of concrete drain along the western boundary of the SU. An area within the south-west of the SU was not surveyed due to its steep terrain and thick vegetation with low visibility due to dense vegetation and leaf litter.

SU2 was undertaken across Lot 5 DP1130130, at 1 Tarcoola Lane, located 2.2 km north-east of Clarrie Hall Dam where a construction compound/workforce accommodation is proposed to be located. The survey area is located 90 m south of Tweed River and surrounded by lower order tributaries of Tweed River along the east and west boundaries of the SU. The SU was located along a flat plain landscape, with consistent low grass cover and no mature trees. Visibility was extremely low due to low lying dense grass cover. Waterlogged soils were observed and no ground exposures were present. Previous disturbance was noted across SU2 and included activities related to low intensity farming, livestock activities, and fencing for a cattle processing area in the south-east of the survey area.

SU3 is located 5.4 km south-west of Clarrie Hall Dam at 511 Doon Doon Road within Lot 2 DP838936 where workforce accommodation is proposed to be located. Low order tributaries of Doon Doon Creek are located in close proximity surrounding the survey area with the closest located 20 m north-east. The SU comprised of a hillslope and hillcrest landscape with occasional mature trees. An asphalt driveway divides the survey area as it enters the site from the south-west corner and continues east. The area surrounding the driveway has low visibility and exposures due to the presence of very tall dense grass and was decided between with the field team that the area would not be surveyed due to high risks of ticks and snakes. Past disturbances across SU3 include the establishment of an asphalt driveway which involved cutting into the hillslope, fences and previous pastoral activities.

Two road corridors were surveyed as part of this study and included portions of Commissioners Creek Road (SU4) and Doon Doon Road (SU7) where a Conductor CH 11KV is proposed to be located. SU4 begun at the entrance of 145 Commissioners Creek Road (Lot 1 DP716151) and continued 600 m south down Commissioners Creek Road. The starting point of SU7 is located out the front of 571 Doon Doon Road and continued south for 620 m until reaching Pine Log Creek. Two lower order tributaries of Doon Doon Creek were present travelling under Commissioners Creek Road in SU4 via concrete drains. Both SU4 and SU7 were located on an undulating moderate rolling hills landforms with evidence of past disturbance relating to the establishment of the roads which involved cut and fill activities to level out the road. Visibility was poor due to the presence of long grass and leaf litter with occasional erosion scalds. Soil profiles displayed were redeposited brown sandy clay loam soils of which reflected the disturbance from the construction of these road corridors.

SU5 included a 100 m transect at 60 Commissioners Creek Road (Lot 1 DP877100) where a Conductor CH 11KV is proposed to be located. The survey unit is located 80 m north of Doon Doon Creek on a moderate hillslope landform. Mature trees were scattered within SU5 and predominantly located closer to the hillcrest in the east. Visibility was limited due to low grass cover and no exposures were visible due to this. Previous disturbances noted in SU5 include low intensity farming and livestock activities, fence installation and the establishment of the current electrical transmission line.

SU6 was undertaken at 571 Doon Doon Road within Lot 1 DP1257191, located 5.7 km south of Clarrie Hall Dam where a Conductor CH 11KV is proposed to be located. A first order tributary of Doon Doon Creek is located 60 m south of SU6 with Doon Doon Creek located 280 m south-east. SU6 was located on a moderately inclined hillslope and hillcrest landform with a driveway present on an east to west orientation that included a row of mature trees on either side. Visibility was low due to low lying grass cover, although exposures were present along cattle tracks due to livestock activities. Soil profiles displayed dark brown sandy clay loam which is characteristic of the Kunghur soil profile of the area. Previous disturbance within SU6 includes the construction of the property's driveway which follows the hillcrest landform, livestock activities, installation of fences, landscaping, and the establishment of the current electrical transmission line.

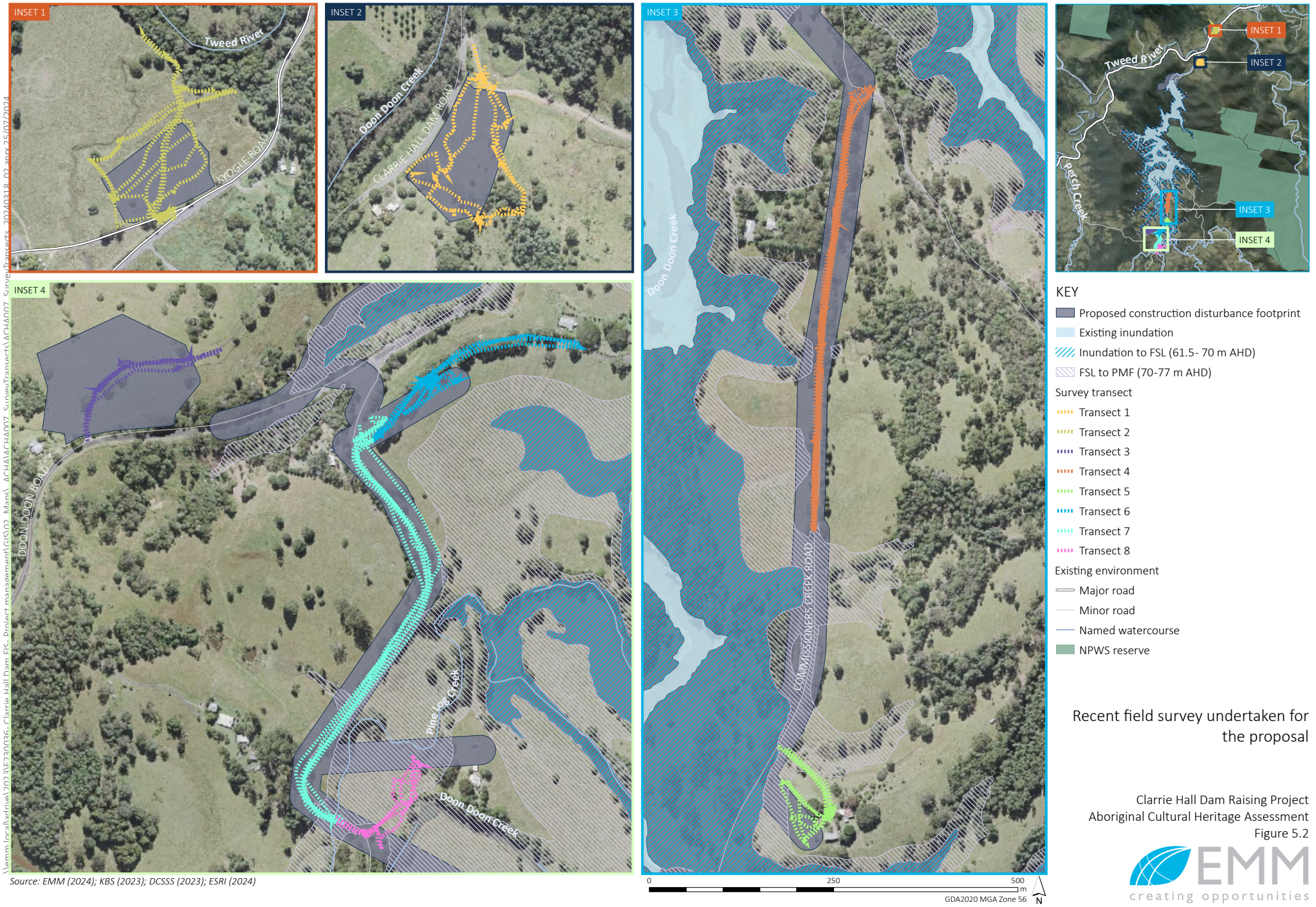
SU8 was undertaken at 637 Doon Doon Road (Lot 7 DP240856 and Lot 3 DP605354) where a Conductor CH 11 KV is proposed to be located. Located 10 m west of Doon Doon Creek, SU8 is located on a hillslope landform with mature trees scattered along the southern boundary along the edge of the creek. The low grass coverage and leaf litter created low visibility and did not observe any exposures present. Livestock activities were recorded as a previous disturbance across SU8.

Table 5.5 Survey coverage

Survey unit	Landform	Survey unit area (m^2)	Visibility (%)	Exposure (%)	Effective coverage area (m^2)	Effective coverage (%)
SU1	Hillslope, Stream Channel	16,880	30	20	1,012.8	6
SU2	Plain	11,300	10	5	56.5	0.5
SU3	Hillslope, Hillcrest	25,420	10	10	254.2	1
SU4	Rolling Hills	10,520	30	10	315.6	3
SU5	Hillslope	2,989	20	10	59.78	2
SU6	Hillslope, Hillcrest	6,796	30	20	543.68	6
SU7	Rolling Hills	9,082	20	10	181.64	2
SU8	Hillslope	2,556	20	10	57.32	2
Total		**85,853**			**2,481.52**	**22.5**

Table 5.6 Landform summary – sampled areas

Landform class	Landform area (m^2)	Area effectively surveyed (m^2)	Landform effectively surveyed (%)	Number of sites	Number of artefacts or features
Hillslope	42,706	1,225.18	2.86	1	2
Hillcrest	10,608	550.65	5.1	0	0
Plain	11,300	56.53	0.5	0	0
Stream Channel	1,637	151.92	9.2	0	0
Hills	19,602	497.24	2.5	0	0
Total	**85,853**	**2,481.52**	**20.16**	**1**	**2**



\\emm.local\drive\2023\E230036_Clarrie Hall Dam EIS_Project management\GIS\02_Maps_ACHA\ACHA007_Survey\Transects\ACHA007_SurveyTransects_20240318_02.aprx 25/07/2024

Source: EMM (2024); KBS (2023); DCSSS (2023); ESRI (2024)

Recent field survey undertaken for the proposal

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.2

EMM
creating opportunities

Plate 5.2 Hillslope along western boundary of SU1 along Clarrie Hall Dam Road

Plate 5.3 Hillslope with Stream Channel in foreground along eastern boundary of SU1

Plate 5.4 Hillslope and stream channel with low visibility, view north of SU1

Plate 5.5 Flooding of vehicle access track exposure in southern half of SU1, view east

Plate 5.6 Tributary of Doon Doon Creek in southern half of SU1

Plate 5.7 Vehicle access track cutting into hillslope along eastern boundary of SU1, view north

Plate 5.8 Stream channel with drain in foreground under Clarrie Hall Dam Road

Plate 5.9 Cattle track on hillslope, south-east of SU1

Plate 5.10 Flat plain with low visibility with cattle processing area in foreground, SU2 view north

Plate 5.11 Cattle processing area in south-east corner of SU2

Plate 5.12 Driveway within SU3, view east

Plate 5.13 Low and high grass cover, SU3 view north

Plate 5.14 Long grass present on hillslope in northern half of SU3, view north

Plate 5.15 Low visibility and evidence of the road cutting into the hillslope, SU7 view south

Plate 5.16 Long grass cover with no exposures, SU4 view south

Plate 5.17 Low order tributary of Doon Doon Creek travelling under road via concrete drain, SU4 view south

Plate 5.18 Evidence of ground exposure near an access track, SU4

Plate 5.19 Hillslope landform with low visibility due to grass cover, SU5 view north

Plate 5.20 Hillslope landform with low visibility, SU6 view west

Plate 5.21 Hillcrest landform with low visibility, SU6 view east

Plate 5.22 Mature trees and vegetation along edge of Doon Doon Creek, SU8 view south

Plate 5.23 Hillslope landform with low visibility, SU8 view east

iii Additional Aboriginal sites identified

The field investigation identified one previously undocumented Aboriginal site (Table 5.7, Figure 5.3, Plate 5.24 – Plate 5.27).

The Aboriginal site was identified in SU6 and labelled as CHD24 AS1. This site was identified along a cattle track exposure located on a hillslope landform south of the property's driveway. The surrounding area included low lying grass coverage with low visibility and appeared to have been subjected to relatively low degree of historical disturbance.

The artefacts comprised one silcrete stone angular fragment and an unworked river pebble (possibly manuport) approximately 11 m from one another on an east to west orientation. The site was located in a 7 m^2 sandy clay loam exposure approximately 90 m north-west from a first order tributary of Doon Doon Creek.

Table 5.7 Summary of the identified cultural assemblage identified as part of additional field survey for the Proposal

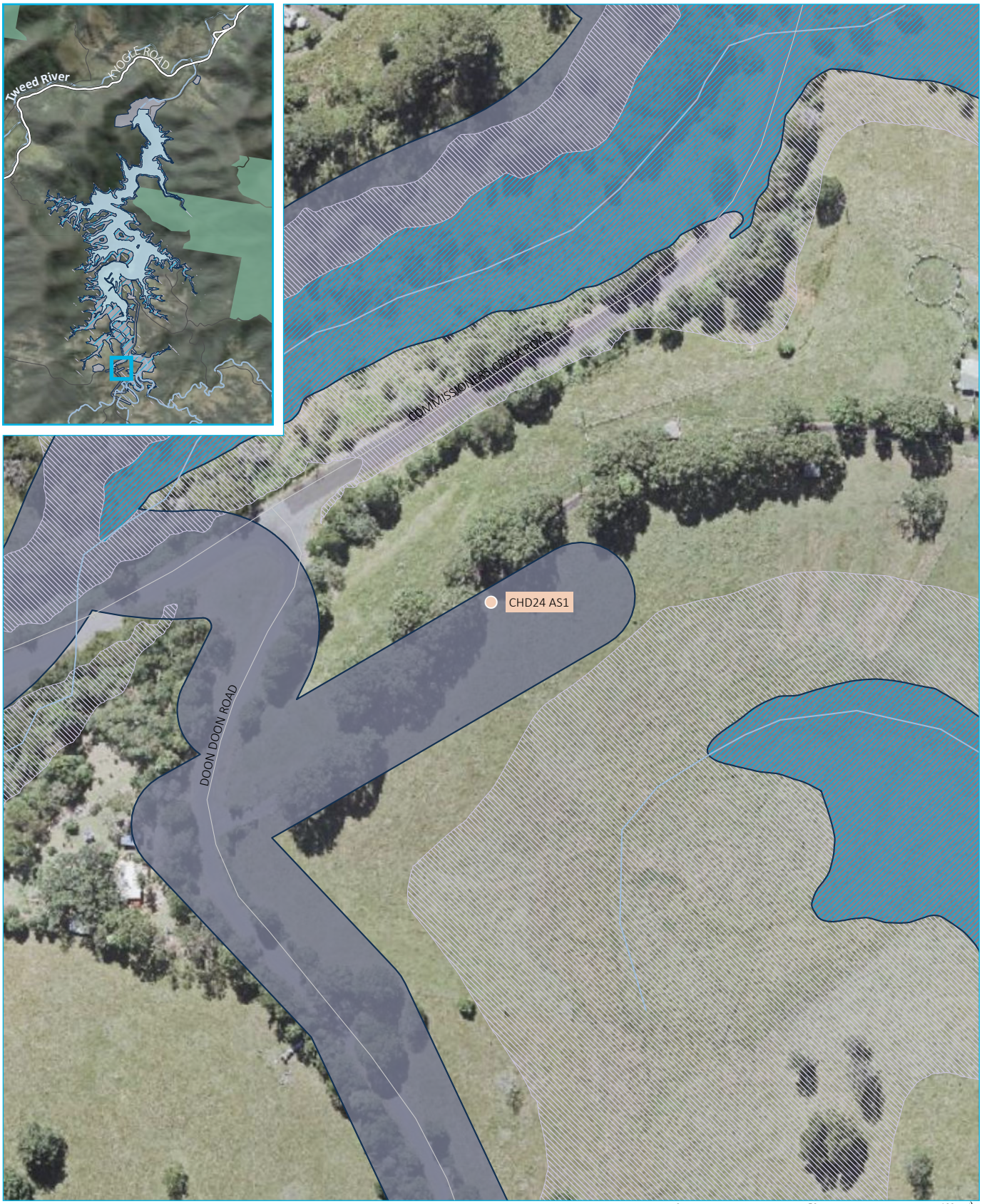
AHIMS ID	AHIMS site name	Site type
-	CHD24 AS1	Low density artefact scatter (2-20)

Plate 5.24 Cattle track exposure and location of CHD AS1, SU6 view east

Plate 5.25 Potential stone artefact identified on cattle track, SU6

Plate 5.26 Location of silcrete artefact found on cattle track exposure, SU6 view west

Plate 5.27 Silcrete angular fragment, SU6



Source: EMM (2024); KBS (2024); DCSSS (2023); Sixmaps (2024); ESRI (2024)

0 50 100 m

GDA2020 MGA Zone 56

N

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- CHD24 AS1

Existing environment

- Major road
- Minor road
- Watercourse/drainage line
- NPWS reserve

\\emm.local\xdrive\2023\E230036- Clarrie Hall Dam EIS- Project management\GIS\02_Maps_ACHA\ACHA010_SurveyResults\ACHA010_SurveyResults_20240318_02.aprx 25/07/2024

Aboriginal sites identified as part of recent field survey for the Proposal

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.3

EMM
creating opportunities

5.3 Archaeological test excavation

NOHC (2018) identified several PADs and stone artefact scatters with potential for subsurface deposits. Subsequently, ELA (2021) undertook test excavations to further characterise and refine these cultural deposits (Appendix A).

Archaeological test excavations were undertaken between 29 June and 28 August 2020. The works focussed on 19 sites identified by NOHC (2018) during the field survey, including #04-1-0235, #04-1-0237, #04-1-0238, #04-1-0239, #04-1-0240, #04-1-0249, #04-1-0254, #04-1-0264, #04-1-0280, #04-1-0281, #04-1-0288, #04-1-0289, #04-1-0291, #04-1-0290, #04-1-0292, #04-1-0293, #04-1-0294, #04-1-0295, and #04-1-0296. These were distributed across the project area and predominantly on crests and upper slopes adjacent the current reservoir (Figure 5.1). Commonly, these locales would have been in close proximity to Doon Doon Creek prior to its inundation.

i Methods

ELA (2021) adopted Heritage NSW's *Code of Practice for the Archaeological Investigations of Aboriginal Objects in NSW* for the archaeological excavations. Specifically, a systematic grid of test pits generally spaced 10 m apart was applied across each site. Each test pit was initially 0.25 m^2 with expansion undertaken where required. Specifically, if one or more artefacts were identified within a test pit, a total of four additional 0.25 m^2 test pits increasing spatial resolution would be undertaken. Test pits could be expanded to 1 m^2 if more than five artefacts were located within a 0.25 m^2 test pit, or if features such as heat treatment pits, hearths, or evidence of knapping events were recognised. Test pits were expanded at the discretion of the Excavation Director.

Excavations were undertaken manually, with the first test pit for each site excavated in 5 cm spits, and with every other test pit excavated in 10 cm spits. Excavations extended to culturally sterile deposits, which was generally <50 cm below surface.

All soil excavated were sieved through a 5 mm sieve with artefacts collected and bagged.

ii Results

Appendix A outlines the test excavations in detail, providing information on each site and the test pits undertaken. A summary is provided below.

A total of ~585 test pits (comprising 579 0.25 m^2 test pits and six 1 m^2 test pits) were excavated across the sites, totalling 150.75 m^2 (Figure 5.4). Only 333 of the 585 test pits (56.9%) contained artefacts, with a total of 1,117 stone artefacts recovered during test excavations (Table 5.8, Figure 5.4). Cultural materials were most commonly produced from chalcedony and silcrete artefacts with lesser representation of chert and tuff raw materials. Cultural material was found up to 50 cm below the ground surface, but mostly from the upper ~0-20 cm of the soil profile. Overall, these provide an average density of 7.2 artefacts/m^2 (Table 5.8).

Of the test pits containing cultural materials, 67 exhibited values greater than five artefacts (Figure 5.4, Appendix G). These were recovered across eleven different sites (AHIMS #04-1-0264, #04-1-0281, #04-1-0249, #04-1-0288, #04-1-0254, #04-1-0280, #04-1-0238, #04-1-0240, #04-1-0295, #04-1-0296 and #04-1-0291). Extrapolation of these values to *n*/m^2 as is commonly presented for archaeological results, reveals that all of these test pits indicate values of ≥20/ m^2 and indicative of past foci of visitation and activity. However, on further review of the data (Appendix G), a value of ≥24/m^2 enables differentiation of high-density areas compared with the broader background scatter (Figure 6.1). This value is used in subsequent sections to reflect the baseline above which past activity is classified compared with the broader ephemeral or transient use commonly found across Australia. While initially these PADs were some ~60 ha in size, the results here reveal high density cultural materials total ~5 ha. These are divided across 10 discrete locales within the 19 investigated areas, each totalling

on average ~0.81 ha in size. The majority of investigated areas contained only one area of high density foci, with #4-1-0288 revealing a more variable distribution and having three discrete foci across ~1.5 ha.[4]

These eleven areas of interest, excluding one site (AHIMS #04-1-0291), are located predominantly across the western side of the project area with two more central (Figure 5.4 and Figure 6.1). Six of these sites are located in the mid-south (AHIMS #04-1-0249, #04-1-0288, #04-1-0254, #04-1-0280, #04-1-0240, #04-1-0296), two in the mid north (AHIMS #04-1-0281 and #04-1-0238) and two in the southern section of the project area (#04-1-0264 #04-1-0295). One site is located on the eastern side of the project area in the mid-south (AHIMS #04-1-0291). These areas are all found directly along the former Doon Doon Creek alignment, but above the existing FSL on surviving elevated alluvial terraces and crest landforms.

#04-1-0264 contained the highest number of stone artefacts, with 210 recovered at an average density of 26.3/m^2. This was located 40 m north-west of the former Doon Doon Creek on a crest landform, and the test pits with the densest cultural materials were located across the highest point of the crest landform (Figure 5.4). When extrapolating test pit B1 within this site, which recovered the highest number of cultural materials, a value of 68/m^2 is returned, and is one of the key past foci within the Proposal.

No artefactual materials were identified at #04-1-0290 and #04-1-0293. As such these sites have been re-classified as 'not a site' in Table 5.8 and subsequent sections. These locations were located on hill slope, crest and floodplain landforms and within ~30 m of the former Doon Doon Creek. This perhaps suggests that mid-slopes and floodplains were less attractive to people in the past.

In addition to stone artefacts, CHD PAD 9 (#04-1-0288) recorded a potential hearth or cooking feature, with extensive charcoal found in test pit A5). This test pit also included a large number of artefacts (n=20). Unfortunately, no samples were collected for chronological purposes during the assessment, and this forms a recommendation in Section 9.

Table 5.8 Summary of archaeological excavations by ELA (2021)

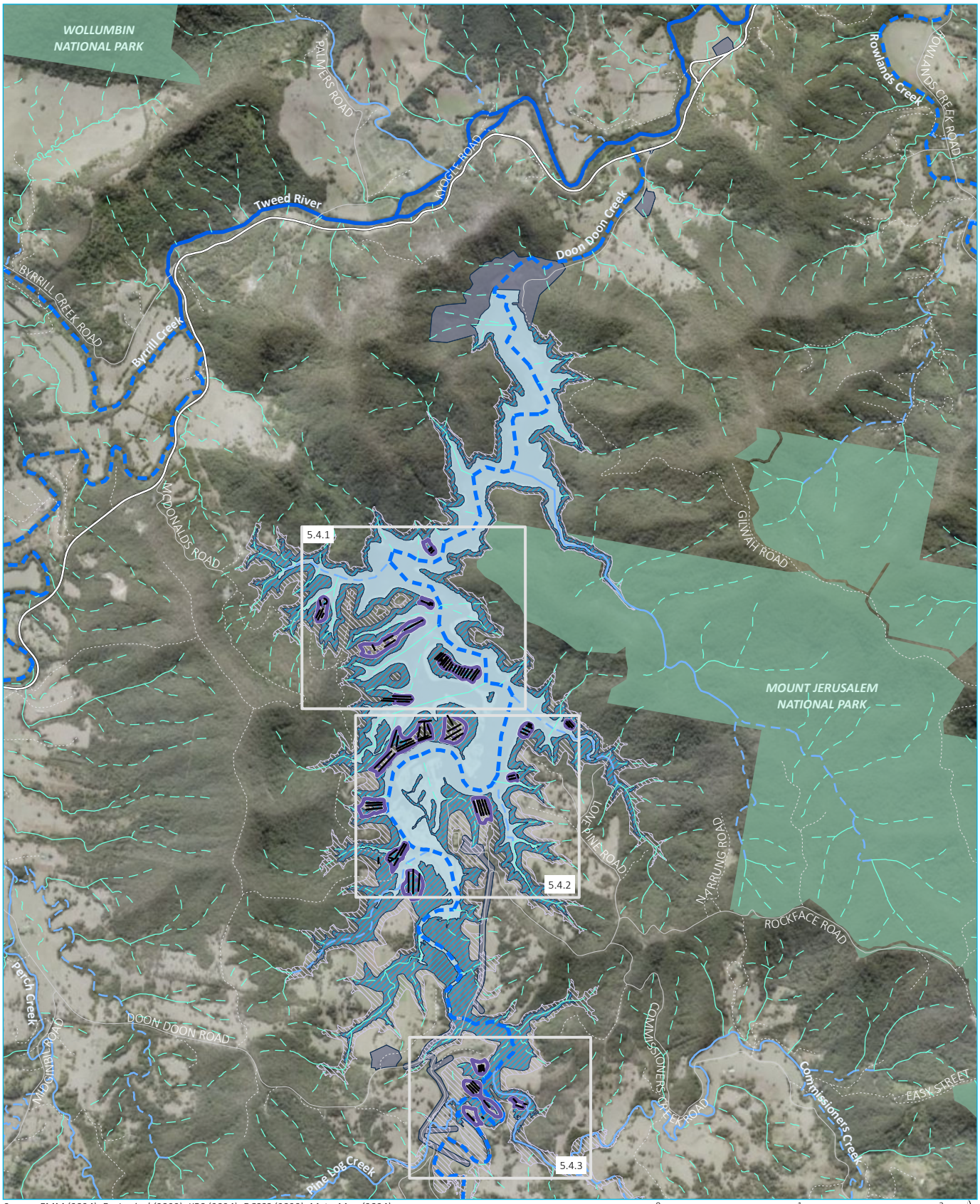
AHIMS ID	AHIMS site name	Total excavations (m^2)	Total artefacts recovered (n)	Artefact density (*n*/m^2)	Summary site description
04-1-0235	CHD-A30	6.75	19	2.8	Low density artefact scatter (2–20)
04-1-0237	CHD-A35	7.75	15	1.9	Low density artefact scatter (2–20)
04-1-0238	CHD-A36	4.25	40	9.4	Moderate density artefact scatter (21–50)
04-1-0239	CHD-A37	10.75	33	3.1	Moderate density artefact scatter (21–50)
04-1-0240	CHD-A38	4.25	11	2.6	Low density artefact scatter (2–20)
04-1-0249	CHD-A48	9.25	76	8.2	High density artefact scatter (51–100)
04-1-0254	CHD A27	13.75	111	8.1	High density artefact scatter (51–100)
04-1-0264	CHD A17	8	210	26.3	Very high-density artefact scatter (100+)

[4] It should be noted that ELA (2021) interpreted the artefactual data using all test pits within a given PAD area, including those that were culturally sterile. This substantively reduces the artefact densities recovered from each site. In contrast, we spatially re-classified the PAD to an archaeological deposit only encompassed by test pits containing cultural materials. This ultimately reduces the size of each cultural deposit but increases the artefact densities to those presented here.

Table 5.8 Summary of archaeological excavations by ELA (2021)

AHIMS ID	AHIMS site name	Total excavations (m^2)	Total artefacts recovered (n)	Artefact density (n/m^2)	Summary site description
04-1-0280	CHD A1	9.5	38	4.0	Moderate density artefact scatter (21–50)
04-1-0281	CHD-A55	15.5	143	9.2	Very high-density artefact scatter (100+)
04-1-0288	CHD PAD 9	23.75	200	8.4	Very high-density artefact scatter (100+)
04-1-0289	CHD PAD 8	2.25	1	0.4	Isolated find
04-1-0290	CHD-PAD7	2.75	0	0.0	Not a site
04-1-0291	CHD PAD 6	6	25	4.2	Moderate density artefact scatter (21–50)
04-1-0292	CHD PAD 5	4	7	1.8	Low density artefact scatter (2–20)
04-1-0293	CHD-PAD3	1.25	0	0.0	Not a site
04-1-0294	CHD PAD 4	3.25	3	0.9	Low density artefact scatter (2–20)
04-1-0295	CHD PAD 2	5	97	19.4	High density artefact scatter (51–100)
04-1-0296	CHD PAD 1	8.5	88	10.4	High density artefact scatter (51–100)
Total		**146.5**	**1,117**	**7.2**	-

Note: AHIMS sites labelled as 'not a site' reflect where no cultural materials were documented as part of the works.



Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 1 2 km

GDA2020 MGA Zone 56

N

\\emm.local\xdrive\2023\E230036- Clarrie Hall Dam EIS- Project management\GIS\02_Maps_ACHA\ACHA009_EcologicalTestPits\ACHA009_EcologicalTestPitsOverview_20240318_01.aprx 25/07/2024

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeological deposit
- Page reference
- Test excavation transect (Ecological 2021)

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 4th order
- 5th order
- 6th order

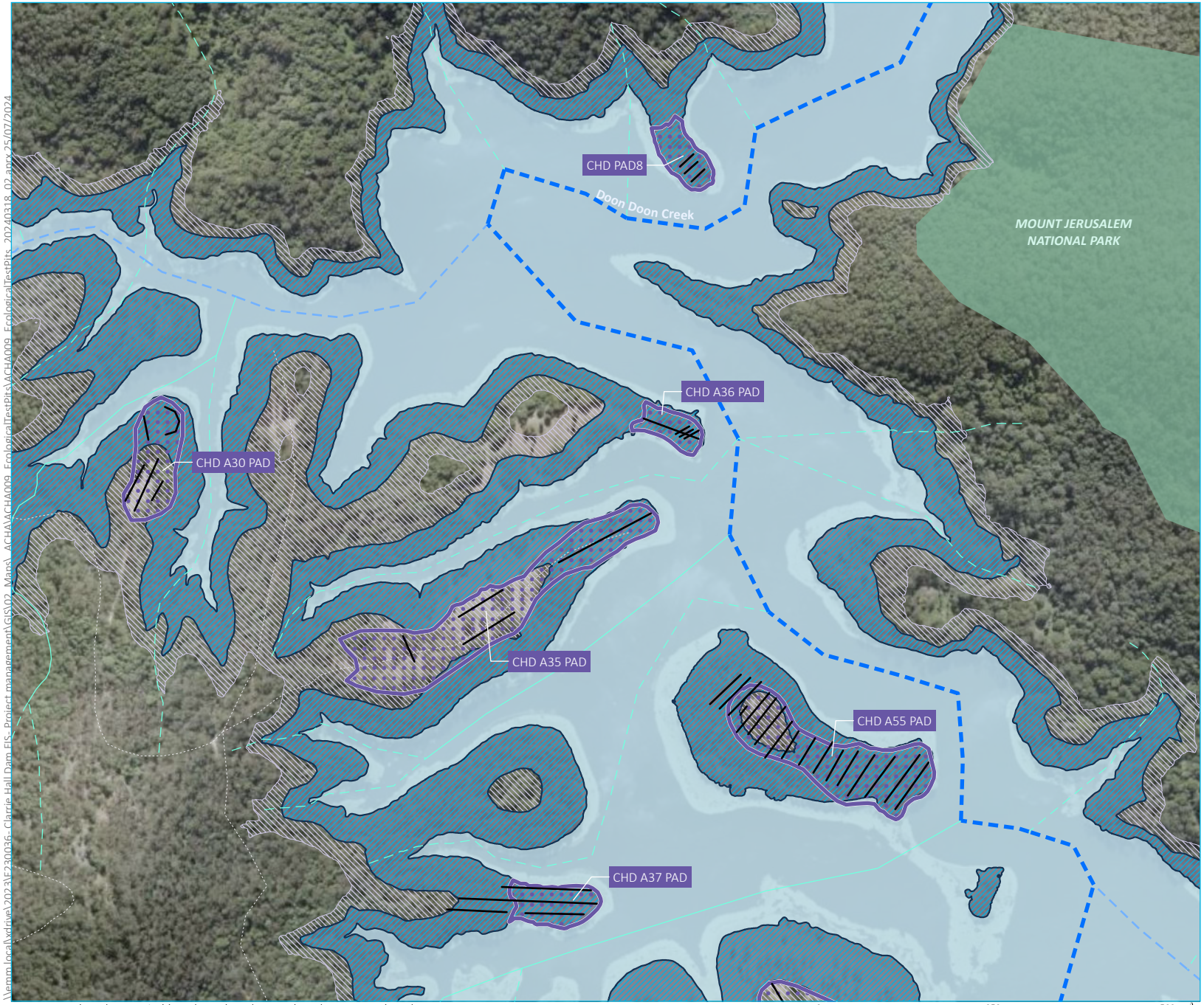
Existing environment

- Major road
- Minor road
- Vehicular track
- NPWS reserve

Test pit program of ELA (2021)

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.4

EMM
creating opportunities



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track
- NPWS reserve

Test pit program of ELA (2021)

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 250 500 m

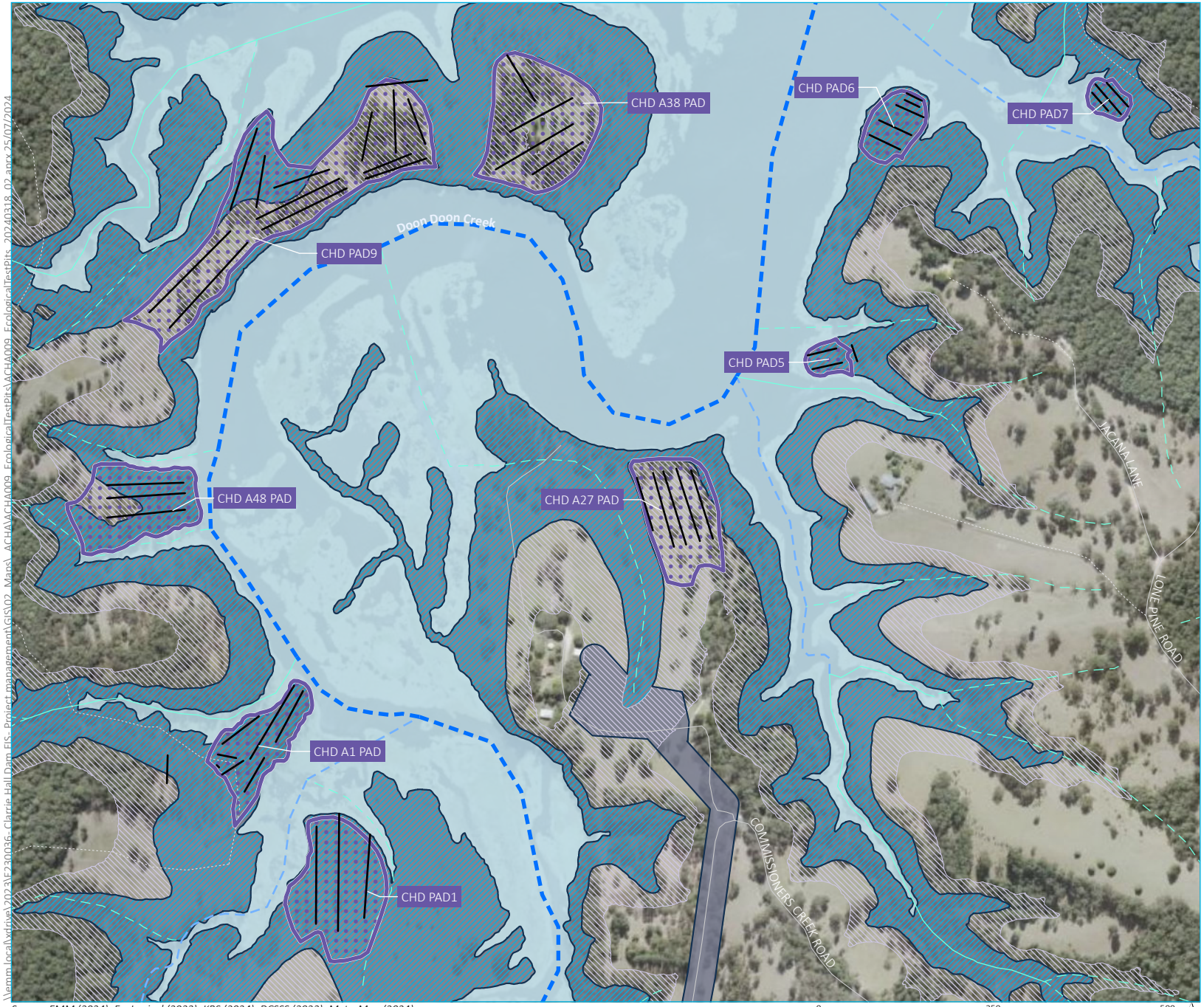
GDA2020 MGA Zone 56

N

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.4.1

EMM creating opportunities

\\emm.local\xdrive\2023\EF230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA009_EcologicalTestPits\ACHA009_EcologicalTestPits_20240318_02.aprx 25/07/2024



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Test pit program of ELA (2021)

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 250 500 m

GDA2020 MGA Zone 56

N

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.4.2

EMM creating opportunities

\\emm.local\xdrive\2023\E230036-_Clarrie Hall Dam EIS-_Project management\GIS\02_Maps_ACHA\ACHA009_EcologicalTestPits\ACHA009_EcologicalTestPits_20240318_02.aprx 25/07/2024

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 4th order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Test pit program of ELA (2021)

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 250 500 m

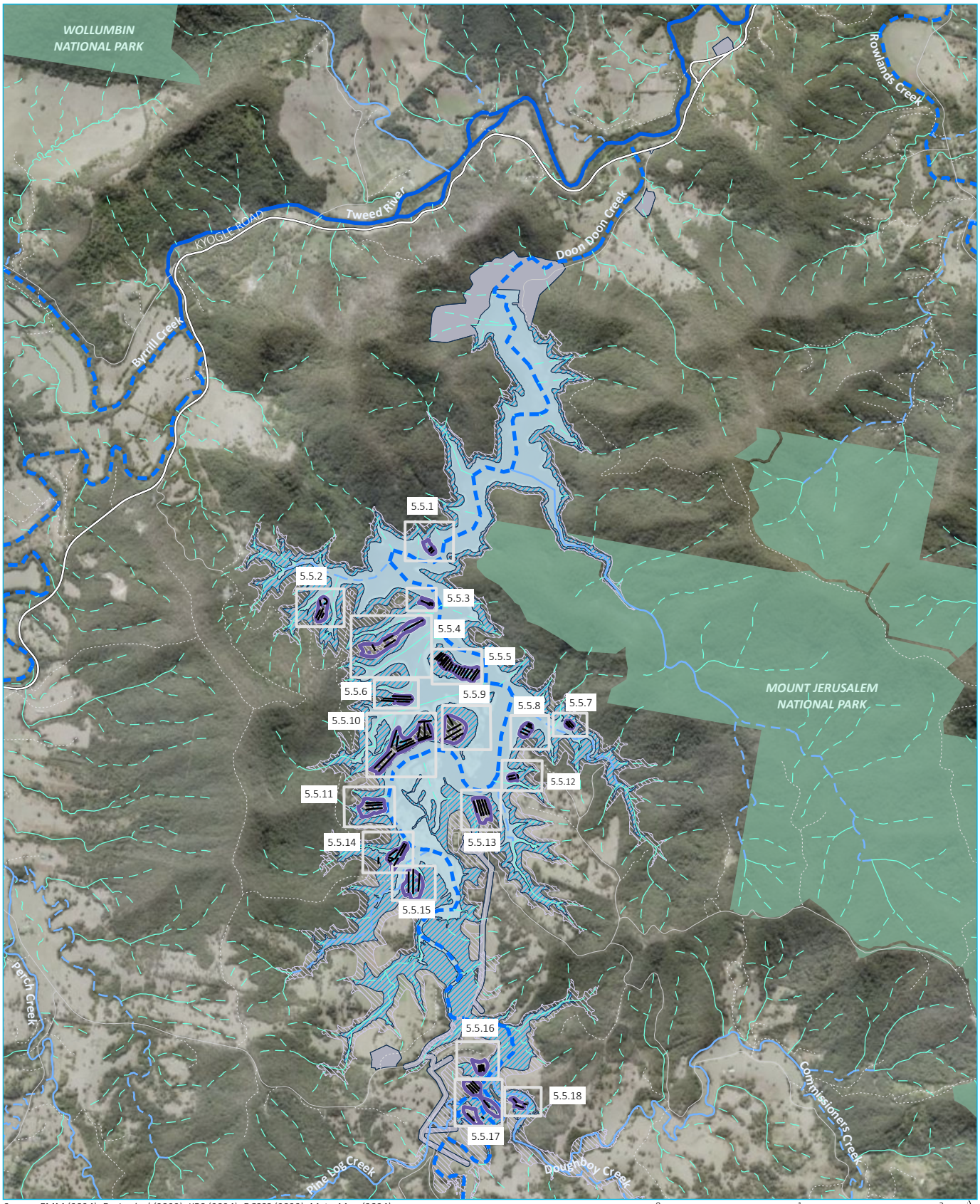
GDA2020 MGA Zone 56

N

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.4.3

EMM creating opportunities

\\emm.localhdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA009_EcologicalTestPits\ACHA009_EcologicalTestPits_20240318_02.aprx 25/07/2024



Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 1 2 km

GDA2020 MGA Zone 56

N

\\emm.local\xdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA011_EcologicalExcavationCount\ACHA011_EcologicalExcavationCountOverview_20240319_01.aprx 25/07/2024

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5 - 70 m AHD)
- FSL to PMF (70 -77 m AHD)
- Page reference
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 4th order
- 5th order
- 6th order

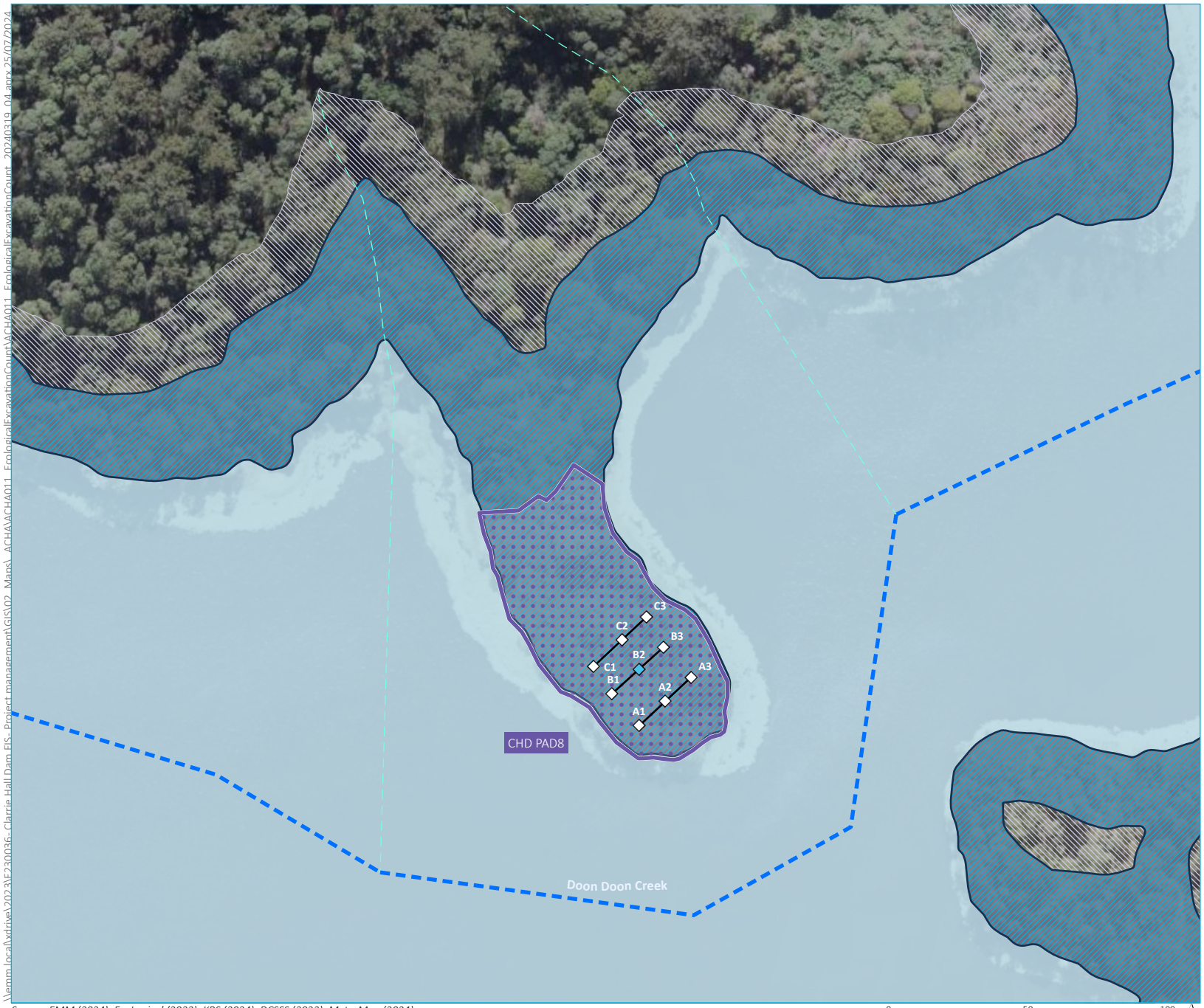
Existing environment

- Major road
- Minor road
- Vehicular track
- NPWS reserve

Test excavation results of ELA (2021)

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.5

EMM
creating opportunities



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts

- 0
- 1

Strahler stream order

- 1st order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Test excavation results of ELA (2021)

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

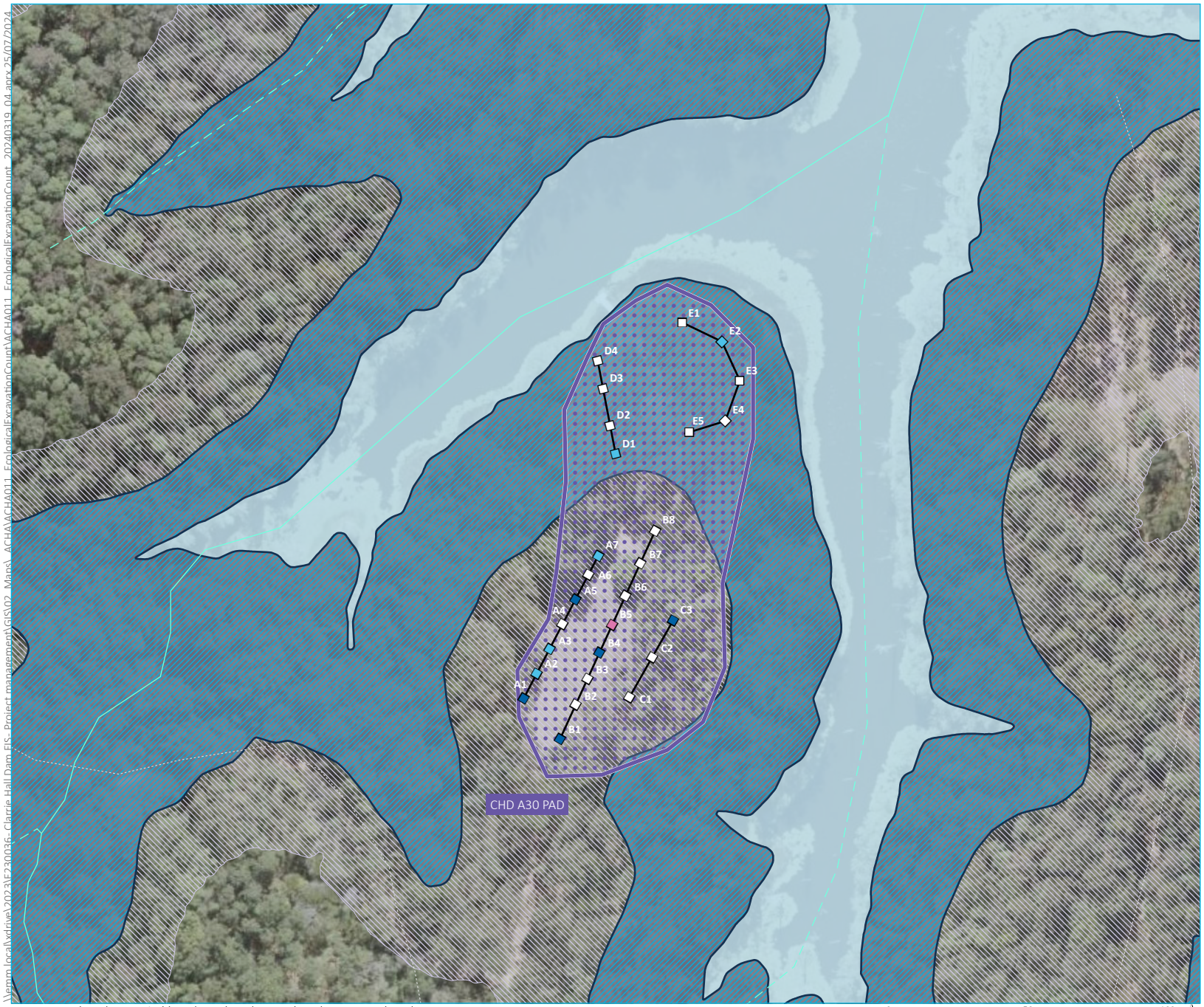
GDA2020 MGA Zone 56

N

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.5.1

EMM creating opportunities

\\emm.local\xtdrive\2023\E230036_Clarrie Hall Dam EIS_Project management\GIS\02_Maps_ACHA\ACHA011_EcologicalExcavationCount\ACHA011_EcologicalExcavationCount_20240319_04.aprx 25/07/2024



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts

- 0
- 1
- 2
- 4

Strahler stream order

- 1st order
- 2nd order

Existing environment

- Major road
- Minor road
- Vehicular track

Test excavation results of ELA (2021)

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

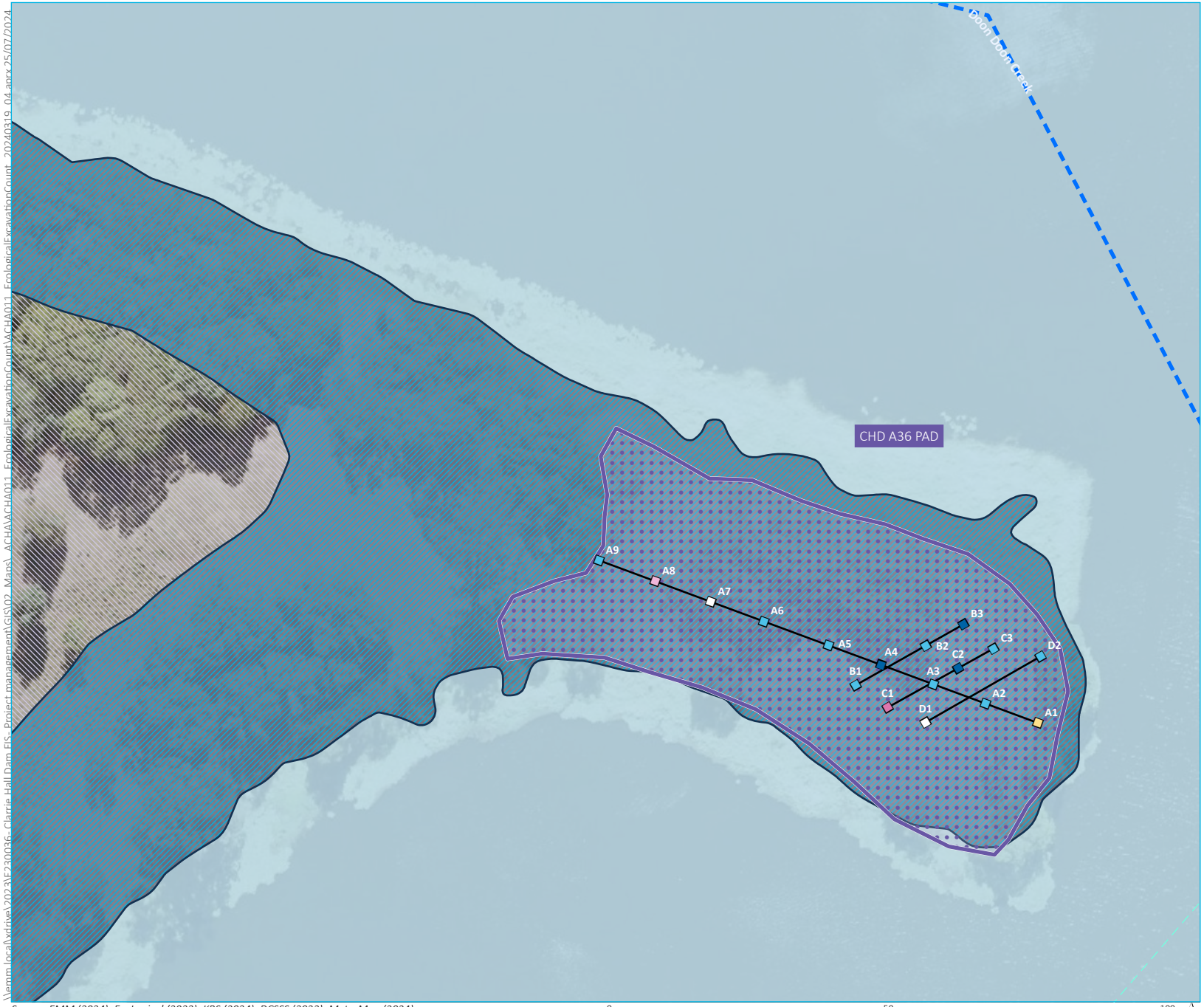
GDA2020 MGA Zone 56

N

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.5.2

EMM creating opportunities

\\emm.local\xtdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA011_EcologicalExcavationCount\ACHA011_EcologicalExcavationCount_20240319_04.aprx 25/07/2024



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts

- 0
- 1
- 2
- 4
- 5
- 16

Strahler stream order

- 1st order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Test excavation results of ELA (2021)

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

GDA2020 MGA Zone 56

N

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.5.3

EMM creating opportunities

\\emm.local\xdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA011_EcologicalExcavationCount\ACHA011_EcologicalExcavationCount_20240319_04.aprx 25/07/2024

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts

- 0
- 1
- 2
- 3
- 4

Strahler stream order

- 1st order
- 2nd order

Existing environment

- Major road
- Minor road
- Vehicular track

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

GDA2020 MGA Zone 56

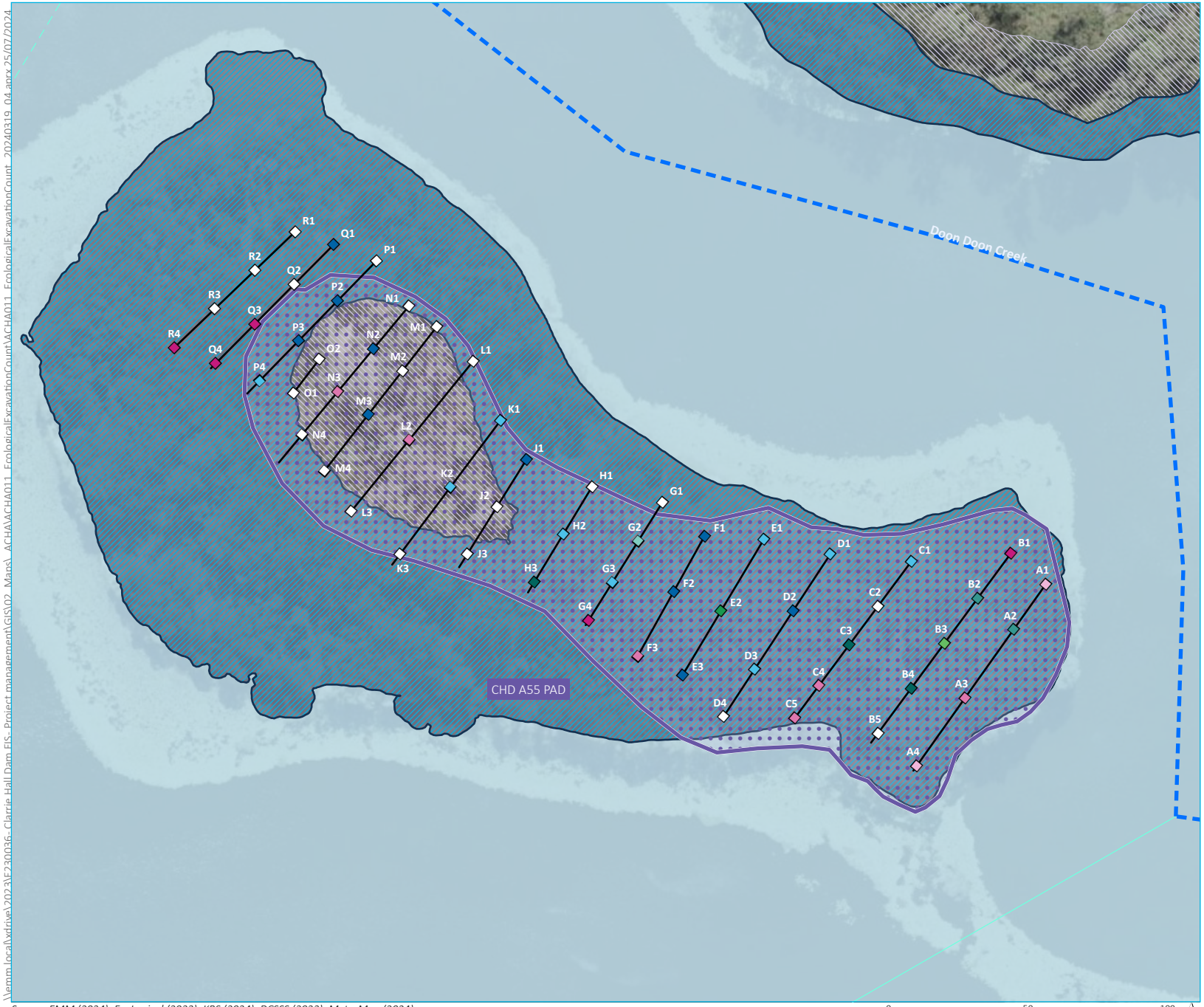
N

\\emm.local\vdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA011_EcologicalExcavationCount\ACHA011_EcologicalExcavationCount_20240319_04.aprx 25/07/2024

Test excavation results of ELA (2021)

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.5.4

EMM
creating opportunities



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 10
- 11

Strahler stream order

- 1st order
- 2nd order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

GDA2020 MGA Zone 56

N

Test excavation results of ELA (2021)

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.5.5

EMM creating opportunities

\\emm.local\xdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA011_EcologicalExcavationCount\ACHA011_EcologicalExcavationCount_20240319_04.aprx 25/07/2024

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts

- 0
- 1
- 2
- 3
- 5

Strahler stream order

- 1st order
- 2nd order

Existing environment

- Major road
- Minor road
- Vehicular track

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

GDA2020 MGA Zone 56

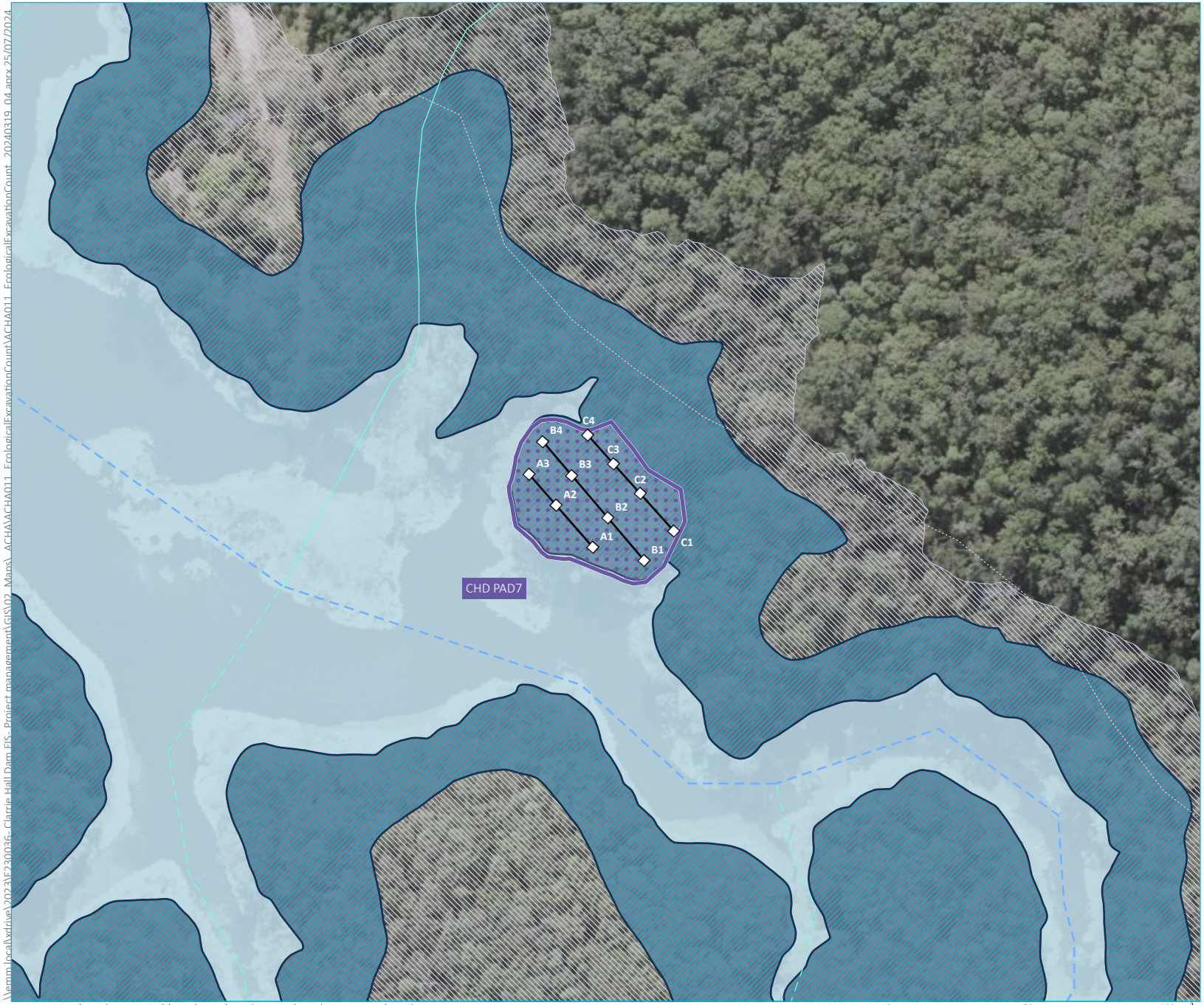
N

\\emm.local\vdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA011_EcologicalExcavationCount\ACHA011_EcologicalExcavationCount_20240319_04.aprx 25/07/2024

Test excavation results of ELA (2021)

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.5.6

EMM
creating opportunities



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts

- 0

Strahler stream order

- 1st order
- 2nd order
- 3rd order

Existing environment

- Major road
- Minor road
- Vehicular track

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

GDA2020 MGA Zone 56

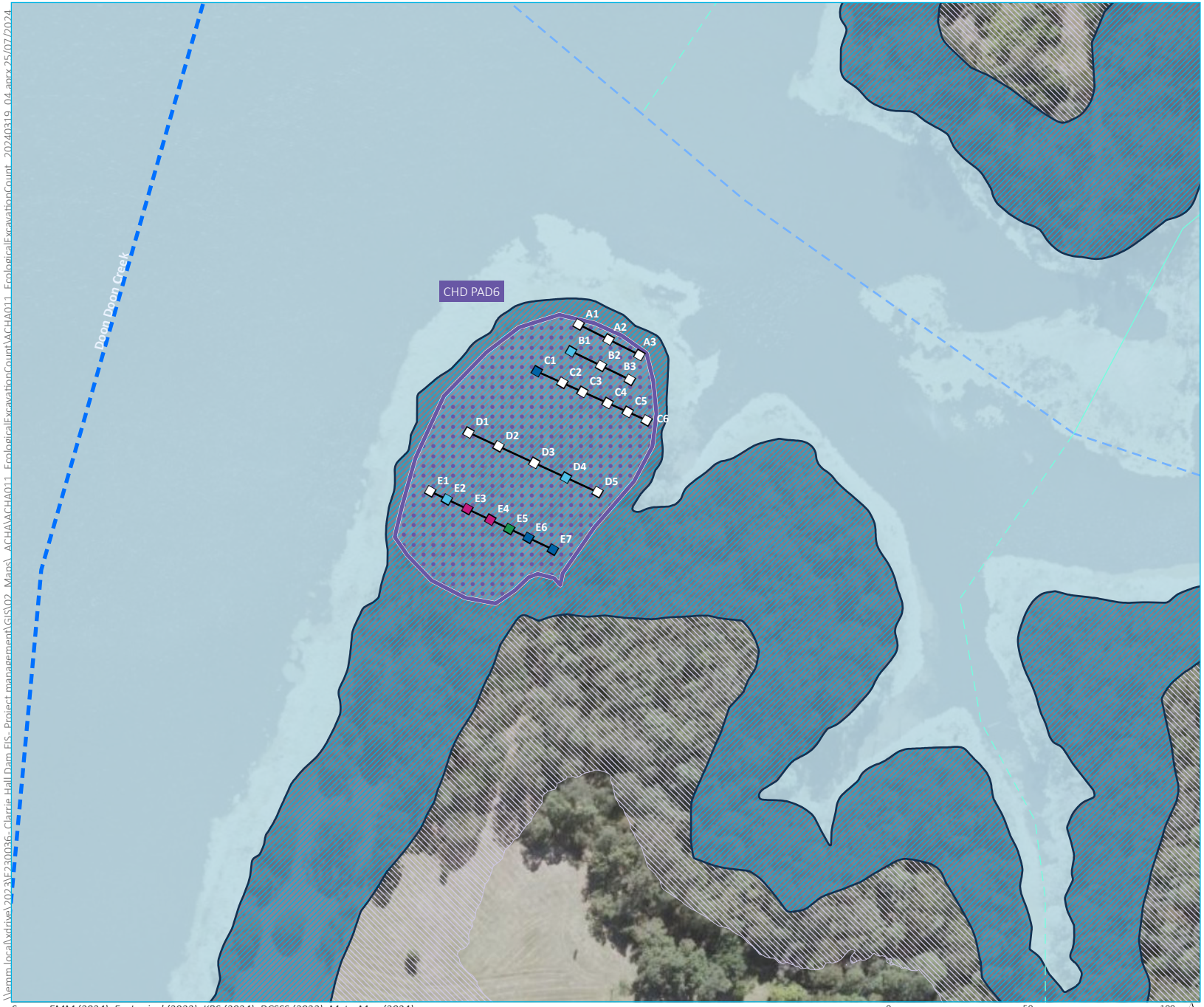
N

\\emm.local\xdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA011_EcologicalExcavationCount\ACHA011_EcologicalExcavationCount_20240319_04.aprx 25/07/2024

Test excavation results of ELA (2021)

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.5.7

EMM
creating opportunities



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts

- 0
- 1
- 2
- 3
- 10

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

GDA2020 MGA Zone 56

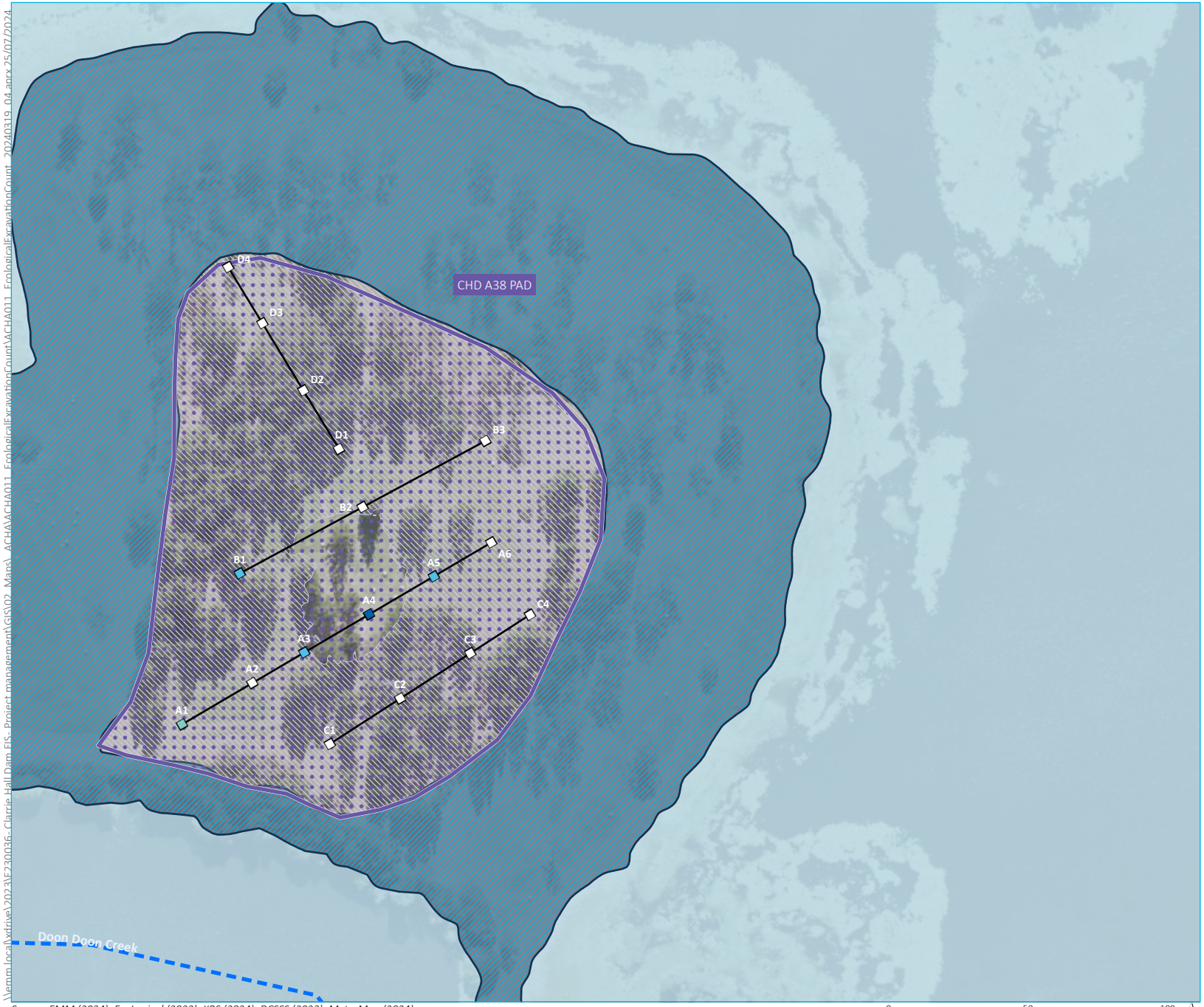
N

\\emm.local\xdrive\2023\E230036_Clarrie Hall Dam EIS_ Project management\GIS\02_Maps_ACHA\ACHA011_EcologicalExcavationCount\ACHA011_EcologicalExcavationCount_20240319_04.aprx 25/07/2024

Test excavation results of ELA (2021)

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.5.8

EMM
creating opportunities



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts

- 0
- 1
- 2
- 6

Strahler stream order

- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Test excavation results of ELA (2021)

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

GDA2020 MGA Zone 56

N

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.5.9

EMM creating opportunities

\\emm.local\xdrive\2023\E230036_Clarrie Hall Dam EIS_Project management\GIS\02_Maps_ACHA\ACHA011_EcologicalExcavationCount\ACHA011_EcologicalExcavationCount_20240319_04.aprx 25/07/2024

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 20
- 45

Strahler stream order

- 1st order
- 2nd order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Test excavation results of ELA (2021)

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.5.10

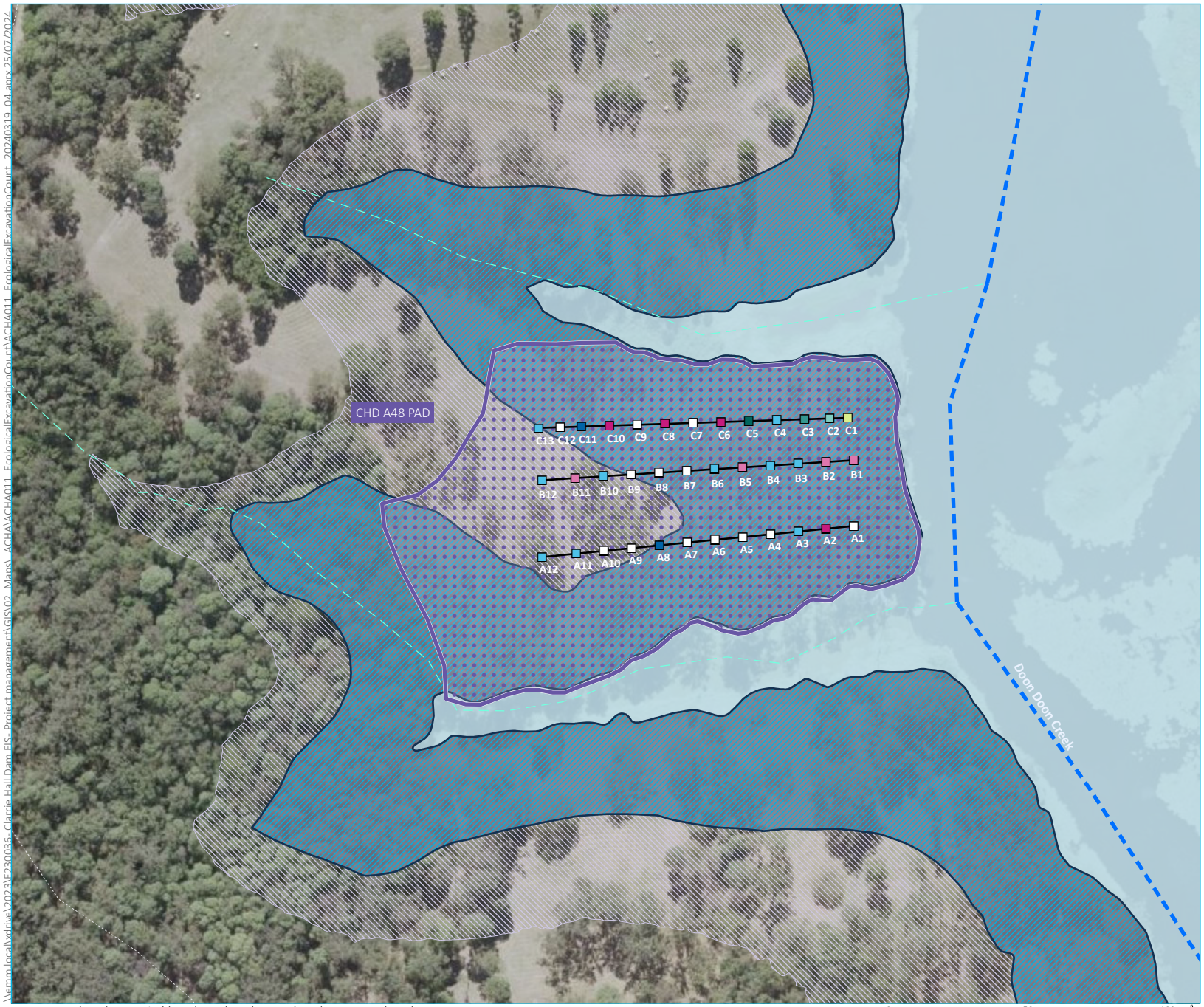
Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m
GDA2020 MGA Zone 56

N

creating opportunities

\\emm.local\xdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA011_EcologicalExcavationCount\ACHA011_EcologicalExcavationCount_20240319_04.aprx 25/07/2024



\\emm.local\xdrive\2023\E230036_Clarrie Hall Dam EIS_Project management\GIS\02_Maps_ACHA\ACHA011_EcologicalExcavationCount\ACHA011_EcologicalExcavationCount_20240319_04.aprx 25/07/2024

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

Test excavation results of ELA (2021)

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.5.11

EMM
creating opportunities

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts

- 0
- 1
- 2

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Test excavation results of ELA (2021)

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

GDA2020 MGA Zone 56

N

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.5.12

EMM creating opportunities

\\emm.local\xdrive\2023\E230036_Clarrie Hall Dam EIS_Project management\GIS\02_Maps_ACHA\ACHA011_EcologicalExcavationCount\ACHA011_EcologicalExcavationCount_20240319_04.aprx 25/07/2024

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 9
- 10
- 15

Strahler stream order

- 1st order
- 3rd order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

GDA2020 MGA Zone 56

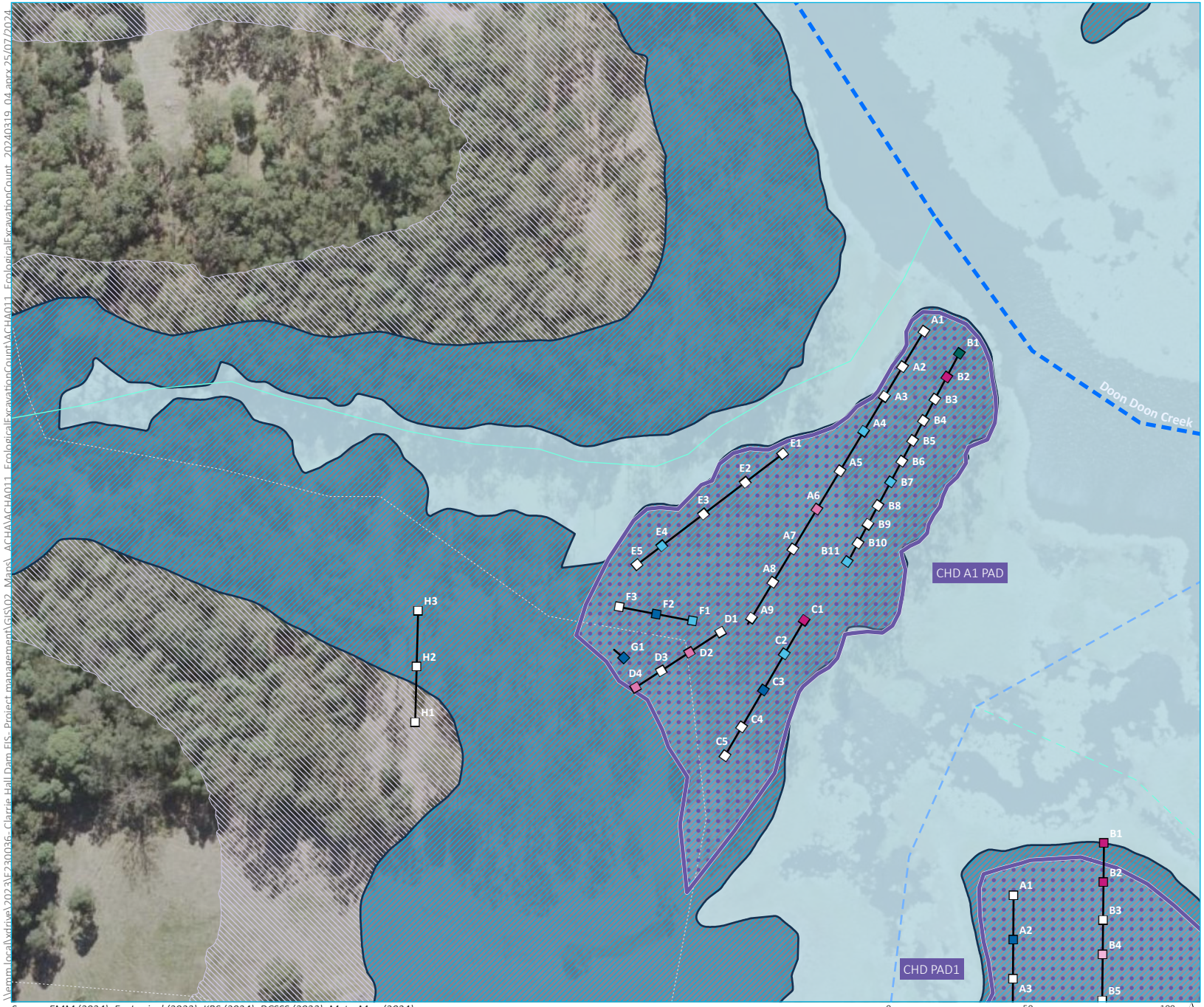
N

\\emm.local\xdrive\2023\E230036_Clarrie Hall Dam EIS_Project management\GIS\02_Maps_ACHA\ACHA011_EcologicalExcavationCount\ACHA011_EcologicalExcavationCount_20240319_04.aprx 25/07/2024

Test excavation results of ELA (2021)

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.5.13

EMM
creating opportunities



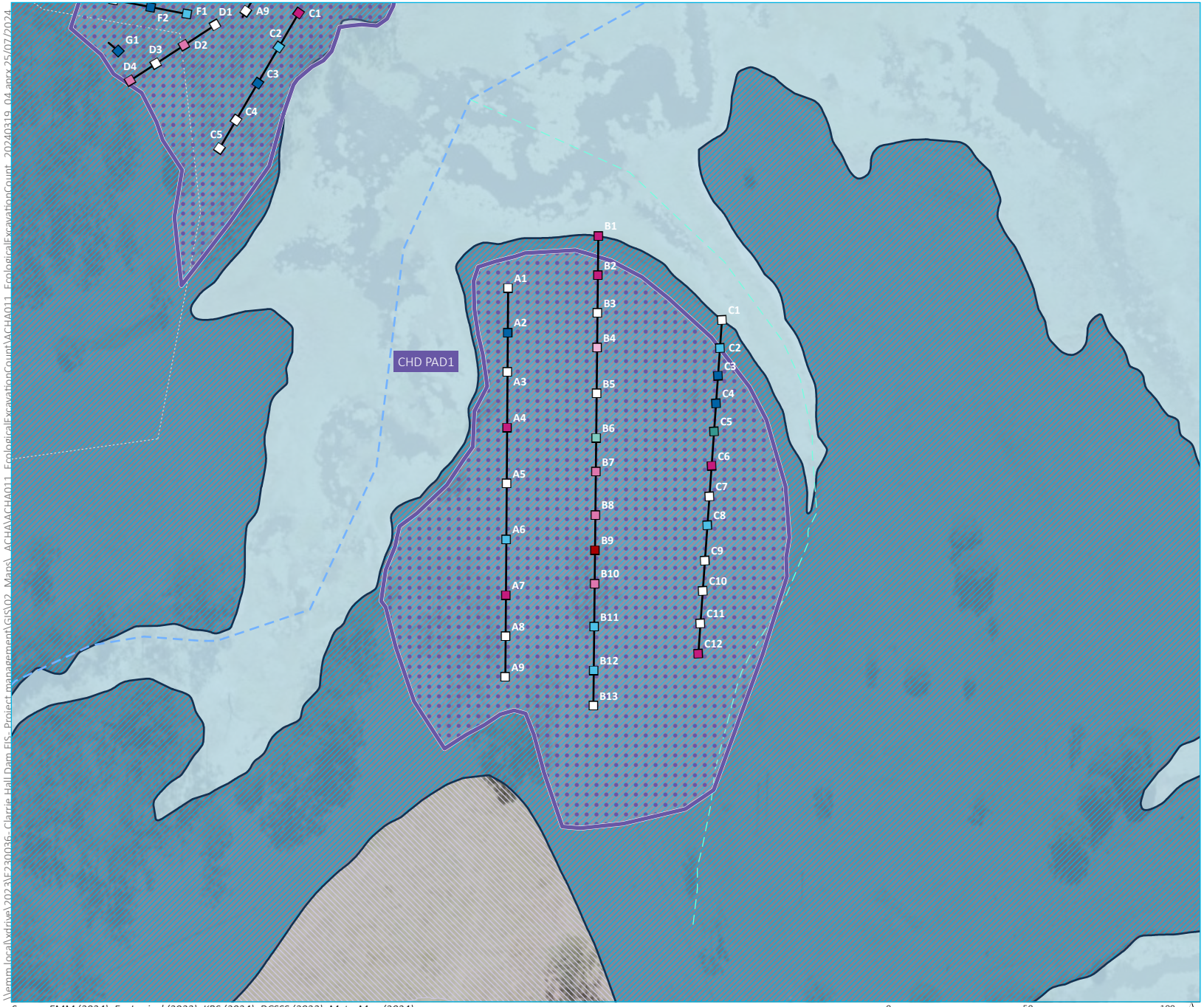
\\emm.local\xtrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA011_EcologicalExcavationCount\ACHA011_EcologicalExcavationCount_20240319_04.aprx 25/07/2024

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

Test excavation results of ELA (2021)

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.5.14

EMM
creating opportunities



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 31

Strahler stream order

- 1st order
- 3rd order

Existing environment

- Major road
- Minor road
- Vehicular track

\\emm.local\vdrive\2023\E230036_Clarrie Hall Dam EIS_Project management\GIS\02_Maps_ACHA\ACHA011_EcologicalExcavationCount\ACHA011_EcologicalExcavationCount_20240319_04.aprx 25/07/2024

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

GDA2020 MGA Zone 56

N

Test excavation results of ELA (2021)

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.5.15

EMM
creating opportunities

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 11
- 12
- 15

Strahler stream order

- 1st order
- 4th order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

GDA2020 MGA Zone 56

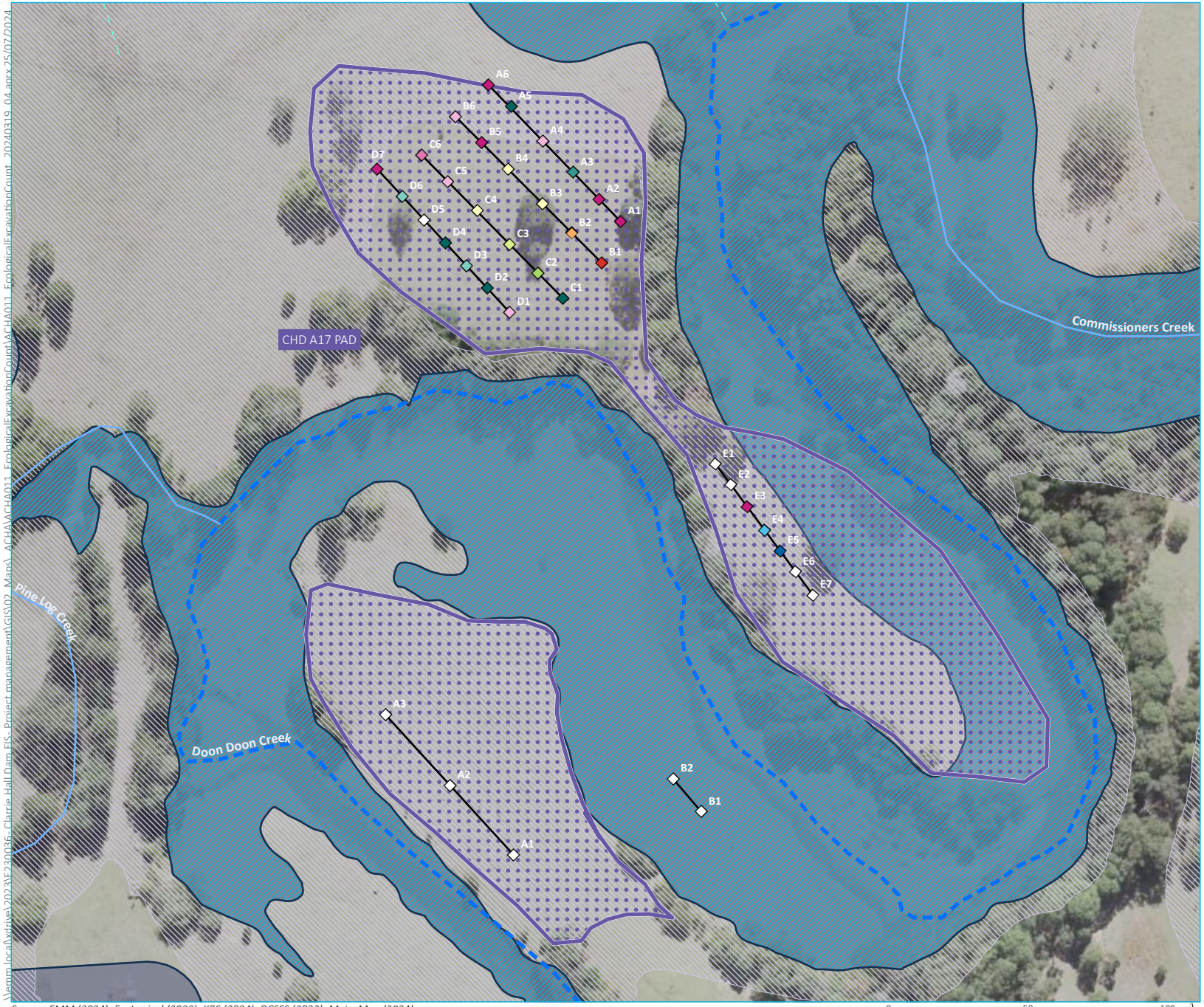
N

\\emm.local\xdrive\2023\E230036_Clarrie Hall Dam EIS_Project management\GIS\02_Maps_ACHA\ACHA011_EcologicalExcavationCount\ACHA011_EcologicalExcavationCount_20240319_04.aprx 25/07/2024

Test excavation results of ELA (2021)

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.5.16

EMM
creating opportunities



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts

- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 12
- 13
- 15
- 17
- 27

Strahler stream order

- 1st order
- 4th order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

GDA2020 MGA Zone 56

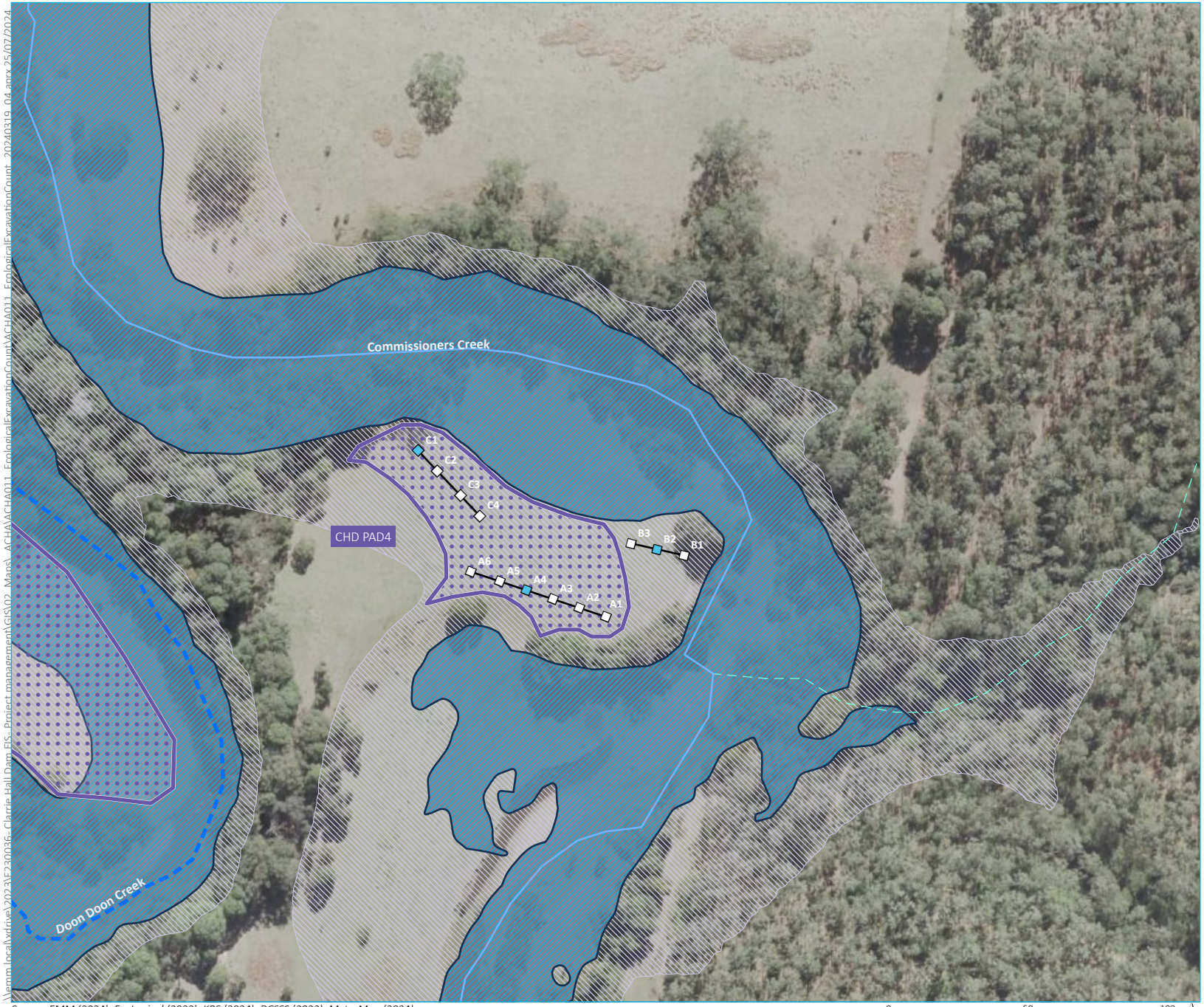
N

\\emm.local\xdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA011_EcologicalExcavationCount\ACHA011_EcologicalExcavationCount_20240319_04.aprx 25/07/2024

Test excavation results of ELA (2021)

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.5.17

EMM
creating opportunities



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts

- 0
- 1

Strahler stream order

- 1st order
- 4th order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Test excavation results of ELA (2021)

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

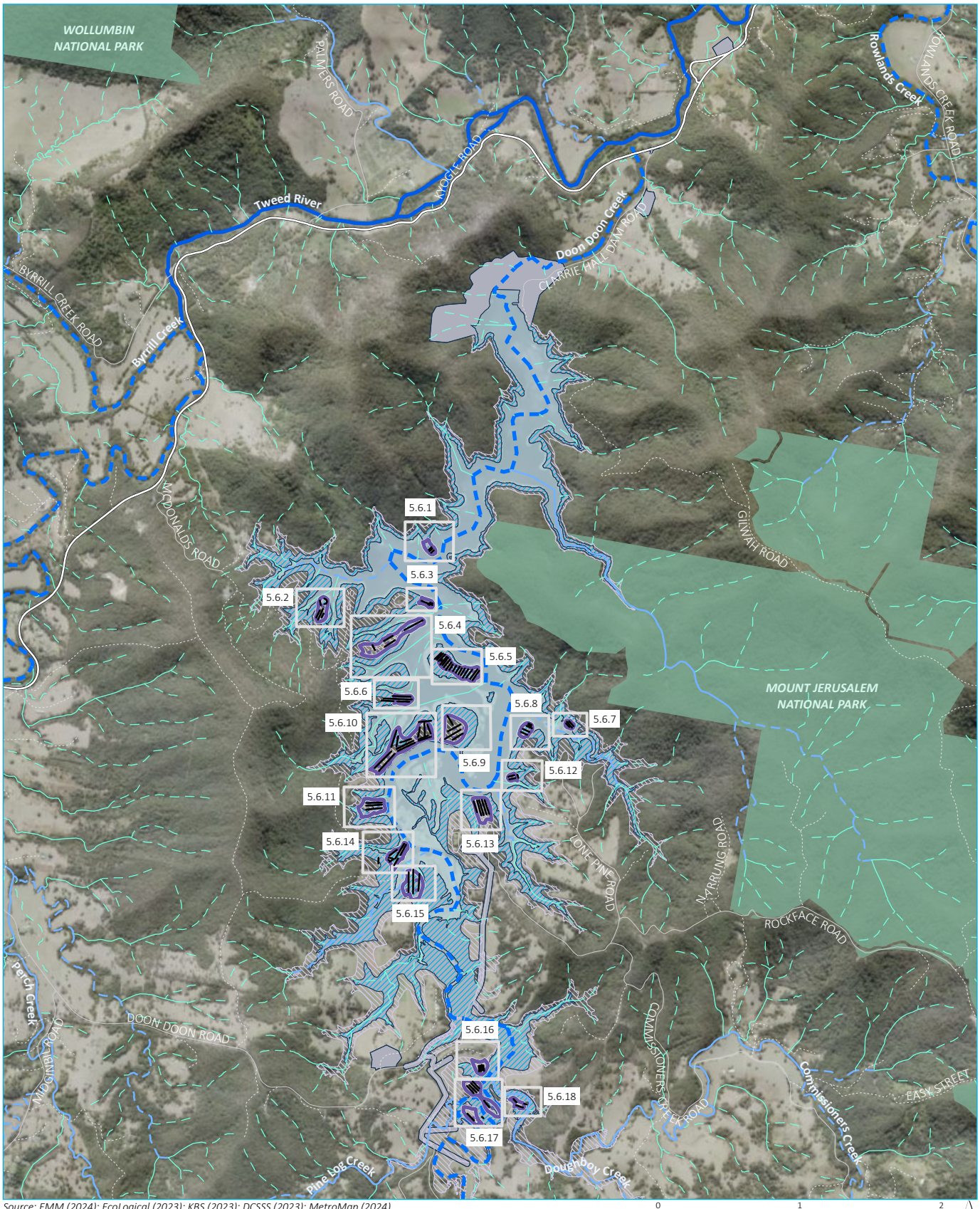
GDA2020 MGA Zone 56

N

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.5.18

EMM creating opportunities

\\emm.local\xdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA011_EcologicalExcavationCount\ACHA011_EcologicalExcavationCount_20240319_04.aprx 25/07/2024



Source: EMM (2024); EcoLogical (2023); KBS (2023); DCSSS (2023); MetroMap (2024)

0 1 2 km

GDA2020 MGA Zone 56

N

\\emm.local\xdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA012_EcologicalExcavationPersqmOverview_20240419_01.aprx 25/07/2024

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5 - 70 m AHD)
- Inundation to PMF (70-77 m AHD)
- Potential archaeological deposit
- Page reference
- Test excavation transect (Ecological 2021)

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 4th order
- 5th order
- 6th order

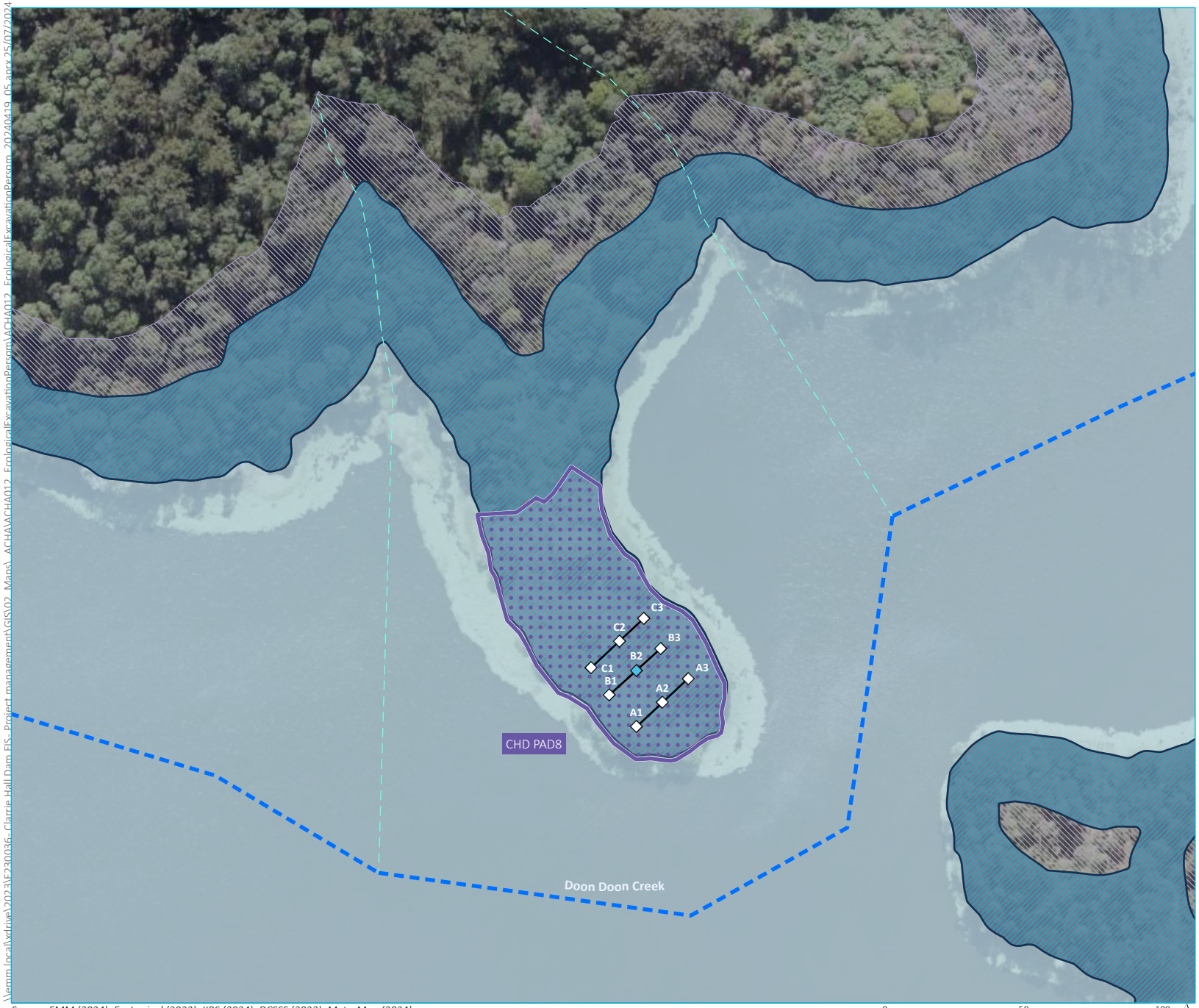
Existing environment

- Major road
- Minor road
- Vehicular track
- NPWS reserve

Test excavation results of ELA (2021) applying extrapolated artefacts / m^2

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.6

EMM creating opportunities



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- Inundation to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts per m^2

- 0
- 4

Strahler stream order

- 1st order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

GDA2020 MGA Zone 56

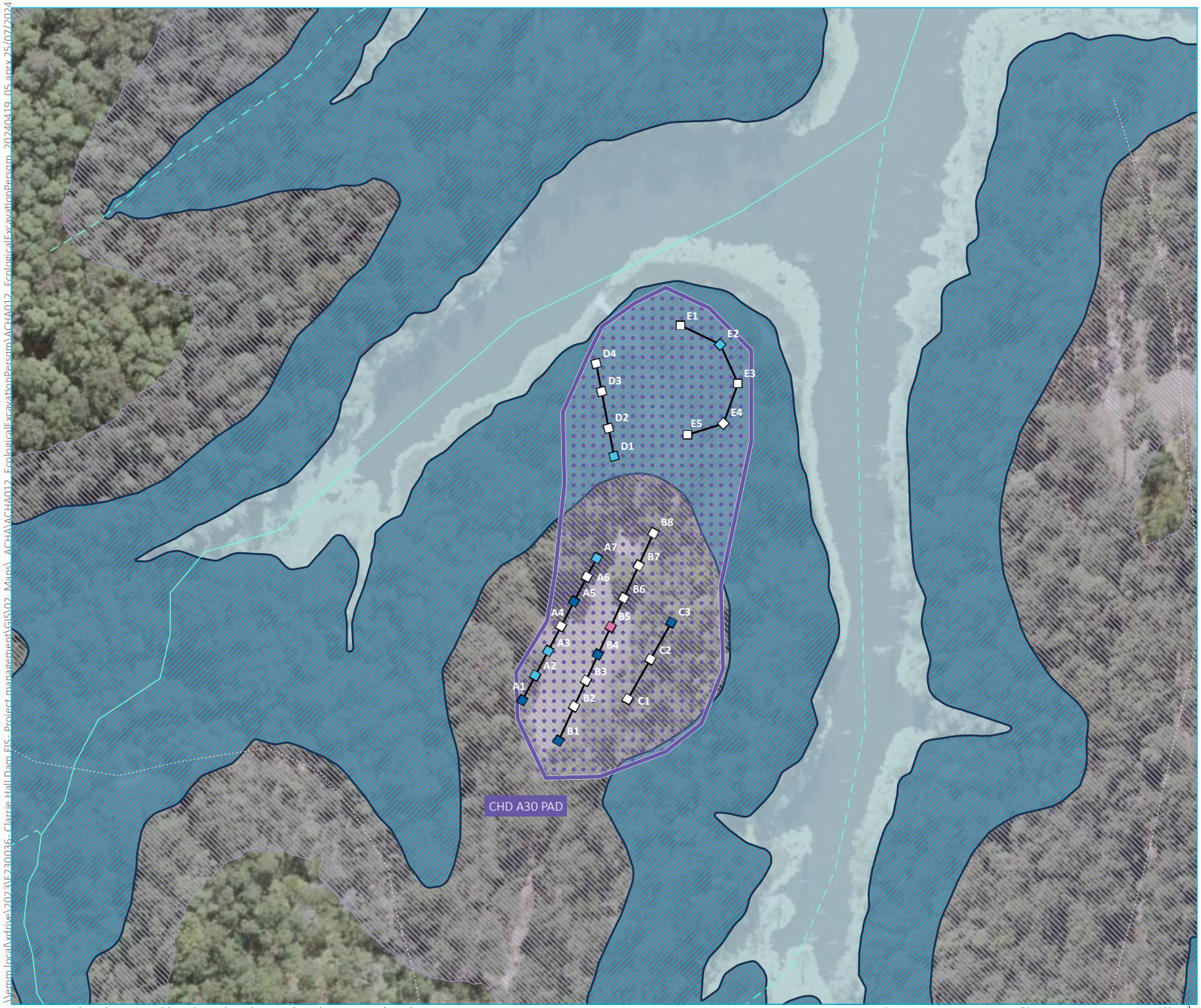
N

Test excavation results of ELA (2021) applying extrapolated artefacts / m^2

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.6.1

EMM creating opportunities

\\emm.local\xtdrive\2023\E230036_Clarrie Hall Dam EIS_Project management\GIS\02_Maps_ACHA\ACHA012_EcologicalExcavationPerson\ACHA012_EcologicalExcavationPerson_20240419_05.aprx 25/07/2024



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- Inundation to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts per m^2

- 0
- 4
- 8
- 16

Strahler stream order

- 1st order
- 2nd order

Existing environment

- Major road
- Minor road
- Vehicular track

Test excavation results of ELA (2021) applying extrapolated artefacts / m^2

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.6.2

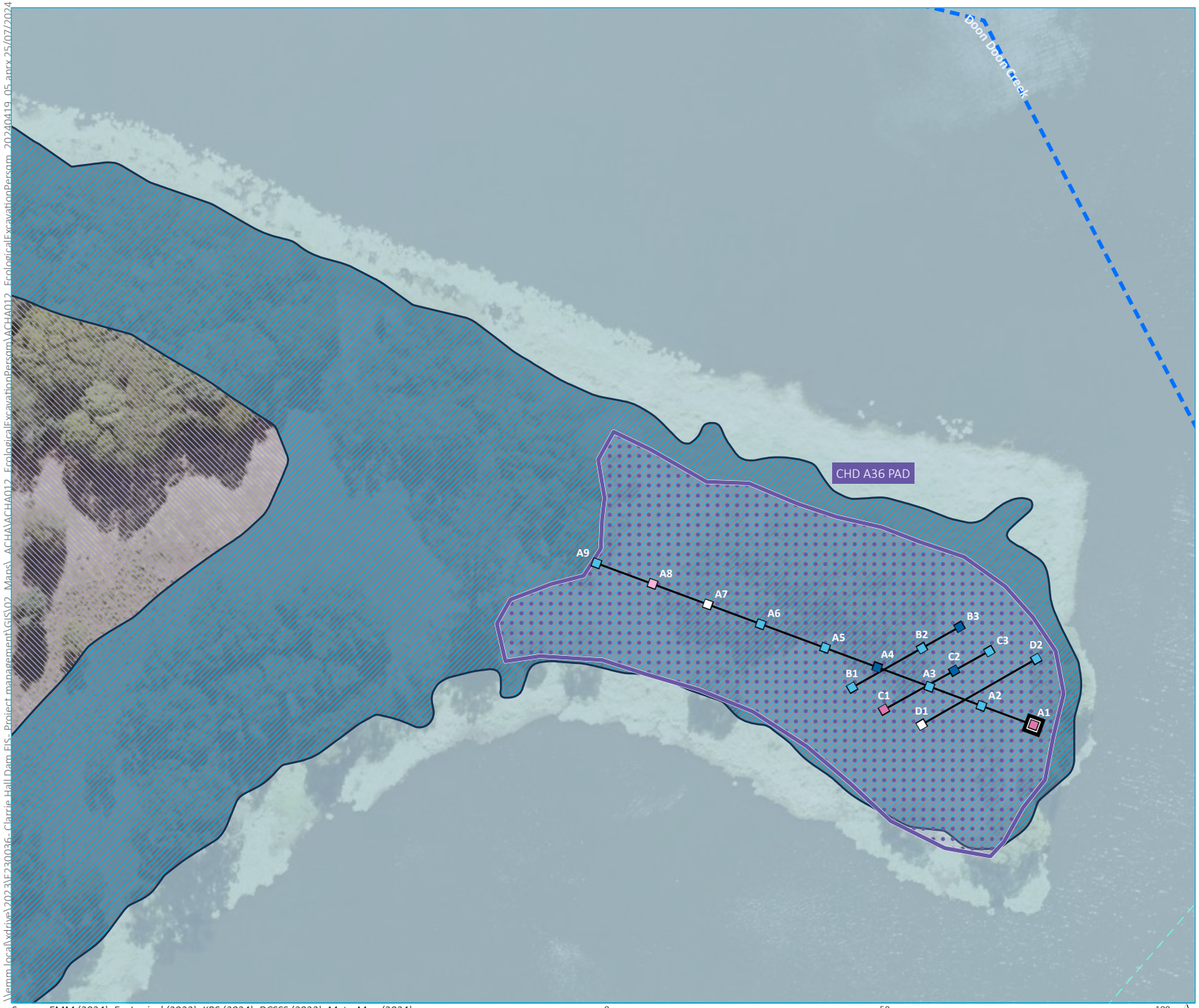
Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m
GDA2020 MGA Zone 56

N

creating opportunities

\\emm.local\xtrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps\ACHA\ACHA012_EcologicalExcavationPerson\ACHA012_EcologicalExcavationPerson_20240419_05.aprx 25/07/2024



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- Inundation to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts per m^2

- 0
- 4
- 8
- 16
- 20
- Count includes area of pit expansion

Strahler stream order

- 1st order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Test excavation results of ELA (2021) applying extrapolated artefacts / m^2

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

GDA2020 MGA Zone 56

N

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.6.3

EMM creating opportunities

\\emm.local\xdrive\2023\E230036_Clarrie Hall Dam EIS_Project management\GIS\02_Maps_ACHA\ACHA012_EcologicalExcavationPerson\ACHA012_EcologicalExcavationPerson_20240419_05.aprx 25/07/2024

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- Inundation to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts per m^2

- 0
- 4
- 8
- 12
- 16

Strahler stream order

- 1st order
- 2nd order

Existing environment

- Major road
- Minor road
- Vehicular track

\\emm.local\vdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA012_EcologicalExcavationPerson\ACHA012_EcologicalExcavationPerson_20240419_05.aprx 25/07/2024

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

GDA2020 MGA Zone 56

N

Test excavation results of ELA (2021) applying extrapolated artefacts / m^2

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.6.4

EMM
creating opportunities

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- Inundation to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts per m^2

- 0
- 4
- 8
- 12
- 16
- 20
- 24
- 28
- 32
- 40
- 44

Strahler stream order

- 1st order
- 2nd order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

GDA2020 MGA Zone 56

N

Test excavation results of ELA (2021) applying extrapolated artefacts / m^2

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.6.5

EMM creating opportunities

\\emm.local\xdrive\2023\E230036_Clarrie Hall Dam EIS_Project management\GIS\02_Maps_ACHA\ACHA012_EcologicalExcavationPerson\ACHA012_EcologicalExcavationPerson_20240419_05.aprx 25/07/2024

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- Inundation to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts per m^2

- 0
- 4
- 8
- 12
- 20

Strahler stream order

- 1st order
- 2nd order

Existing environment

- Major road
- Minor road
- Vehicular track

Test excavation results of ELA (2021) applying extrapolated artefacts / m^2

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

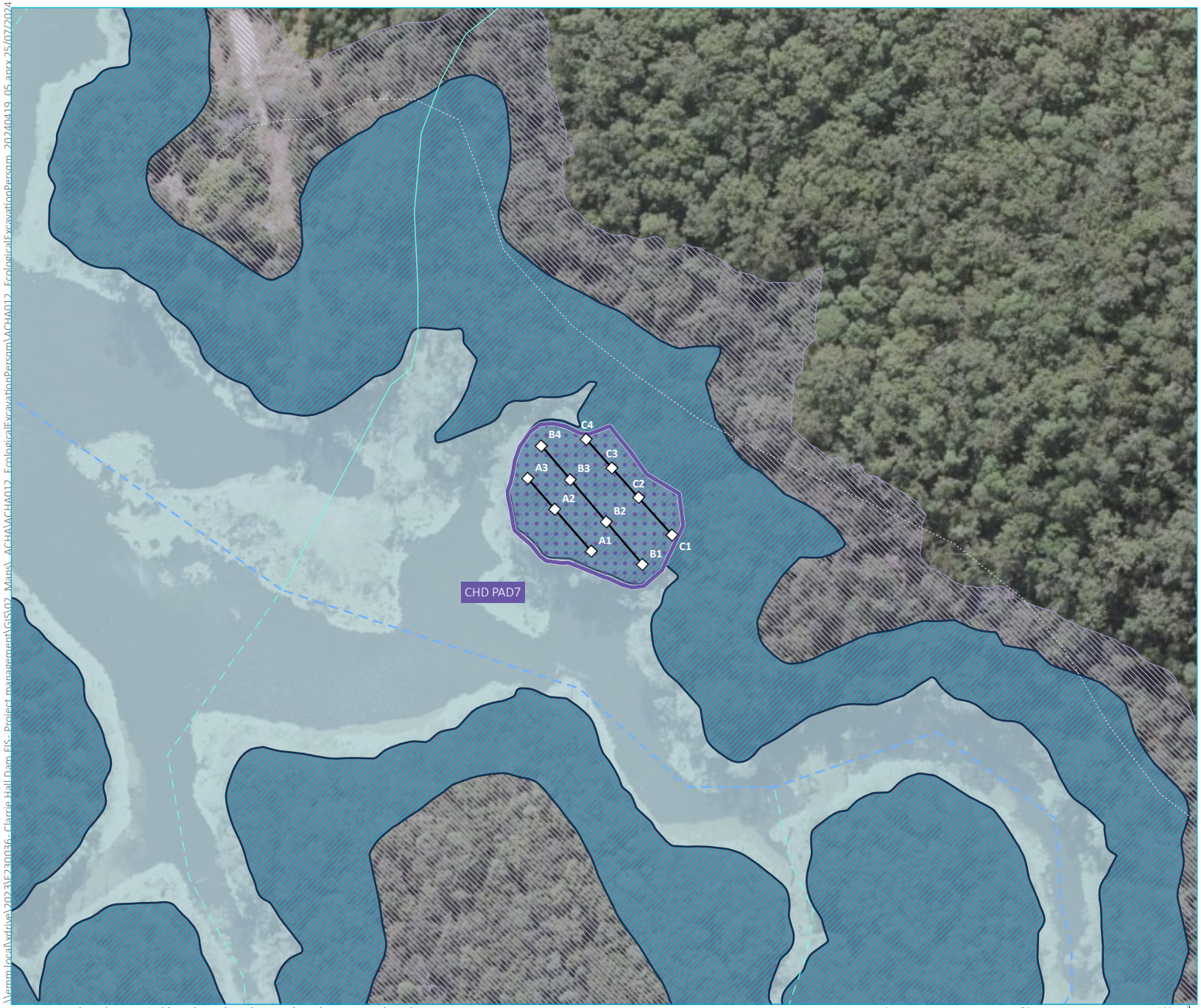
GDA2020 MGA Zone 56

N

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.6.6

EMM creating opportunities

\\emm.local\xdrive\2023\EF230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA012_EcologicalExcavationPerson\ACHA012_EcologicalExcavationPerson_20240419_05.aprx 25/07/2024



Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

\\emm.local\xdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps\ACHA\ACHA012_EcologicalExcavationPerson\ACHA012_EcologicalExcavationPerson_20240419_05.aprx 25/07/2024

Test excavation results of ELA (2021) applying extrapolated artefacts / m^2

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.6.7

EMM
creating opportunities

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- Inundation to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts per m^2

- 0
- 4
- 8
- 12
- 40

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

GDA2020 MGA Zone 56

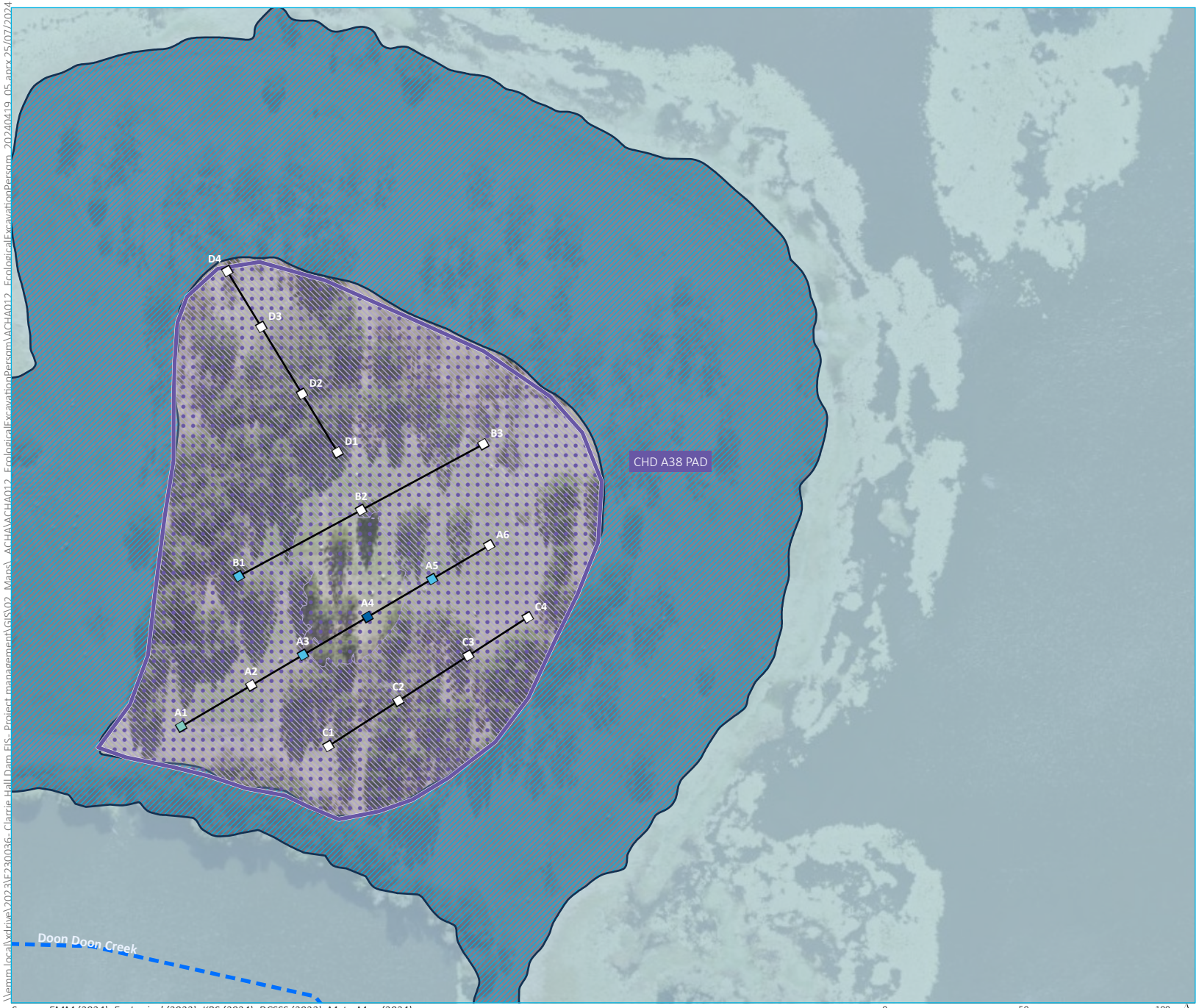
N

Test excavation results of ELA (2021) applying extrapolated artefacts / m^2

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.6.8

EMM creating opportunities

\\emm.local\xdrive\2023\E230036_Clarrie Hall Dam EIS- Project management\GIS\02_Maps_ACHA\ACHA012_EcologicalExcavationPersqm\ACHA012_EcologicalExcavationPersqm_20240419_05.aprx 25/07/2024



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- Inundation to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts per m^2

- 0
- 4
- 8
- 24

Strahler stream order

- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Test excavation results of ELA (2021) applying extrapolated artefacts / m^2

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

GDA2020 MGA Zone 56

N

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.6.9

EMM creating opportunities

\\emm.local\xdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA012_EcologicalExcavationPerson\ACHA012_EcologicalExcavationPerson_20240419_05.aprx 25/07/2024

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- Inundation to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts per m^2

- 0
- 4
- 8
- 12
- 16
- 20
- 24
- 28
- 45
- 80
- Count includes area of pit expansion

Strahler stream order

- 1st order
- 2nd order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Test excavation results of ELA (2021) applying extrapolated artefacts / m^2

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.6.10

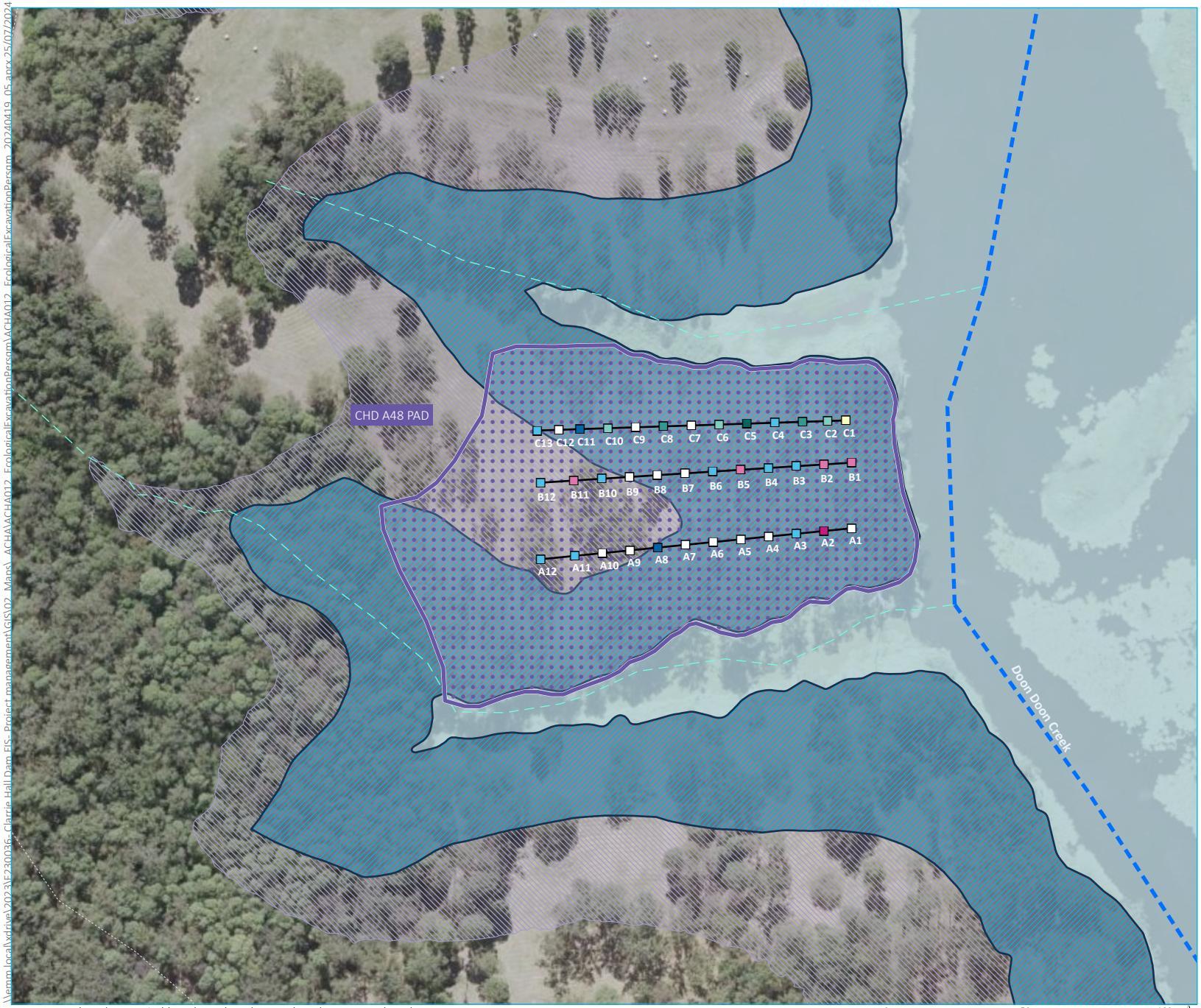
Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m
GDA2020 MGA Zone 56

N

\\emm.local\xtdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA012_EcologicalExcavationPerson\ACHA012_EcologicalExcavationPerson_20240419_05.aprx 25/07/2024

EMM creating opportunities



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- Inundation to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts per m^2

- 0
- 4
- 8
- 12
- 16
- 24
- 28
- 32
- 52

Strahler stream order

- 1st order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

\\emm.local\xdrive\2023\E230036- Clarrie Hall Dam EIS- Project management\GIS\02_Maps\ ACHA\ACHA012_EcologicalExcavationPerson\ACHA012_EcologicalExcavationPerson_20240419_05.aprx 25/07/2024

Test excavation results of ELA (2021) applying extrapolated artefacts / m^2

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.6.11

EMM
creating opportunities

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- Inundation to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts per m^2

- 0
- 4
- 8

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

GDA2020 MGA Zone 56

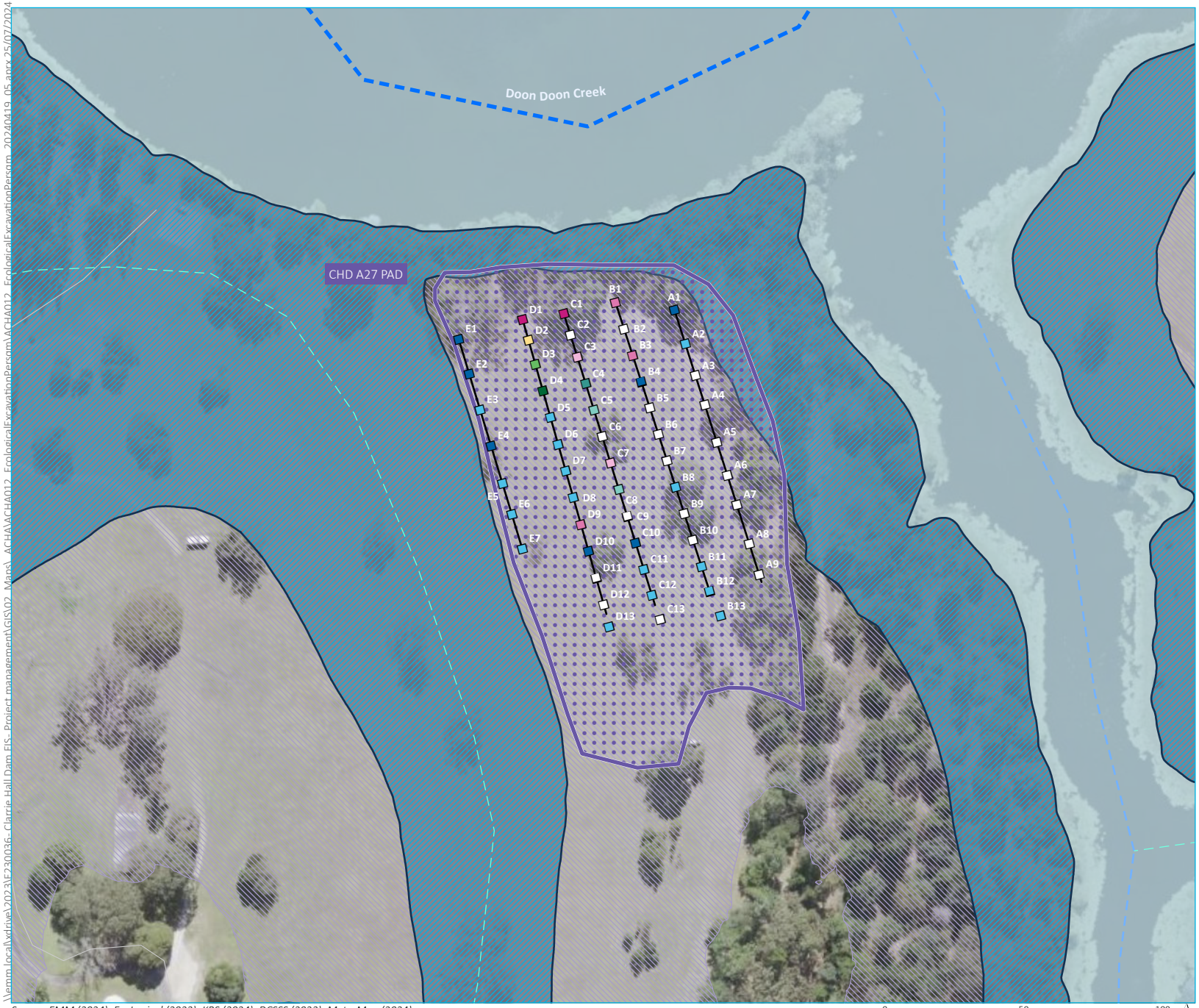
N

Test excavation results of ELA (2021) applying extrapolated artefacts / m^2

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.6.12

EMM creating opportunities

\\emm.local\xdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA012_EcologicalExcavationPersqm\ACHA012_EcologicalExcavationPersqm_20240419_05.aprx 25/07/2024



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- Inundation to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts per m^2

- 0
- 4
- 8
- 12
- 16
- 20
- 24
- 28
- 36
- 40
- 60

Strahler stream order

- 1st order
- 3rd order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

GDA2020 MGA Zone 56

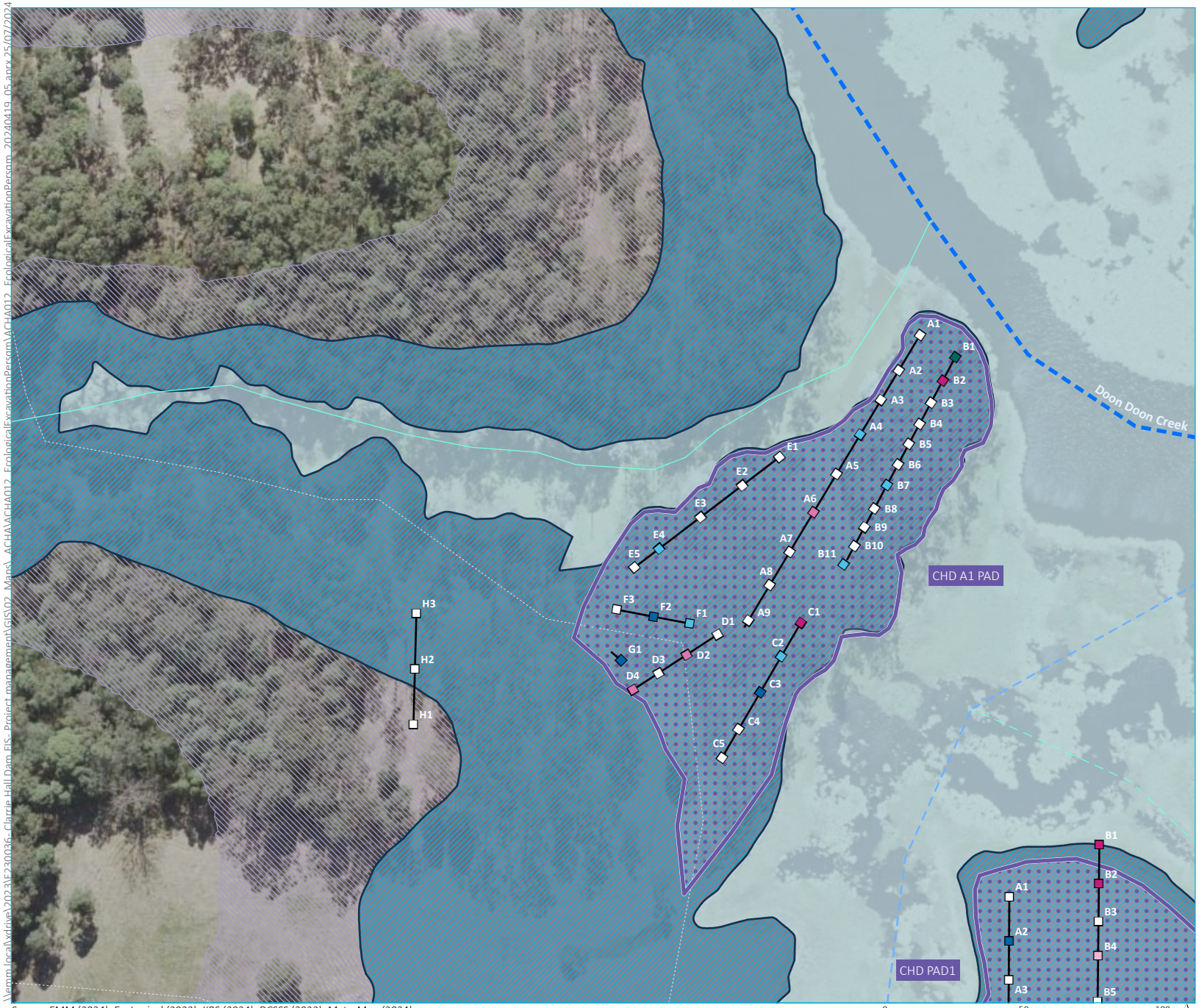
N

Test excavation results of ELA (2021) applying extrapolated artefacts / m^2

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.6.13

EMM creating opportunities

\\emm.local\xdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA012_EcologicalExcavationPerson\ACHA012_EcologicalExcavationPerson_20240419_05.aprx 25/07/2024



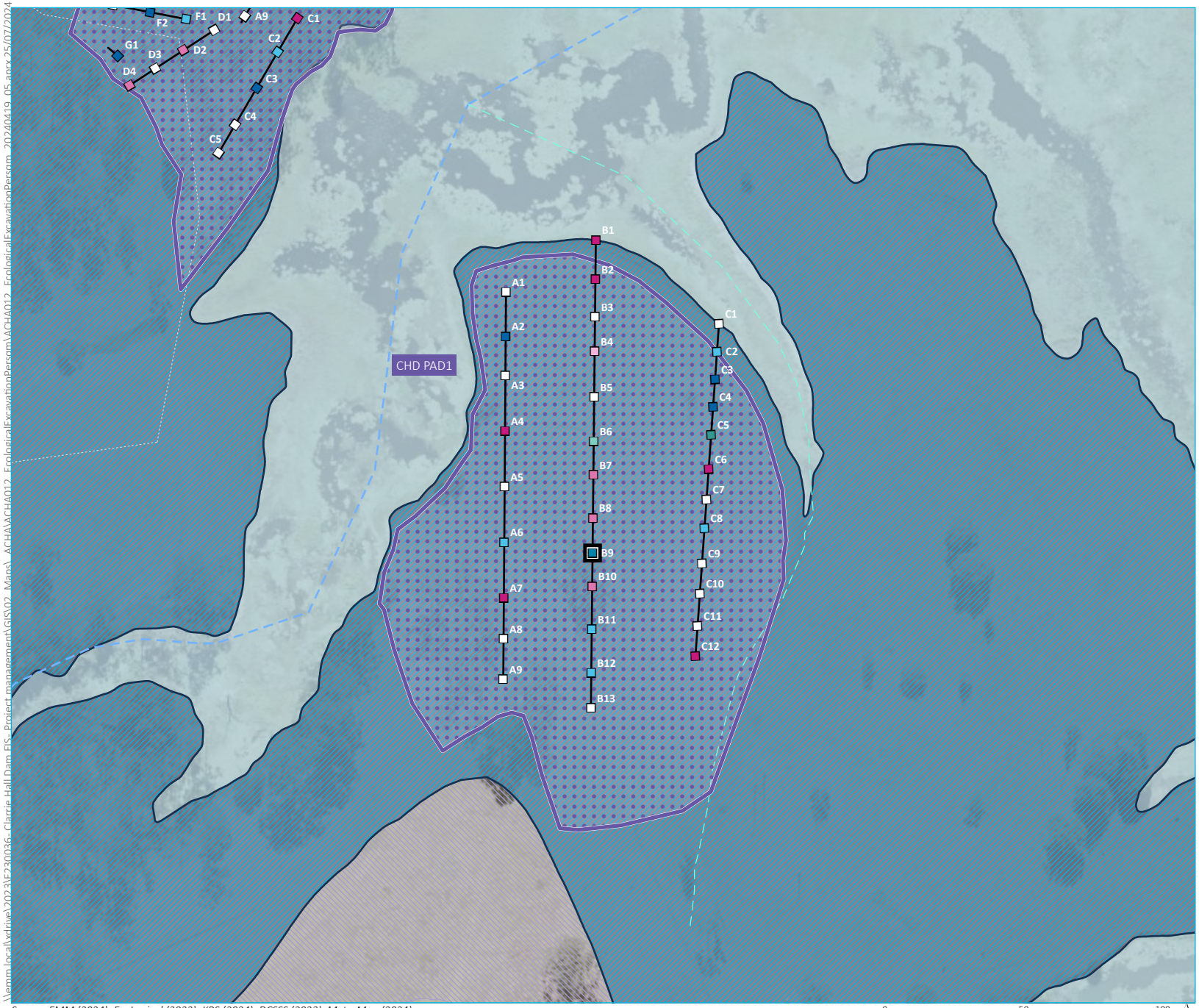
Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

\\emm.local\vtrive\2023\E230036_Clarrie Hall Dam EIS_Project management\GIS\02_Maps_ACHA\ACHA012_EcologicalExcavationPerson\ACHA012_EcologicalExcavationPerson_20240419_05.aprx 25/07/2024

Test excavation results of ELA (2021) applying extrapolated artefacts / m^2

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.6.14

EMM
creating opportunities



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- Inundation to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts per m^2

- 0
- 4
- 8
- 12
- 16
- 20
- 24
- 28
- 31
- Count includes area of pit expansion

Strahler stream order

- 1st order
- 3rd order

Existing environment

- Major road
- Minor road
- Vehicular track

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

GDA2020 MGA Zone 56

N

Test excavation results of ELA (2021) applying extrapolated artefacts / m^2

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.6.15

EMM creating opportunities

\\emm.local\vdrive\2023\E230036_Clarrie Hall Dam EIS_Project management\GIS\02_Maps_ACHA\ACHA012_EcologicalExcavationPersqm_20240419_05.aprx 25/07/2024

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- Inundation to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts per m^2

- 0
- 4
- 8
- 12
- 16
- 20
- 24
- 28
- 32
- 44
- 48
- 60

Strahler stream order

- 1st order
- 4th order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Test excavation results of ELA (2021) applying extrapolated artefacts / m^2

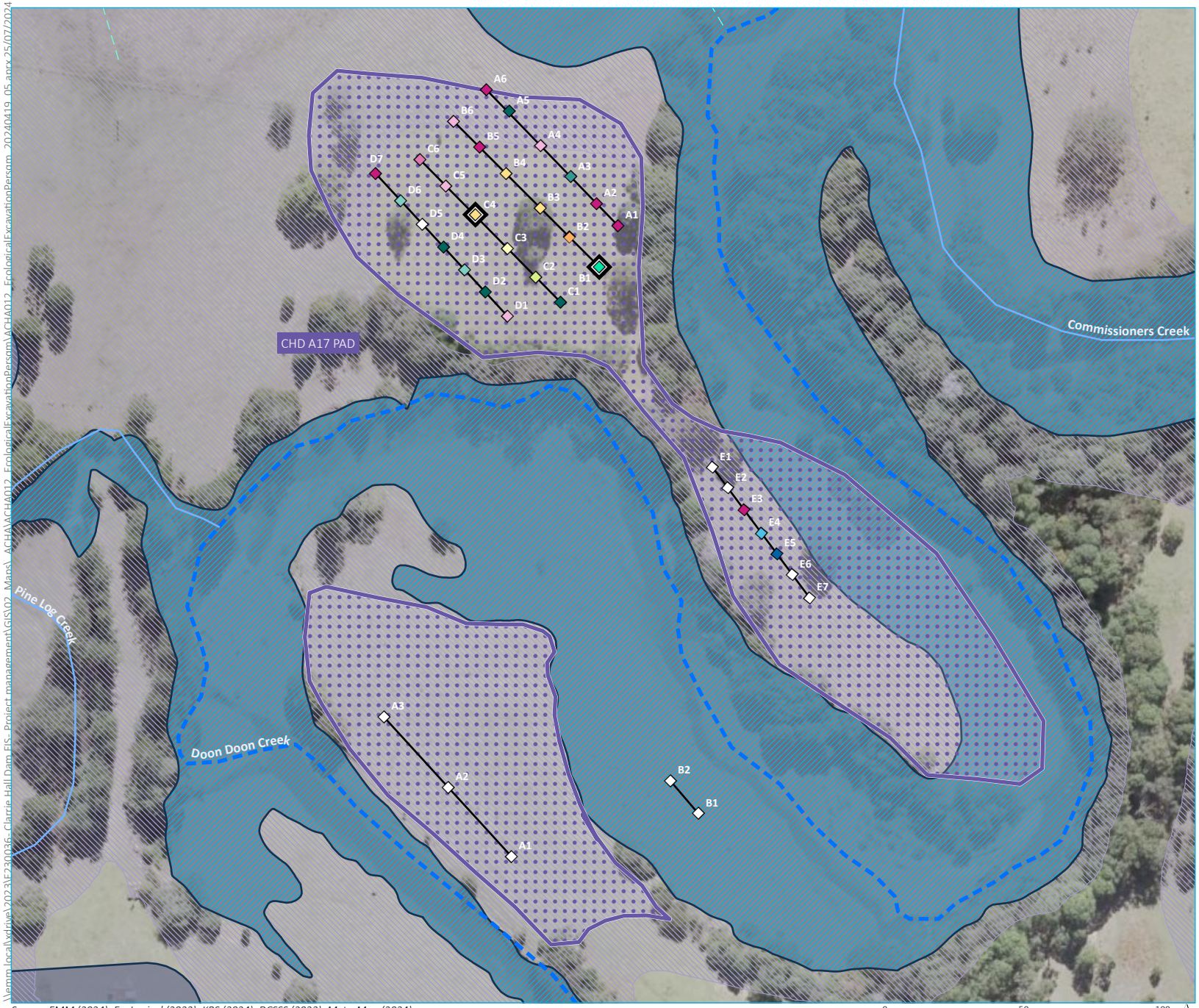
Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.6.16

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m
GDA2020 MGA Zone 56
N

creating opportunities

\\emm.local\xdrive\2023\E230036_Clarrie Hall Dam EIS_Project management\GIS\02_Maps_ACHA\ACHA012_EcologicalExcavationPerson\ACHA012_EcologicalExcavationPerson_20240419_05.aprx 25/07/2024



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- Inundation to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts per m^2

- 0
- 4
- 8
- 12
- 16
- 20
- 24
- 27
- 28
- 32
- 48
- 52
- 60
- 68
- Count includes area of pit expansion

Strahler stream order

- 1st order
- 4th order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Test excavation results of ELA (2021) applying extrapolated artefacts / m^2

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

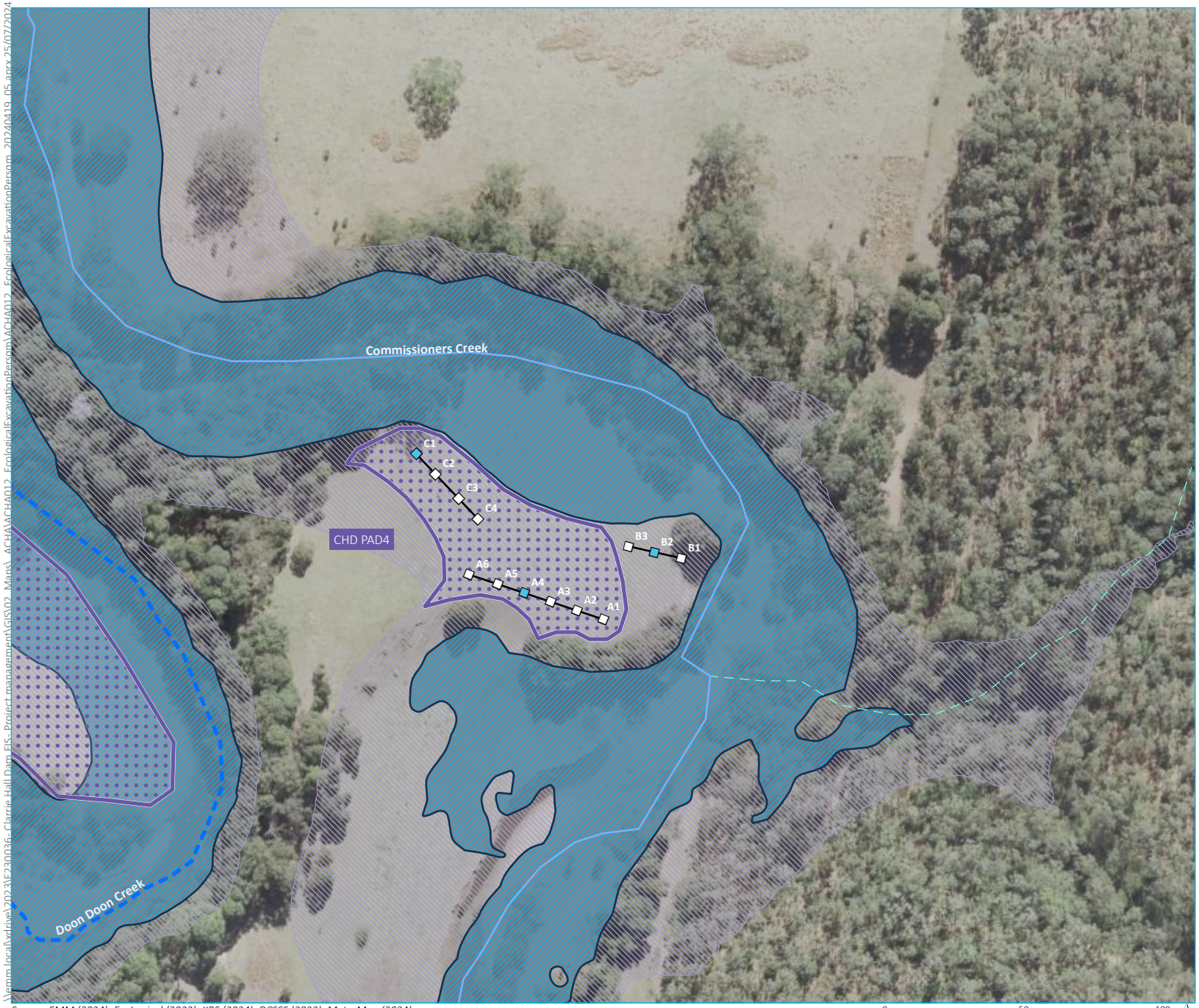
GDA2020 MGA Zone 56

N

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.6.17

EMM creating opportunities

\\emm.local\vdrive\2023\E230036_Clarrie Hall Dam EIS_Project management\GIS\02_Maps_ACHA\ACHA012_EcologicalExcavationPerson\ACHA012_EcologicalExcavationPerson_20240419_05.aprx 25/07/2024



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- Inundation to PMF (70-77 m AHD)
- Potential archaeological deposit
- Test excavation transect (Ecological 2021)

Number of artefacts per m^2

- 0
- 4

Strahler stream order

- 1st order
- 4th order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

GDA2020 MGA Zone 56

N

Test excavation results of ELA (2021) applying extrapolated artefacts / m^2

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 5.6.18

EMM creating opportunities

\\emm.localxdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA012_EcologicalExcavationPerson\ACHA012_EcologicalExcavationPerson_20240419_05.aprx 25/07/2024

6 Archaeological resource

6.1 Key findings

- The Proposal has been subject to three assessments over the last six years, and includes cultural values mapping, field survey, and test excavations to explore and document the Aboriginal objects, site and places within the project area and to align them within the regional context. Overall, the findings have found the Proposal to be situated within a rich cultural landscape with evidence of extensive but disparate past human activity along Doon Doon Creek in the past – elements of which remain extant above the existing dam and reservoir.

- These various site validation activities undertaken over a six-year period, resulted in the duplication and overlapping of results presented in Sections 3.3, 5.2, and 5.3. When combining and ratifying these findings, some 14 discrete Aboriginal objects and sites are located within the proposed FSL and other development infrastructure activities amongst the continuous background distribution of surface and shallowly buried artefacts across the project area. These can be broken down as:

    - Two rockshelter sites (#04-1-0286 [CHD-RS1] and #04-1-0090 (CHD BMP– 05-0036]). #04-1-0286 reflects two closely spaced overhangs on the same sandstone outcropping and documented under the same AHIMS listing.

    - Two culturally modified trees (#04-1-0285 [CHD-ST1] and #04-1-0303 [CHD-ST2]). A third potential tree was identified during the rockshelter investigations for this report (Section 2.4) but has been added to the listing of #04-1-0286.

    - One natural chalcedony outcropping identified as a potential quarry (#04-1-0284 [CHD-G1]).

    - Nine areas of past foci and activity #04-1-0238 [CHD-AS36], #04-1-0239 [CHD-AS37], #04-1-0249 [CHD A48], #04-2-0264 [CHD-AS17], #04-1-0280 [CHD A1], #04-1-0281 [CHD-A55], #04-1-0288 [CHD-PAD9], #04-1-0291 [CHD-PAD6], and #04-1-0296 [CHD PAD1]) characterised by high densities of sub-surface artefacts ($\bar{x}$ = ≥24/m^2) which are considered to reflect extensive and/or repeated visitation and occupation by people over the last few thousand years. Based on field observations and previous archaeological fieldwork, the average size of these sites between 0.12 and 1.5 ha.

    - A stone artefact background scatter that is predicted to occur intermittently across the project area and extending beyond its limits within which intermittent low to moderate artefact densities of 1–23/m^2 may be expected intermixed with culturally sterile zones. This includes a large number of the previously recorded sites (n=65) currently documented across the project area and outlined in subsequent sections.

- When considering the area between the proposed FSL and PMF (70–77 m AHD), the following additional three Aboriginal objects and sites would be encompassed within the Proposal (in the case of inundation between 70–77 m AHD, this will be affected less frequently as elevation increases. While values immediately above 70 m AHD may be affected in a higher probability event (eg a 5% AEP event, or 5% chance of occurring in a given year, elevations closer to 77 m AHD may only be during the PMF which has an exceedingly low chance of occurring in a given year).:

    - Two area of past foci and activity (#04-1-0254 [CHD-A27] and #04-1-0295 [CHD-PAD2]) characterised by a high density of sub-surface artefacts which reflect extensive and/or repeated visitation and occupation by people over the last several thousand years.

- One grinding groove (#04-1-0261 [CHD-A20]).

- A continuation of the stone artefact background scatter that is predicted to occur intermittently across the project area and extending beyond its limits within which disparate low to moderate artefact densities of 1–23/m^2 may be expected intermixed with culturally sterile zones.

6.2 Results and synthesis

The project area is encompassed within a significant cultural landscape dominated by the prominent Wollumbin (Mount Warning) just north of the site. A substantive number of traditional Dreaming stories include Wollumbin within their narrative, and many of these remain important to the local Aboriginal community today. These stories extend from the coastal edge into Woodenbong and inland. Indeed, the importance of the region may be evident in the use and residence of the locale – potentially including the project area – by the Moorung Moobar people prior to Contact. Additional discussions with Elders and key knowledge-holders as part of this report did not identify any specific areas or places of value within the project area but did highlight the importance of nearby Byrrill Creek and Commissioners Creek. The former was a proposed area for an earlier iteration of the Proposal but was discontinued in part due to cultural heritage – a finding reinforced here. While a portion of Commissioners Creek is within the Proposal, discussions suggest the places of value are further upstream and some distance south of the project area.

However, despite this rich intangible history, detailed cultural heritage investigations of the region have been extremely limited. The majority of previous investigations have been as part of various iterations of the establishment of the Clarrie Hall dam, and the current Proposal. This must be highlighted, since the perception of substantive cultural materials within the project area, is in part the result of a *lack* of knowledge about the surrounding region. A search of the AHIMS report database for Uki and Murwillumbah returns only 19 studies over the last ~40 years.

Prior to the establishment of the present dam in the 1970s, investigations by Dallas and Sullivan, and Piper, identified a small number of Aboriginal objects and sites, including a rockshelter, culturally modified trees, and various stone artefacts. With few exceptions, these sites have been inundated by the current reservoir, including #04-1-0011, #04-1-0016, #04-1-0025, #04-1-0026, #04-1-0027, and #04-1-01888. Only a small number of these have been documented on the Heritage NSW AHIMS database, and despite multiple studies, information on their composition or location remains limited. Further, anecdotal information indicates that an identified grinding groove and culturally modified tree from these studies were recovered and situated near the dam in the 1980s but has since been lost (Appendix F).

Following the establishment of the dam and its proposed raising, a number of studies have been undertaken around its periphery, including SCU (2008), NOHC (2018) and ELA (2021), and most recently additional field investigations for this report. These have demonstrated a more extensive cultural assemblage, including additional rockshelters, culturally modified trees and numerous disparate stone artefact sites. The majority of these data comes from NOHC (2018) who investigated some 87.5% of the project area, and identified 60 discrete new site recordings, including several with potential subsurface cultural materials. These latter sites appear to be situated on the remnants of the Doon Doon Creek corridor – typically nearby crests – that would have overlooked this important watercourse and remain above the current reservoir to this day.

ELA (2021) undertook archaeological excavations of the potential subsurface sites identified by NOHC (2018) and totalling 19 discrete locations along the length of the current reservoir. While ELA's (2021) test excavations were extensive, the report has limited synthesis of the findings or how the initial predictions that encompassed some 60 ha of the project area. Additional review of the information gathered as part of these works indicates that artefact densities of ≥24/m^2 are indicative of extended and/or repeated occupation, and these areas of past foci are typically 0.81 ha in size. Some 10 specific foci were identified, and totalling ~5 ha of the project area.

With so many studies across different period encompassing the project area, there is some duplication. For example, ELA (2021) entirely investigated 19 previously identified sites, and which we here have re-interpreted through analysis of the data. As such, they are referenced as three different site types and extent in three different assessments. Additionally, both NOHC (2018) and ELA (2021) appeared to extend investigations beyond the proposed FSL and PMF footprint, and as such numerous sites referenced would be unaffected and outside the Proposal. Further, some sites have been previously inundated and lost through the current dam, albeit may still be referenced in Heritage NSW AHIMS database. While these need to be referenced in consideration of cumulative impact in subsequent sections, listing them as part of the extant cultural assemblage would be mis-leading.

When ratifying these various assessments, removing those that have been inundated and/or outside the Proposal, adopting a threshold of ≥24/m^2 as reflecting past specific activity, the following cultural assemblage can be considered within the proposed FSL:

- Two rockshelter sites (#04-1-0286 [CHD-RS1][5] and #04-1-0090 (CHD BMP– 05-0036]). #04-1-0286 reflects two closely spaced overhangs on the same sandstone outcropping and documented under the same AHIMS listing.

- Two culturally modified trees (#04-1-0285 [CHD-ST1] and #04-1-0303 [CHD-ST2]). A third potential tree was identified during the rockshelter investigations for this report (Section 2.4), but has been added to the listing of #04-1-0286.

- One natural chalcedony outcropping identified as a potential quarry (#04-1-0284 [CHD-G1]).

- Nine areas of past foci and activity (#04-1-0238 [CHD-AS36], #04-1-0239 [CHD-AS37], #04-1-0249 [CHD A48], #04-2-0264 [CHD-AS17], #04-1-0280 [CHD A1], #04-1-0281 [CHD-A55], #04-1-0288 [CHD-PAD9], #04-1-0291 [CHD-PAD6], and #04-1-0296 [CHD PAD1]) characterised by high densities of sub-surface artefacts ($\bar{x}$ = ≥24/m^2) which are considered to reflect extensive and/or repeated visitation and occupation by people over the last few thousand years. Based on field observations and previous archaeological fieldwork, the average size of these sites between 0.12 and 1.5 ha.

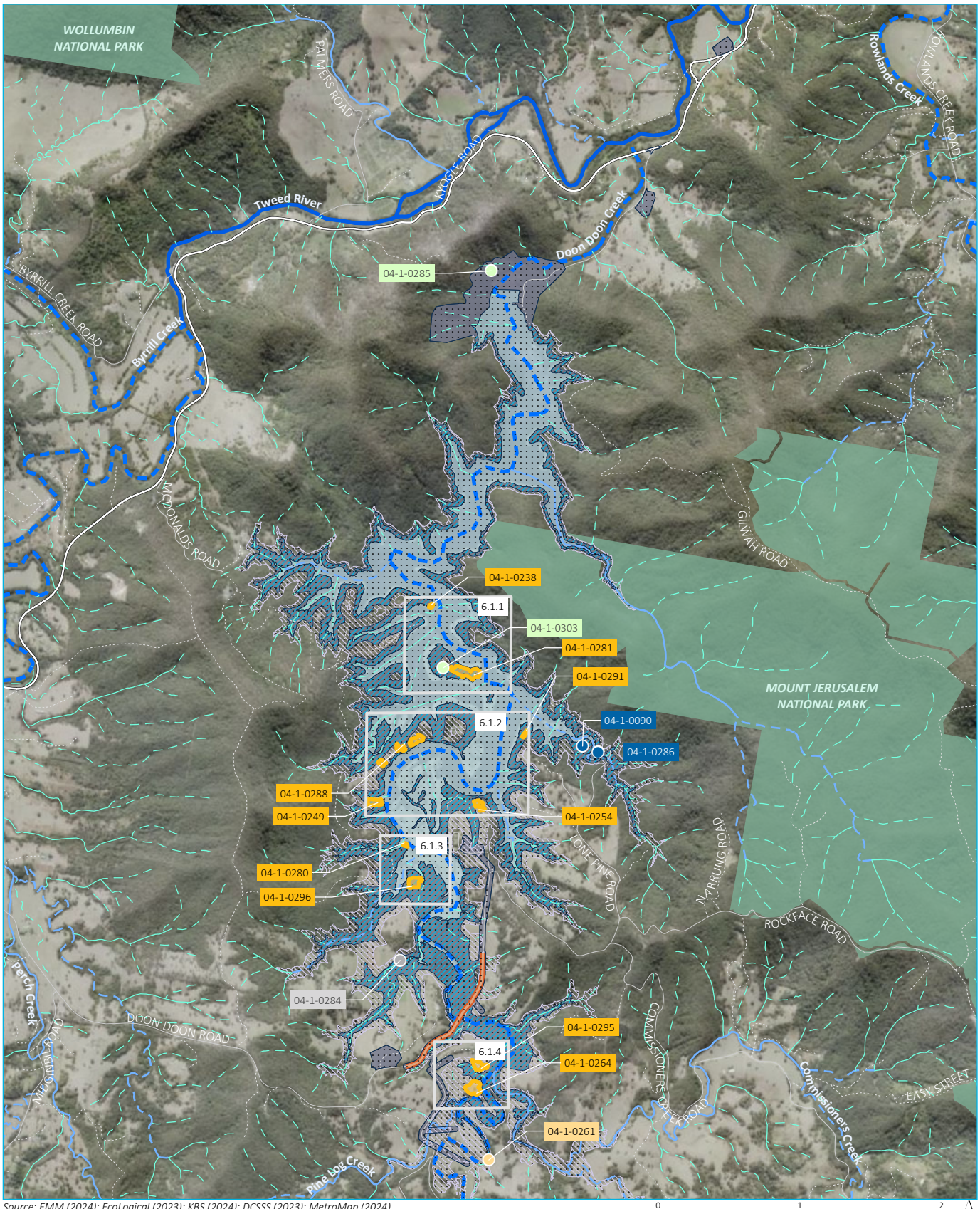
- A stone artefact background scatter that is predicted to occur intermittently across the project area and extending beyond its limits within which disparate low to moderate artefact densities of 1–23/m^2 may be expected intermixed with culturally sterile zones. This includes a large number of the previously recorded sites (n=65) currently documented across the project area, including CHD24 AS1, #04-1-0289 (CHD PAD 8), #04-1-0302 (CHD-1), #04-1-0009 (Midginbill DD1 BMP-05-0029), #04-1-0010 (Midginbill DD2 BMP-05-0030), #04-1-0011 (Midginbill DD3 BMP-050031), #04-1-0130 (Clarrie Halll Dam 2 BMP-05-0112), #04-1-0230 (CHD-A52), #04-1-0231 (CHD A51), #04-1-0234 (CHD-A33), #04-1-0241 (CHD-A39), #04-1-0244 (CHD-A42), #04-1-0246 (CHD-A44), #04-1-0247 (CHD-A46), #04-1-0248 (CHD-A47), #04-1-0250 (CHD-A45), #04-1-0251 (CHD-A53), #04-1-0252 (CHD-A29), #04-1-0253 (CHD-A28), #04-1-0256 (CHD-A25), #04-1-0257 (CHD-A24), #04-1-0260 (CHD-A21), #04-1-0263 (CHD-A18), #04-1-0266 (CHD-A15), #04-1-0267 (CHD-A14), #04-1-0268 (CHD-A13), #04-1-0269 (CHD-A12), #04-1-0270 (CHD-A11), #04-1-0271 (CHD-A10), #04-1-0272 (CHD-A9), #04-1-0274 (CHD-A7), #04-1-0276 (CHD-A5), #04-1-0278 (CHD-A3), #04-1-0279 (CHD-A2), #04-1-0282 (CHD-A54), #04-1-0258 (CHD-A23), #04-1-0259 (CHD-A22), #04-1-0229 (CHD-A50), #04-1-0232 (CHD-A31), #04-1-0233 (CHD-A32), #04-1-0235 (CHD-A30), #04-1-0236 (CHD-A34), #04-1-0237 (CHD-A35), #04-1-0240 (CHD-A38), #04-1-0242 (CHD-A40), #04-1-0243 (CHD-A41), #04-1-0245 (CHD-A43), #04-1-0255 (CHD-A26), #04-1-0262 (CHD-A19), #04-1-0273 (CHD-A8), #04-1-0277 (CHD-A4), #04-1-0292 (CHD PAD 5), #04-1-0294

[5] In some parts of NOHC (2018) and ELA (2021) and subsequent discussions with the Aboriginal participants, this site is aligned and sometime referenced as DD 6 (#04-1-0014). It is considered that when references to #04-1-0014 – technically DD6, a site that has been previously inundated – reference is actually being made to CHD-RS1 (#04-1-0286). The two sites are clearly in close proximity to each other and may account for the inter-changeable nature of the terms.

(CHD PAD 4), #04-1-0297 (CHD-A49), #04-1-0301 (CHD-AS1), #04-1-0265 (CHD-A16), #04-1-0275 (CHD-A6), CH6, CH7, CH8, #04-1-0012 (Midginbill DD4), #04-1-0015 (Byill Range DD7 BMP-05-0037), #04-1-0025 (Mt Misery Byrrill, BMP-05-0070), #04-1-0027 (Mt Misery Byrrill BMP-05-0072) #04-1-0194 (Byrrill Ridge 4 Tweed ACH Artefacts).

When considering the area between the proposed FSL and PMF (70-77 m AHD), three further Aboriginal objects and sites would be encompassed within the Proposal:

- Two area of past foci and activity (#04-1-0254 [CHD-A27] and #04-1-0295 [CHD-PAD2]) characterised by a high density of sub-surface artefacts which reflect extensive and/or repeated visitation and occupation by people over the last several thousand years.
- One grinding groove (#04-1-0261 [CHD-A20]).
- A continuation of the artefact background scatter that is predicted to occur intermittently across the project area and extending beyond its limits within which disparate low to moderate artefact densities of 1–23/m^2 may be expected intermixed with culturally sterile zones.



Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 1 2 km

GDA2020 MGA Zone 56

N

\\emm.local\xdrive\2023\E230036- Clarrie Hall Dam EIS- Project management\GIS\02_Maps_ACHA\ACHA015_ArchaeologicalResources\ACHA015_ArchaeologicalResourcesOverview_20240321_02.aprx 25/07/2024

KEY

- Development site
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Subsurface cultural deposit
- CH background scatter (intermittent and disparate low density stone artefact densitie
- Page reference
- McCabes Bridge realignment

AHIMS site type
- Culturally modified tree
- Grinding groove
- PAD
- Quarry

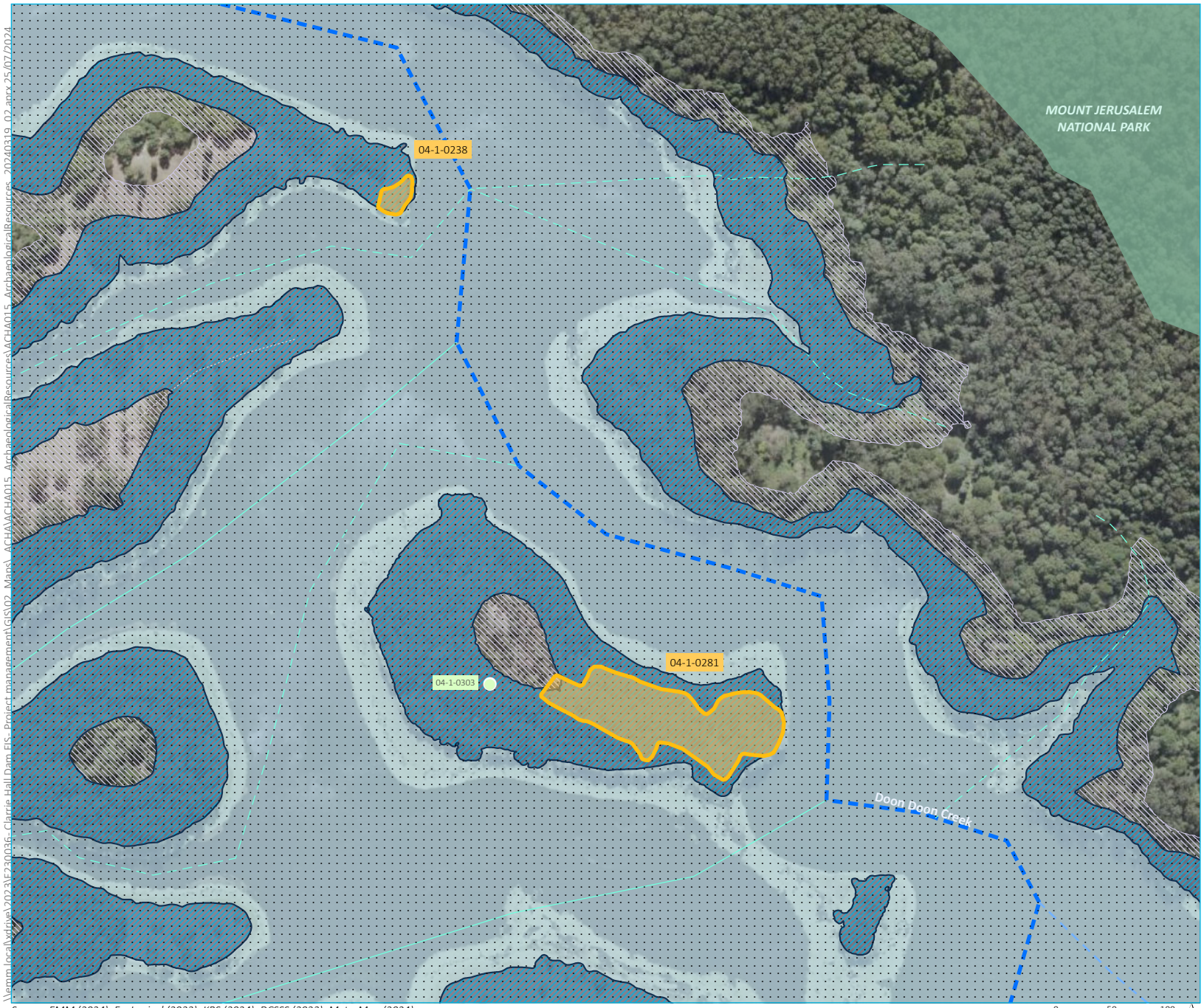
Strahler stream order
- 1st order
- 2nd order
- 3rd order
- 4th order
- 5th order
- 6th order

Existing environment
- Major road
- Minor road
- Vehicular track
- NPWS reserve

The archaeological resource

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 6.1

EMM
creating opportunities



KEY

- Development site
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Subsurface cultural deposit
- CH background scatter (intermittent and disparate low density stone artefact densitie

AHIMS site type

- Culturally modified tree

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track
- NPWS reserve

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m
GDA2020 MGA Zone 56

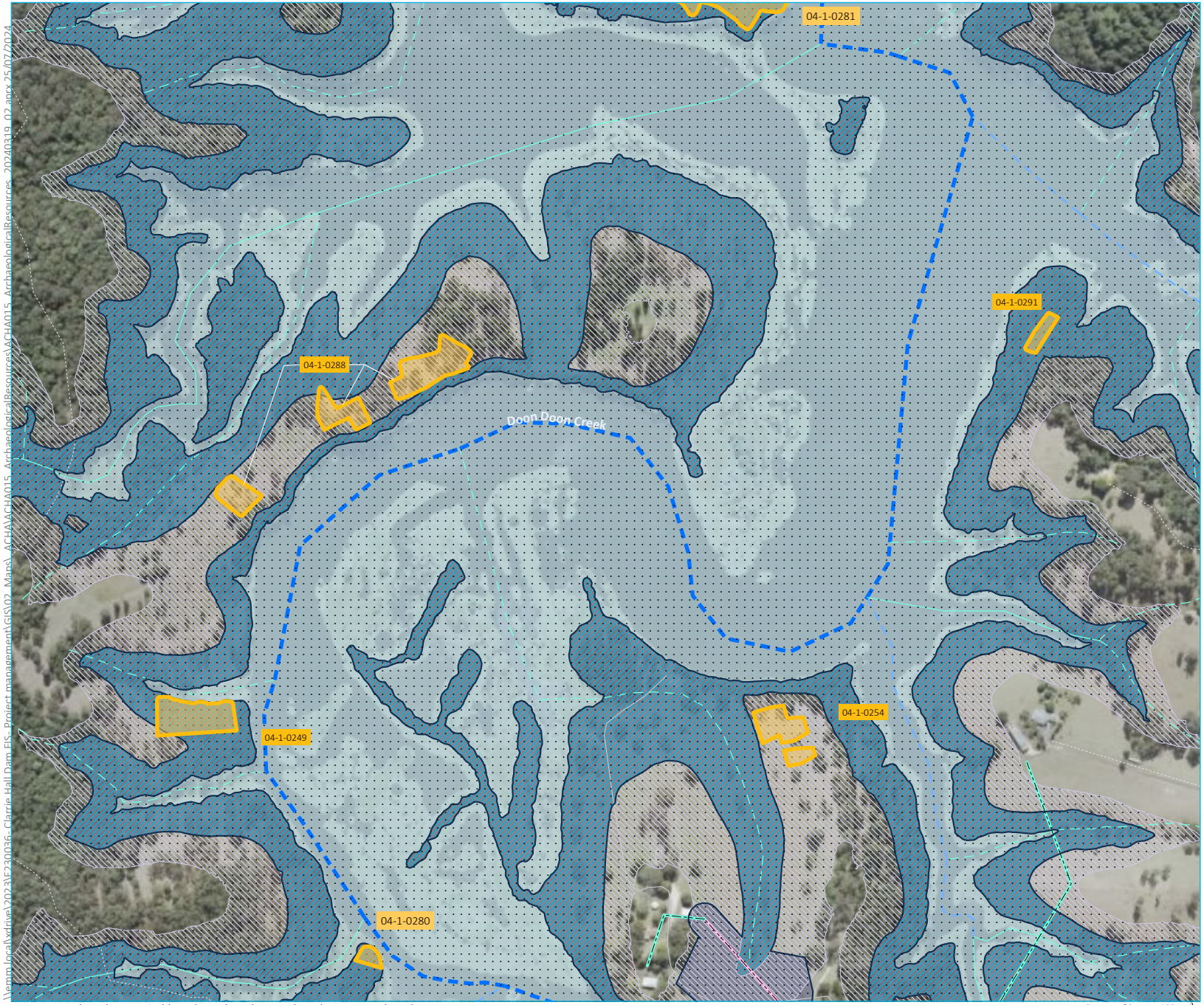
N

\\emm.local\vdrive\2023\E230036_Clarrie Hall Dam EIS_Project management\GIS\02_Maps_ACHA\ACHA015_ArchaeologicalResources\ACHA015_ArchaeologicalResources_20240319_02.aprx 25/07/2024

The archaeological resource

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 6.1.1

EMM
creating opportunities



KEY

- Development site
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Subsurface cultural deposit
- CH background scatter (intermittent and disparate low density stone artefact densitie

Transmission line

- Existing
- New

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m
GDA2020 MGA Zone 56

N

\\emm.local\xdrive\2023\E230036_Clarrie Hall Dam EIS_ Project management\GIS\02_Maps_ACHA\ACHA015_ArchaeologicalResources\ACHA015_ArchaeologicalResources_20240319_02.aprx 25/07/2024

The archaeological resource

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 6.1.2

EMM
creating opportunities

KEY

- Development site
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Subsurface cultural deposit
- CH background scatter (intermittent and disparate low density stone artefact densitie

Transmission line

- Existing
- New

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

GDA2020 MGA Zone 56

N

\\emm.local\vdrive\2023\E230036- Clarrie Hall Dam EIS- Project management\GIS\02_Maps_ACHA\ACHA015_ArchaeologicalResources\ACHA015_ArchaeologicalResources_20240319_02.aprx 25/07/2024

The archaeological resource

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 6.1.3

EMM
creating opportunities

KEY

- Development site
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Subsurface cultural deposit
- CH background scatter (intermittent and disparate low density stone artefact densitie
- McCabes Bridge realignment

Transmission line

- Existing
- New

Strahler stream order

- 1st order
- 2nd order
- 4th order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m
GDA2020 MGA Zone 56
N

\\emm.local\vdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA015_ArchaeologicalResources\ACHA015_ArchaeologicalResources_20240319_02.aprx 25/07/2024

The archaeological resource

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 6.1.4

EMM
creating opportunities

7 Significance assessment

7.1 General

All Aboriginal objects in NSW are protected under the *National Parks and Wildlife Act 1974.* It is recognised that the destruction of sites may be necessary to allow other activities or developments to occur. In order for the consent authority to make informed decisions on such matters, an important element of cultural resource management is determining the significance of cultural heritage places and objects to understand what may be lost and how best it can be mitigated.

Cultural significance is outlined in Article 1.2 of the Burra Charter - the best practice document for managing cultural heritage – as 'aesthetic, historic, scientific, social, or spiritual value for past, present or future generations' (Australia ICOMOS 2013). These values are reiterated in the NSW guidelines, which determines cultural significance of a place can be assessed by identifying the values that are present across the subject area and assessing what is important and why (OEH 2011). In assessing the scientific significance of sites, aspects such as rarity and representativeness and the integrity must be considered. Generally speaking, a site or object that is rare will have a heightened significance, although a site that is suitable of conservation as 'representative' of its type will also be significant. Conversely an extremely rare site may no longer be significant if its integrity has been sufficiently compromised.

The criteria adopted for this report are defined in Table 7.1. The management implications of these sites' significance are discussed in subsequent sections.

Table 7.1 A summary of criteria used to assess the cultural significance (OEH 2011, 8–10)

Criterion	Definition
Social value – Does the place have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons?	Social (or cultural) value refers to the spiritual, traditional, historical or contemporary associations and attachments the place or area has for Aboriginal people. Social or cultural value is how people express their connection with a place and the meaning that place has for them. Social or cultural value can only be identified through consultation with Aboriginal people.
Historic value – Is the place important to the cultural or natural history of the local area and/or region and/or state?	Historic value refers to the association of a place with a historically important person, event, phase or activity. Historic places do not always have physical evidence of their historical importance (such as structures, planted vegetation or landscape modifications). They may have 'shared' historic values with other (non-Aboriginal) communities.
Scientific (archaeological) value – Does the place have potential to yield information that will contribute to an understanding of the cultural or natural history of the local area and/or region and/or state?	Scientific (archaeological) value refers to the importance of a landscape, area, place or object because of its rarity, representativeness and the extent to which it may contribute to further understanding and information. Information about scientific values is gathered through archaeological investigation undertaken in this report.
Aesthetic value – Is the place important in demonstrating aesthetic characteristics in the local, regional, and/or State environment?	Aesthetic value refers to the sensory, scenic, architectural and creative aspects of the place. It is often linked with social value, and can consider form, scale, colour, texture and material of the fabric or landscape, and the smell and sounds associated with the place and its use. This value is only relevant to archaeological sites on only rare occasions, such as rockshelters that contain art, or culturally modified trees in prominent positions, etc.

7.2 Statement of significance

This assessment identified 14 discrete Aboriginal sites and places located within the proposed FSL, and 17 when considering the PMF (Table 7.2 and Figure 6.1). In addition to discrete sites and places, the entire project area was characterised by a low density background artefact scatter interspersed with occasional areas of denser material associated with past foci and/or repeat occupation (#04-1-0288, #40-1-0264, #04-1-0281, #04-1-0249, #04-1-0296, #04-1-0238, #04-1-0239, #04-1-0291, and #04-1-0280) (Section 6). These continuous buried deposits were documented throughout the field investigations as part of the field survey and test excavations and encompass 65 individual recordings of low density stone artefact sites or isolated objects (now all integrated into the broader background scatter identification for management purposes – see Table 7.2). With limited regional information, the findings within the project area appear to align with current archaeological understanding, with rockshelter, culturally modified trees and grinding grooves all documented more broadly. Stone artefacts of various densities are also prevalent in the broader Heritage NSW database.

A number of these sites have been previously assessed by NOHC (2018) and ELA (2021) (Appendix A), and in most instances, these values have continued to be adopted in Table 7.2. With re-interpretation of the Aboriginal objects and/or sites, further consideration of the significance has been undertaken. Both the previous significance and any revised significance is presented in Table 7.2.

At a general level, when considering the scientific significance, a number of the sites and zones can be considered to have moderate (local) or high (regional) significance with the ability to provide information on the past activities of the area (research potential). These sites can primarily be divided into three main categories:

1. Rockshelters that would have been used for habitation in the past. These sites form the foundational information across Australia for past Aboriginal populations, behaviour and activity, and are therefore of high scientific significance. Commonly, they include art and other cultural deposits that make them extremely important to the local Aboriginal community as well. However, in the case of the two rockshelter sites within the project area, few exhibit any evidence of cultural activity. The upper shelter within #4-1-0286 was a small shelter, but contained numerous visible cultural materials, and has accordingly been considered of high value. Similarly, the lower shelter within #04-1-0286 was a larger overhang with deposit and is considered of high value. Conversely, #04-1-0090, consisted of a shallow overhang with no cultural activity and limited evidence of deposit, and as such can provide limited further understanding of its, or the broader region's use, by people in the past, though was identified as of moderately cultural value to Aboriginal stakeholders.

2. Culturally modified trees that indicate the use and manipulation of the cultural landscape by Aboriginal people in the past. While typically of limited scientific significance, they are increasingly rare in the region due to land clearance. They are also typically important to the local Aboriginal community. For these reasons, these sites have been assigned a moderate significance.

3. High and moderate density artefact scatters that indicate the occupation and/or repeat visitation of a locale by people in the past. The largest portion of the assemblage consisted of subsurface stone artefactual material (>24/m^2), which encompassed 9 (64%) of the 14 discrete sites within the FSL documented (or 11 [65%] of the 17 discrete sites within the PMF documented). These sites are assigned either a moderate or high significance based on their potential research potential to inform our understanding of past use and behaviour. Of note are AHIMS sites #04-1-0264, #04-1-0281 and #04-1-0288 and #36-3-1141, which contain both substantive observed cultural material and buried cultural deposits, which can be explored to inform procurement, technological behaviours, and inform temporal change. All of these sites are relatively rare even when considering the broader sites documented in Section 6.2 (which suggests the average number of artefacts in a site is <10). All of these sites are within the Proposal. The moderate sites are more marginal in what types of information can be obtained, several contain densities

only just above background activity levels, while a number are in disturbed environments. As such, the level of research potential is considered limited, and low and moderate values have been assigned.

The remaining identified sites, including the broader background artefact scatter, are considered to have limited, if any research potential (Table 7.2). While important in demonstrating the longevity and continued use of the region by Aboriginal people in the past, it is considered that little further information can be obtained from additional investigation of these sites, places and objects.

All the sites have some level of aesthetic significance, but only few can be considered an intrinsic part of their significance. These include the grinding groove sites that require some form of running water usually (although various isolated pools following rain can also be used), and several of the high-density artefact scatter zones and areas adjacent creeks that were likely selected by people in the past, at least in part, due to their aesthetic appeal.

Site specific cultural values have not been provided by the Aboriginal participants to date, and the values presented in Table 7.2 are based on discussions in the field and meetings (Sections 2.3 and 2.4). To date discussions have focussed on the identified rockshelters, culturally modified trees, and rare or unique artefacts within the broader cultural assemblage. As part of the cultural values mapping, two places of value were identified. None of these are within the Proposal. These are all considered to have moderate cultural significance, clearly being of importance to the local Aboriginal community, but are not presented in Table 7.2, since they are outside of the Proposal's potential impacts.

Table 7.2 provides a summary of the significance values for each Aboriginal object and/or site identified.

Table 7.2 Significance of Aboriginal objects and/or sites identified within the FSL and PMF

Site	AHIMS #	Site type	Brief description	NOHC (2018) significance classification	ELA (201) significance classification	Significance (this report)				
						Scientific	Aesthetic	Historical	Cultural/ Social	Overall
CHD BMP - 05-0036	04-1-0090	Rockshelter	A small linear overhang with some potential cultural deposits.	Moderate	Moderate	Moderate	Low	-	Moderate	Moderate
CHD-AS36	04-1-0238	Artefact scatter and cultural deposit	A moderate density surface and subsurface stone artefactual deposit on a promontory west of the former Doon Doon Creek and totalling ~0.05 ha in size.	Moderate	Moderate/high	Moderate	Low	-	Moderate	Moderate
CHD-AS48	04-1-0249	Artefact scatter and cultural deposit	A high density subsurface stone artefactual deposit on a promontory west of the former Doon Doon Creek and totalling ~0.5 ha in size.	Moderate	Moderate/high	High	Low	-	Moderate	High
CHD-AS27	04-1-0254	Artefact scatter and cultural deposit	A high density subsurface stone artefactual deposit on a promontory east of the former Doon Doon Creek, reflecting two discrete locales within the listing and totalling ~0.25 ha in size.	Moderate	Low	High	Low	-	Moderate	High
CHD-A20	04-1-0261	Grinding groove	A series of 15–20 pitted marks within sandstone outcropping within Doon Doon creek at the southernmost extreme of the Proposal. The features were proposed by Aboriginal participants to reflect black bean processing.	Low	Low	Low	Low	-	Moderate	Moderate
CHD-AS17	04-1-0264	Artefact scatter and cultural deposit	A very high density surface and subsurface stone artefactual deposit situated on Commissioners Creek and totalling ~0.25 ha in size.	Moderate	Moderate/high	High	Low	-	Moderate	High

Table 7.2 Significance of Aboriginal objects and/or sites identified within the FSL and PMF

Site	AHIMS #	Site type	Brief description	NOHC (2018) significance classification	ELA (201) significance classification	Significance (this report)				
						Scientific	Aesthetic	Historical	Cultural/ Social	Overall
CHD A1	04-1-0280	Artefact scatter and cultural deposit	A moderate density surface and subsurface stone artefactual deposit on a promontory west of the former Doon Doon Creek and totalling ~0.08 ha in size.	Moderate	Low	Moderate	Low	-	Moderate	Moderate
CHD-A55	04-1-0281	Artefact scatter and cultural deposit	A very high density surface and subsurface stone artefactual deposit situated on an island in the centre of the Proposal, and totalling ~1.5 ha in size.	Moderate	Moderate/high	High	Low	-	Moderate	High
CHD-G1	04-1-0284	Quarry/raw material resource	A natural chalcedony raw material outcrop in the south-west portion of the project area.	Low	Low	Low	-	-	Low	Low
CHD-ST1	04-1-0285	Culturally modified tree	Large *Eucalyptus gummifera* with >2 x 1 m south-east facing scar.	High	High	Moderate	Low	-	High	High
CHD-RS1	04-1-0286 (mis-referenced as #04-1-0014 in some reports)	Rockshelter	Two small overhangs, one with stone artefactual material, on the same sandstone outcrop. A potential culturally modified tree was also found immediately south of the outcrop.	High	High	High	Low	-	High	High
CHD-PAD9	04-1-0288	Cultural deposit	A very high density subsurface stone artefactual deposit extending across three locales within the broader listing and totalling ~0.4 ha in size.	Moderate	Moderate/high	High	Low	-	Moderate	High
CHD PAD6	04-1-0291	Cultural deposit	A moderate density surface and subsurface stone artefactual deposit on a promontory east of the former Doon Doon Creek and totalling ~0.1 ha in size.	Not assessed	Low	Moderate	Low	-	Moderate	Moderate

Table 7.2 Significance of Aboriginal objects and/or sites identified within the FSL and PMF

Site	AHIMS #	Site type	Brief description	NOHC (2018) significance classification	ELA (201) significance classification	Significance (this report)				
						Scientific	Aesthetic	Historical	Cultural/ Social	Overall
CHD PAD2	04-1-0295	Cultural deposit	A high density subsurface stone artefactual deposit on a promontory south-west of the former Doon Doon Creek and totalling ~0.6 ha in size.	Not assessed	Moderate/high	High	Low		Moderate	High
CHD PAD1	04-1-0296	Cultural deposit	A high density subsurface stone artefactual deposit on a promontory south-west of the former Doon Doon Creek and totalling ~0.5 ha in size.	Not assessed	Moderate/high	High	Low		Moderate	High
CHD-ST2	04-1-0303	Culturally modified tree	Large *Eucalyptus* sp. with ~1.3 x 0.4 m north facing scar.	-	High	Moderate	Low	-	High	High
CH Background scatter	See note 6	Low density artefact scatter	A stone artefact background scatter that is predicted to occur intermittently across the project area and extending beyond its limits within which disparate low to moderate artefact densities of 1–23/m^2 may be expected intermixed with culturally sterile zones; and reflecting long-term, transient use of the region for several thousand years.	Variously low - moderate	Variously low - moderate	Low	Low		Low	Low

Notes: 1. Values are only assigned where the site fulfils that specific criterion.

2. In the case of the cultural criterion, it is ranked in relation to whether the site is important to one individual (low), a mixed view from the Aboriginal participants (moderate) or broad-scale support from all stakeholders (high). Further details are presented in Section 4 and Appendix D.

3. Where relevant, cultural sites rankings are based on the cultural mapping report presented in Appendix D. While all sites identified were of value to the Aboriginal participants, some were clearly of more significance than others. Greater significance was also given to those that had broader regional analogues.

4. Sites requiring further investigation and/or validation, are ranked based on the assumption the site proves valid. However, their significance should be revisited when further analysis and classification of them occurs. These values are presented in red to demonstrate their tentative status.

5. The overall significance is comparable with the highest ranking achieved in any of the four main criteria.

6. CH Background scatter incorporates CHD24 AS1, #04-1-0289 (CHD PAD 8), #04-1-0302 (CHD-1), #04-1-0009 (Midginbill DD1 BMP-05-0029), #04-1-0010 (Midginbill DD2 BMP-05-0030), #04-1-0011 (Midginbill DD3 BMP-050031), #04-1-0130 (Clarrie Halll Dam 2 BMP-05-0112), #04-1-0230 (CHD-A52), #04-1-0231 (CHD A51), #04-1-0234 (CHD-A33), #04-1-0241 (CHD-A39), #04-1-0244 (CHD-A42), #04-1-0246 (CHD-A44), #04-1-0247 (CHD-A46), #04-1-0248 (CHD-A47), #04-1-0250 (CHD-A45), #04-1-0251 (CHD-A53), #04-1-0252 (CHD-A29), #04-1-0253 (CHD-A28), #04-1-0256 (CHD-A25), #04-1-0257 (CHD-A24), #04-1-0260 (CHD-A21), #04-1-0263 (CHD-A18), #04-1-0266 (CHD-A15), #04-1-0267 (CHD-A14), #04-1-0268 (CHD-A13), #04-1-0269 (CHD-A12), #04-1-0270 (CHD-A11), #04-1-0271 (CHD-A10), #04-1-0272 (CHD-A9), #04-1-0274 (CHD-A7), #04-1-0276 (CHD-A5), #04-1-0278 (CHD-A3), #04-1-0279 (CHD-A2), #04-1-0282 (CHD-A54), #04-1-0258 (CHD-A23), #04-1-0259 (CHD-A22), #04-1-0229 (CHD-A50), #04-1-0232 (CHD-A31), #04-1-0233 (CHD-A32), #04-1-0235 (CHD-A30), #04-1-0236 (CHD-A34), #04-1-0237 (CHD-A35), #04-1-0240 (CHD-A38), #04-1-0242 (CHD-A40), #04-1-0243 (CHD-A41), #04-1-0245 (CHD-A43), #04-1-0255 (CHD-A26), #04-1-0262 (CHD-A19), #04-1-0273 (CHD-A8), #04-1-0277 (CHD-A4), #04-1-0292 (CHD PAD 5), #04-1-0294 (CHD PAD 4), #04-1-0297 (CHD-A49), #04-1-0301 (CHD-AS1), #04-1-0265 (CHD-A16), #04-1-0275 (CHD-A6), CH6, CH7, CH8, #04-1-0012 (Midginbill DD4), #04-1-0015 (Byill Range DD7 BMP-05-0037), #04-1-0025 (Mt Misery Byrrill, BMP-05-0070), #04-1-0027 (Mt Misery Byrrill BMP-05-0072) #04-1-0194 (Byrrill Ridge 4 Tweed ACH Artefacts).

8 Impact assessment

8.1 Key findings

- The proposed activity would consist of the raising of an established dam, resulting in further inundation to 70 m AHD (from 61.5 m AHD) and infrequently up to 77 m AHD (PMF) (the probability of this to occur is extremely low, at less than 1 in 1,000,000 in any one year), and ground disturbance impacts in the immediate vicinity of the dam. A number of ancillary requirements, such as the realignment of McCabes Bridge, construction camps, concrete batching plant sites and transmission lines are also expected (Table 1.1). The works would result in the impact of some 297.6 ha, of which 209 ha would be solely affected by inundation from the proposed FSL operational impacts, 49.6 ha affected by construction impacts and additional 39 ha potentially affected with the proposed PMF operational impacts. Impacts downstream of the dam along Doon Doon Creek are expected to be negligible, with geomorphological change predicted to be unlikely and flow regime change minimal.

- Throughout the project, Council has undertaken design refinements and discussions with the RAPs, which has resulted in the avoidance or partial avoidance of two significant sites, CHD-RS1 (#04-1-0286) and CHD-ST1 (#04-1-0285).

- Of the 17 identified sites, 11 would be subject to direct impacts from inundation resulting in their complete (n=5) or partial (n=6) loss, four would be unaffected being outside of the FSL and two are entirely within the inundation zone. Overall, some 1.1 ha, or 22% of significant cultural deposits would be unaffected by the Proposal. A low-density stone artefact background scatter is considered present intermittently and disparately across the entire project area and would also be adversely affected.

- The potential impacts would result in cumulative impacts to some components of the regional cultural assemblage, notably to rockshelter and culturally modified tree site types. However, the opportunity for avoidance given the nature of the Proposal is limited. Archaeological mitigation, especially of subsurface cultural materials to further inform our understanding of the past, is proposed to offset some of these impacts.

8.2 Avoidance and minimisation of impacts through design refinements

The following avoidance and impact minimisation results have been achieved through Proposal refinements and discussion with the RAPs:

- CHD-ST1 (#04-1-0285) – a significant culturally modified tree - has been designed around as part of the ELA (2021) investigations, and remains outside of the Proposal impact footprint.

- CHD-RS1 (#-04-1-0286) – a sandstone outcrop containing two overhangs. The upper overhang with visible cultural materials is on, or just above the FSL by ~0.5 m. Council has committed to the protection of this site, as well as other parts of the sandstone outcrop that remain above the FSL.

8.3 Proposal impacts

As outlined in Section 1, the proposed activity involves the raising of an existing dam by 8.5 m, installation of new spillway, and the resulting increase in inundation to 70 m AHD (from 61.5 m AHD) and also includes the potential for a PMF to77 m AHD (Figure 1.1 and Figure 1.2). (This latter value has an exceedingly low chance of occurring annually).[6] In addition to these main components is the requirement of road upgrades, quarry pit for material for the dam, the establishment of accommodation camps, and installation of transmission lines (Section 1.1.1). These activities would result in impacts of 67 ha from the construction activities, some 220 ha from inundation or 419 ha when including the PMF.

In the case of construction activities, it is expected that vegetation removal and ground disturbance >30 cm - the average depth of buried cultural materials – would be required. As such, any cultural materials within these areas would be expected to be impacted and/or destroyed. It is noted, however, that in the immediate vicinity of the dam itself and the quarry (which is existing) that previous impacts to vegetation and soil profile has occurred as part of the 1970s construction.

The ancillary activities would require less disturbance, but even the installation of roads and temporary camps would typically undertake the removal of topsoil and compaction prior to establishment, and therefore impacts to the upper soil profile of at least 50 cm would be expected depending on site conditions and final detailed design. All of these activities would require removal of trees and other surface debris (e.g. loose stones, etc) prior to establishment.

In the case of the inundation footprint, initial impacts would potentially include the removal of vegetation and increased erosion to the upper reaches of the catchment as the reservoir fills and this may impact upper soil profiles in these locales. However, numerous academic studies of existing dams internationally have demonstrated that the drowned soil profile elsewhere is relatively unaffected by inundation, with only discolouration and the loss of the organic surface (O horizon) being evident (e.g. Félix-Faure et al. 2019). Rather, the greatest impact from inundation is increased erosion along the reservoir's edge (the FSL and PMF levels) from wave action (e.g. Fagherazzi and Wiberg 2009; Vilhena et al. 2019). Specifically, Félix-Faure et al. (2019) states:

> In the annual drawdown zone [comparable to a fluctuating FSL in this report], upper horizons of submerged soils are eroded, especially near the upper shore and on slopes. In the permanently drowned area, silty sediments cover drowned soils. Compared to reference soils, forest soils drowned for 84 years maintain their original morphological differentiation, but colors are dull, and the humus (O horizons) have virtually disappeared.

Based on these studies, it can be considered that areas that are permanently drowned by the inundation would have little impact on the soil profile and any associated buried cultural materials, nor would surface finds be affected, albeit potentially buried in silt. However, areas along the edge of the eventual reservoir may be subject to localised erosion and slumping from water-level changes. Given the focus of the assessment in areas immediately above the current FSL and near the proposed FSL, it is probable that much of the cultural assemblage would be present within this fluctuation zone and may be subject to erosion.

Additional impacts may occur between the FSL and PMF also in relation to wave action and temporary inundation of these zones. However, KBR (2023b) indicate that flooding to the PMF would last less than a week when it occurs, while Ball et al. (2019) suggests that the annual exceedance probability (AEP) for this to occur may be as low as 1 in 1,000,000 in any one year. As such, it is considered that potential impacts between the FSL and PMF are likely to be limited and for the purposes of this report, it is not considered that the Proposal would adversely affect any cultural materials in this zone.

[6] In the case of inundation between 70-77 m AHD, this will be affected less frequently as elevation increases. While values immediately above 70 m AHD may be affected in a higher probability event (eg a 5% AEP event, or 5% chance of occurring in a given year, elevations closer to 77 m AHD may only be during the PMF which has an exceedingly low chance of occurring in a given year.

Surface water assessment of Doon Doon Creek and the Tweed River indicate that physical, or geomorphological, changes are unlikely and/or negligible (EMM 2023a, 2023b). There would be some changes to the downstream flow regime, likely reducing extreme droughts or floods, but to an observer this would visually be differences of no more than 0.1 m during high flows. For the purposes of this report, it is not considered that the Proposal would adversely affect any cultural materials downstream of the existing dam.

8.4 Aboriginal heritage impact

Two types of potential impact are considered, direct and indirect. Direct impacts relate to the construction activities and their removal, truncation and/or disturbance of the ground surface. This would include the removal of vegetation, removal or modification of geological outcropping and the removal or disturbance of the upper soil profile. Indirect impacts are the result of both construction and post-construction activities that may result in environmental changes that would affect cultural material within, or near the project activities. General examples of indirect impact may include the burial of a soil profile resulting in its compression and indirectly damaging buried cultural material, or an increase in dust being blown into a rockshelter and negatively affecting art motifs should they be present.

All cultural material identified within the project area was either identified on the current land surface (e.g rockshelters, culturally modified trees) and/or buried within the upper ~0.5 m of the soil profile. As outlined in Section 8.2, several of the proposed development activities would result in direct impacts to these sites and deposits.

Specifically, 11 of the identified Aboriginal objects and sites would be subject to direct impacts that would result in partial (CHD-AS48 [#04-1-0249], CHD-RS1 [#04-1-0286], CHD-PAD9 [#04-1-0288], CHD-PAD2 [#04-1-0295] and the broader background scatter) or complete (CHD-AS1 [#04-1-0280], CHD-AS5 [#04-1-0281], CHD-G1 [#04-1-0284], CHD PAD 6 [#04-1-0291], CHD PAD1 [#04-1-0296], and CHD-ST2 [#04-1-0303]) loss of value (Table 8.1 and Figure 8.1). These are all situated in close proximity to the FSL where changing water conditions and wave action area considered likely to result in erosion of the surface and under-lying soil profiles within which cultural materials are present. In relation to CHD-ST2 (#04-1-0303), it is expected that vegetation clearance of this portion of the Proposal would occur and result in its loss. Overall, this results in the loss of nine sites of high and/or moderate significance.

Two sites (CHD BMP-05-0036 [#04-1-0090], and CHD-AS36 [#04-1-0238] would be inundated and subject to indirect impacts, although based on details in Section 8.3 are not considered to result in their destruction, albeit being inaccessible in the future. These are all considered of moderate value.

Four sites, largely considered of high significance, are located above the FSL and would be unaffected by the Proposal, including CHD-AS27 (#04-1-0254), CHD-AS17 (#04-1-0264), CHD-ST1 (#04-1-0285), and CHD-AS20 [#04-1-0261]). Both CHD-AS27 and CHD-AS17 amount to some of the 0.5 ha of the ~5 ha of identified buried cultural deposits within the Proposal. In the case of CHD-PAD9 (#04-1-0288) and CHD-PAD2 (#04-1-0295), only very small portions of the sites are within the FSL, with >90% of each being outside of the Proposal and unaffected. When incorporating these two sites, some 1.1 ha or 22% of the significant cultural deposits would be unaffected.

As demonstrated in Section 6, the entire project area is considered to encompass a low-density stone artefact background scatter of that is predicted to occur intermittently across the project area and extending beyond its limits within which disparate low to moderate artefact densities of 1–23/m^2 may be expected intermixed with culturally sterile zones; and reflecting long-term, transient use of the region for several thousand years. Stone artefacts were either found as isolated objects and/or low-density artefact scatters as part of the field survey and/or as part of the test excavations. These findings reflect the long use of the Doon Doon Creek valley over several millennia but are considered to have limited archaeological significance. It would be expected that this background scatter would be encountered disparately and intermittently across the 67 ha disturbance zone, as well as within the broader inundation zone.

8.5 Intergenerational loss/equity

Ecologically sustainable development, or intergeneration equity, is the principle whereby the current generation should maintain the health, diversity and longevity of the environment for the benefit of future society. For Aboriginal heritage management, intergenerational equity can be considered primarily in terms of the cumulative impacts to Aboriginal objects, sites and/or places in a region. If few Aboriginal objects and places remain in a region (e.g. due to development impacts), there are fewer opportunities for future generations of Aboriginal people and the broader community to enjoy the cultural benefits. Information about the integrity, rarity and representativeness of the Aboriginal objects, sites and places that may be impacted, and how they inform the past visitation and occupation of land by Aboriginal people, are relevant to the consideration of intergenerational equity and the understanding of the cumulative impacts of a project. While not directly related to the ACHA process, such (future) impacts are also a critical issue for consideration under the *Native Title Act 1993* (see Appendix A for brief discussion).

Overall, the Proposal would potentially result in adverse impacts to 11 identified Aboriginal sites, objects and/or places, as well as various amounts of buried stone or artefactual material (Sections 6 and 8.4). These consist of one rockshelter, one culturally modified tree, and seven discrete stone artefact scatters and/or deposits. A low density broader background scatter of stone artefacts extending across the project area would also be adversely affected.

Through ongoing Proposal refinement and liaison with the RAPs, two significant sites have been avoided by the Proposal, including CHD-ST1 (#04-1-0285) and one of the overhangs within CHD-RS1 (#04-1-0286). While a further four sites would be avoided by the Proposal or would be fully inundated, which here is interpreted as a form of conservation albeit one that removes ongoing access by the local Aboriginal community.

The majority of the potential impacts are to surface and/or subsurface cultural materials, and which can be suitably mitigated through careful excavation and recovery. Indeed, improving understanding of the past activity by Aboriginal people in this area has been frequently mentioned through the six years of consultation, and excavation of such deposits would assist in this. The recovery of cultural materials from locations that are largely inaccessible would also enable them to be applied to potential educative and interpretive opportunities to be explored elsewhere within the LGA. Given this, the cumulative impact of the Proposal is considered relatively minor, since mitigation of seven of the adversely affected sites could offset through mitigation and would enable off-site cultural heritage outcomes.

However, the inundation of CHD-RS1 and CHD-ST2, would result in some cumulative impact to the regional cultural assemblage. Based on the AHIMS database, only six culturally modified trees are documented within the region, of which two (~33%) would be lost through the Proposal (This includes the potential culturally modified tree near CHD-RS1). There are few rockshelters documented in the region – NOHC (2018) noted five – with one previously inundated by the current dam (DD 6), and a further two through this Proposal. While more significant rockshelters are documented in nearby Jerusalem National Park (as advised by RAPs), the loss of these sites remain of concern to the RAPs, and is found throughout the consultation in Section 2 and Appendix C.

Given this, the Proposal would result in some cumulative impacts to the regional cultural assemblage, including important sites and places. Unfortunately, as an existing dam being raised, the nature of the Proposal limits alternative options to improve avoidance or limit impacts to the cultural assemblage. As such management and mitigation measures are proposed to avoid and/or mitigate cultural materials to offset these impacts wherever feasible.

Table 8.1 Summary of potential impacts to Aboriginal objects and/or sites by the Proposal

Site	AHIMS #	Site type	Status	Significance	Type of harm	Location and/or activity causing harm	Degree of harm	Consequence of harm	Notes
CHD BMP - 05-0036	04-1-0090	Rockshelter	Valid	Moderate	Indirect	Within inundation extent	N/A	N/A	This site would be below the FSL and would be entirely inundated. Given it is below the probable wave action zone of the FSL, it would be submerged but not expected to be subject to erosive impacts.
CHD-AS36	04-1-0238	Artefact scatter and cultural deposit	Valid	Moderate	Indirect	Within inundation extent	N/A	N/A	This site would be below the FSL and would be entirely inundated. Given it is below the probable wave action zone of the FSL, it would be submerged but not expected to be subject to erosive impacts.
CHD-AS48	04-1-0249	Artefact scatter and cultural deposit	Valid	High	Direct	Within inundation extent, within 20 m of the FSL	Partial	Partial loss of value	
CHD-AS27	04-1-0254	Artefact scatter and cultural deposit	Valid	High	-	-	N/A	N/A	This site is situated between the FSL and PMF.
CHD-A20	04-1-0261	Grinding groove	Valid	Moderate	-	-	N/A	N/A	This site is situated between the FSL and PMF.
CHD-AS17	04-1-0264	Artefact scatter and cultural deposit	Valid	High	-	-	N/A	N/A	This site is situated between the FSL and PMF.
CHD A1	04-1-0280	Artefact scatter and cultural deposit	Valid	Moderate	Direct	Within inundation extent, within 20 m of the FSL	Whole	Complete loss of value	
CHD-A55	04-1-0281	Artefact scatter and cultural deposit	Valid	High	Direct	Within inundation extent, within 20 m of the FSL	Whole	Complete loss of value	
CHD-G1	04-1-0284	Quarry/raw material resource	Valid	Low	Direct	Within inundation extent, within 20 m of the FSL	Whole	Complete loss of value	

Table 8.1 Summary of potential impacts to Aboriginal objects and/or sites by the Proposal

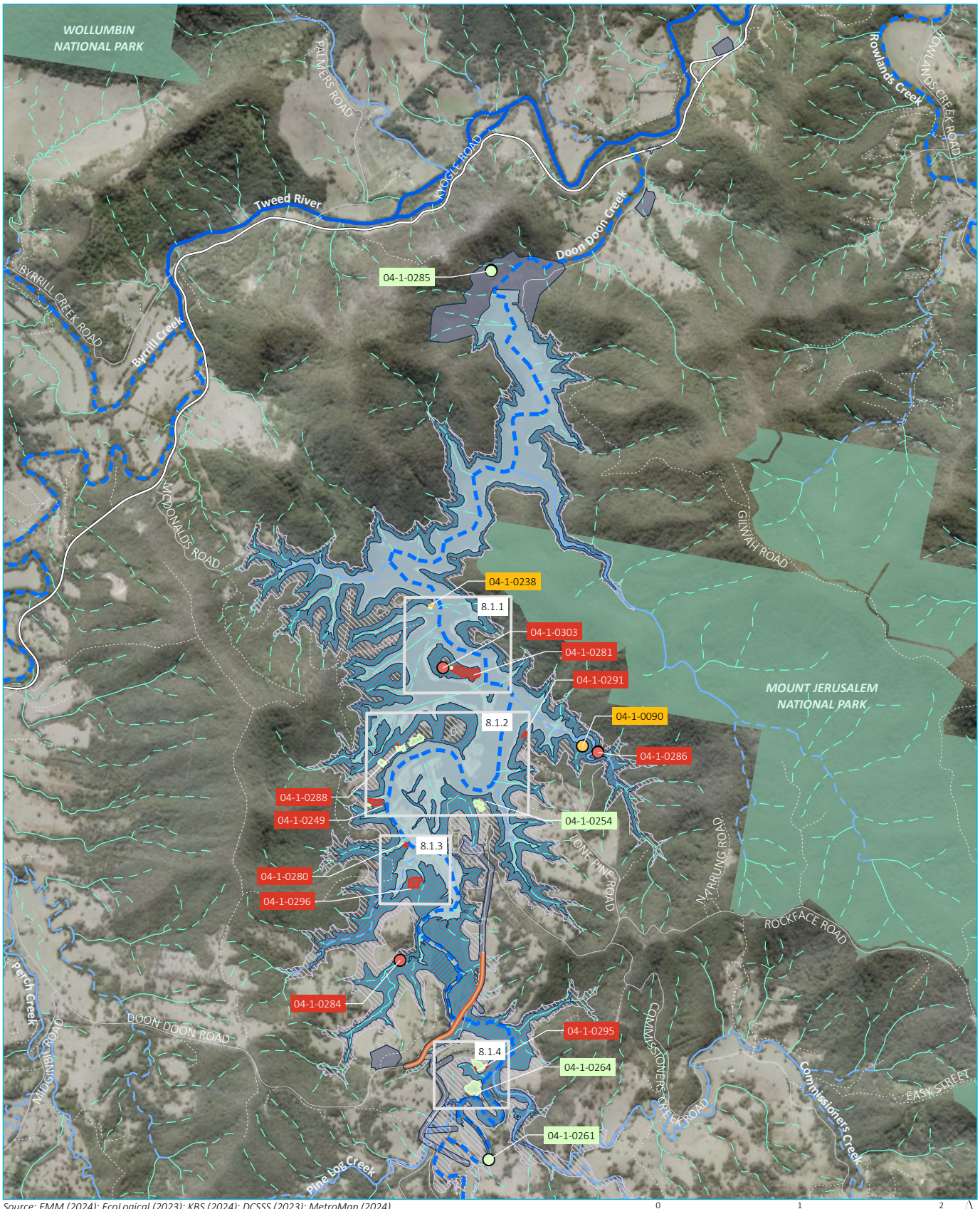
Site	AHIMS #	Site type	Status	Significance	Type of harm	Location and/or activity causing harm	Degree of harm	Consequence of harm	Notes
CHD-ST1	04-1-0285	Culturally modified tree	Valid	High	-	-	N/A	N/A	While within the project area, Council has designed construction activities to avoid the site and suitable buffer zone.
CHD-RS1	04-1-0286 (mis-referenced as #04-1-0014 in some reports)	Rockshelter	Valid	High	Direct	Within inundation extent, within 20 m of the FSL	Partial		The site represents two overhangs and a potential culturally modified tree. The upper overhang would be above the FSL and unaffected by the Proposal.
CHD-PAD9	04-1-0288	Cultural deposit	Valid	High	Direct	Within inundation extent, within 20 m of the FSL	Partial		Only a small portion, ~5%, of this site is within the FSL. The remainder of the site is situated between the FSL and PMF.
CHD PAD6	04-1-0291	Cultural deposit	Valid	Moderate	Direct	Within inundation extent, within 20 m of the FSL	Whole	Complete loss of value	
CHD PAD2	04-1-0295	Cultural deposit	Valid	High	Direct	Within inundation extent, within 20 m of the FSL	Partial		Only a small portion, ~5%, of this site is within the FSL. The remainder of the site is situated between the FSL and PMF.
CHD PAD1	04-1-0296	Cultural deposit	Valid	High	Direct	Within inundation extent, within 20 m of the FSL	Whole	Complete loss of value	
CHD-ST2	04-1-0303	Culturally modified tree	Valid	High	Direct	Within inundation extent, within 20 m of the FSL	Whole	Complete loss of value	

Table 8.1 Summary of potential impacts to Aboriginal objects and/or sites by the Proposal

Site	AHIMS #	Site type	Status	Significance	Type of harm	Location and/or activity causing harm	Degree of harm	Consequence of harm	Notes
CH Background scatter	See note 2	Low density artefact scatter	Valid	Low	Direct	Within inundation extent, within 20 m of the FSL	Partial	Partial loss	This site is considered to extend disparately and intermittently across the project area and extend beyond it.

Notes: 1. The type, degree and consequence of harm definitions are based on DECCW's *Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW*.

2. CH Background scatter incorporates CHD24 AS1, #04-1-0289 (CHD PAD 8), #04-1-0302 (CHD-1), #04-1-0009 (Midginbill DD1 BMP-05-0029), #04-1-0010 (Midginbill DD2 BMP-05-0030), #04-1-0011 (Midginbill DD3 BMP-050031), #04-1-0130 (Clarrie Halll Dam 2 BMP-05-0112), #04-1-0230 (CHD-A52), #04-1-0231 (CHD A51), #04-1-0234 (CHD-A33), #04-1-0241 (CHD-A39), #04-1-0244 (CHD-A42), #04-1-0246 (CHD-A44), #04-1-0247 (CHD-A46), #04-1-0248 (CHD-A47), #04-1-0250 (CHD-A45), #04-1-0251 (CHD-A53), #04-1-0252 (CHD-A29), #04-1-0253 (CHD-A28), #04-1-0256 (CHD-A25), #04-1-0257 (CHD-A24), #04-1-0260 (CHD-A21), #04-1-0263 (CHD-A18), #04-1-0266 (CHD-A15), #04-1-0267 (CHD-A14), #04-1-0268 (CHD-A13), #04-1-0269 (CHD-A12), #04-1-0270 (CHD-A11), #04-1-0271 (CHD-A10), #04-1-0272 (CHD-A9), #04-1-0274 (CHD-A7), #04-1-0276 (CHD-A5), #04-1-0278 (CHD-A3), #04-1-0279 (CHD-A2), #04-1-0282 (CHD-A54), #04-1-0258 (CHD-A23), #04-1-0259 (CHD-A22), #04-1-0229 (CHD-A50), #04-1-0232 (CHD-A31), #04-1-0233 (CHD-A32), #04-1-0235 (CHD-A30), #04-1-0236 (CHD-A34), #04-1-0237 (CHD-A35), #04-1-0240 (CHD-A38), #04-1-0242 (CHD-A40), #04-1-0243 (CHD-A41), #04-1-0245 (CHD-A43), #04-1-0255 (CHD-A26), #04-1-0262 (CHD-A19), #04-1-0273 (CHD-A8), #04-1-0277 (CHD-A4), #04-1-0292 (CHD PAD 5), #04-1-0294 (CHD PAD 4), #04-1-0297 (CHD-A49), #04-1-0301 (CHD-AS1), #04-1-0265 (CHD-A16), #04-1-0275 (CHD-A6), CH6, CH7, CH8, #04-1-0012 (Midginbill DD4), #04-1-0015 (Byill Range DD7 BMP-05-0037), #04-1-0025 (Mt Misery Byrrill, BMP-05-0070), #04-1-0027 (Mt Misery Byrrill BMP-05-0072) #04-1-0194 (Byrrill Ridge 4 Tweed ACH Artefacts).



Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 1 2 km

GDA2020 MGA Zone 56

N

\\emm.local\xdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA016_PotentialImpacts\ACHA016_PotentialImpactsOverview_20240319_02.aprx 25/07/2024

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5 - 70 m AHD)
- FSL to PMF (70-77 m AHD)
- Page reference
- McCabes Bridge realignment

Subsurface cultural deposit impact
- Direct
- Indirect
- Avoidance

AHIMS by potential impact
- Direct
- Indirect
- Avoidance

Strahler stream order
- 1st order
- 2nd order
- 3rd order
- 4th order
- 5th order
- 6th order

Existing environment
- Major road
- Minor road
- Vehicular track
- NPWS reserve

Potential cultural heritage impacts by the proposal

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 8.1

EMM
creating opportunities

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)

Subsurface cultural deposit impact

- Direct
- Indirect
- Avoidance

AHIMS by potential impact

- Direct

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track
- NPWS reserve

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m
GDA2020 MGA Zone 56

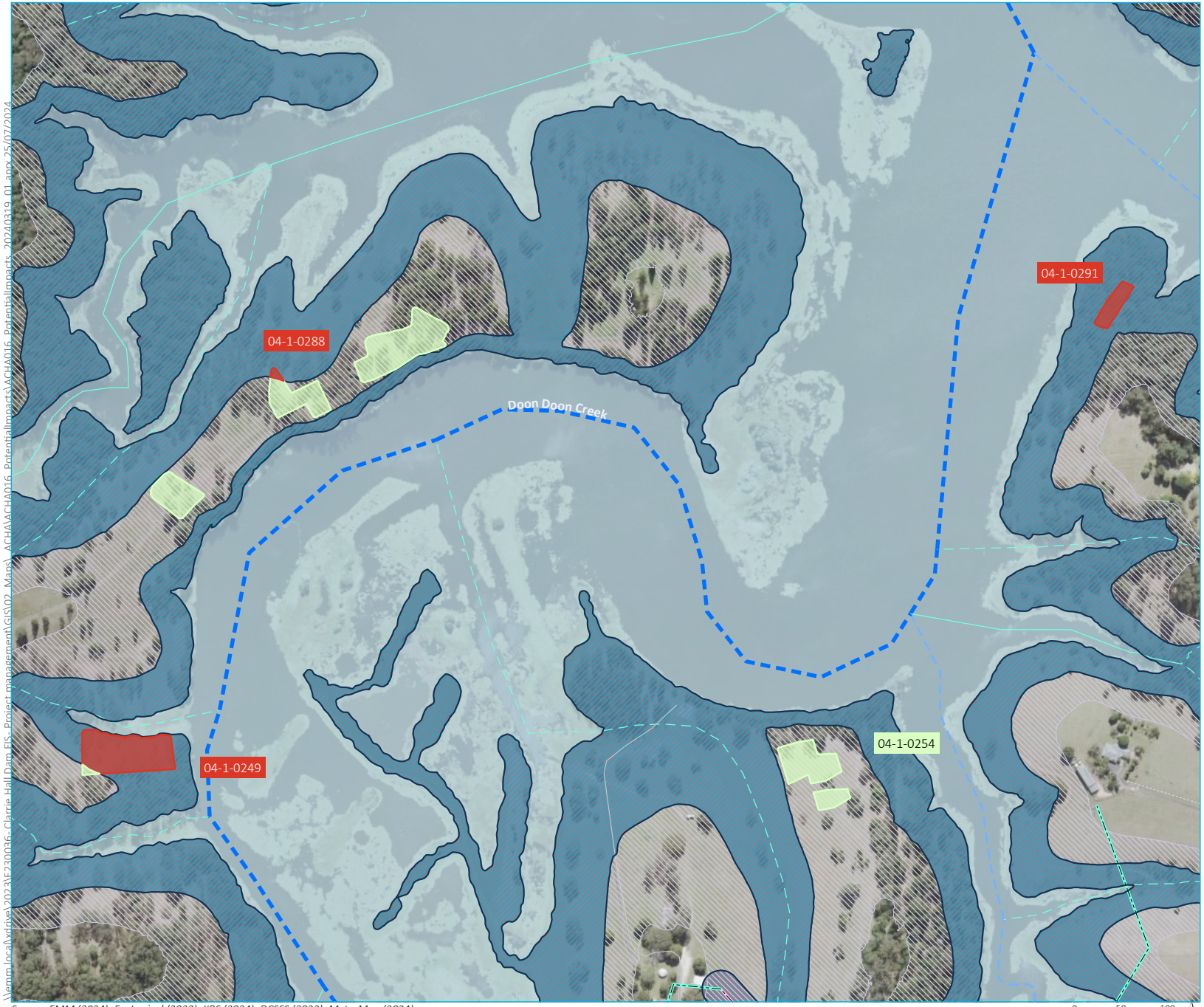
N

\\emm.local\xdrive\2023\E230036_Clarrie Hall Dam EIS_Project management\GIS\02_Maps_ACHA\ACHA016_PotentialImpact\ACHA016_PotentialImpacts_20240319_01.aprx 25/07/2024

Potential cultural heritage impacts by the proposal

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 8.1.1

EMM
creating opportunities



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)

Transmission line

- Existing
- New

Subsurface cultural deposit impact

- Direct
- Indirect
- Avoidance

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m
GDA2020 MGA Zone 56
N

\\emm.local\wdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA016_PotentialImpact\ACHA016_PotentialImpacts_20240319_01.aprx 25/07/2024

Potential cultural heritage impacts by the proposal

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 8.1.2

EMM
creating opportunities

KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)

Transmission line

- Existing

Subsurface cultural deposit impact

- Direct
- Indirect
- Avoidance

Strahler stream order

- 1st order
- 2nd order
- 3rd order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

\\emm.local\vdrive\2023\E230036- Clarrie Hall Dam EIS- Project management\GIS\02_Maps_ACHA\ACHA016_PotentialImpact\ACHA016_PotentialImpacts_20240319_01.aprx 25/07/2024

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

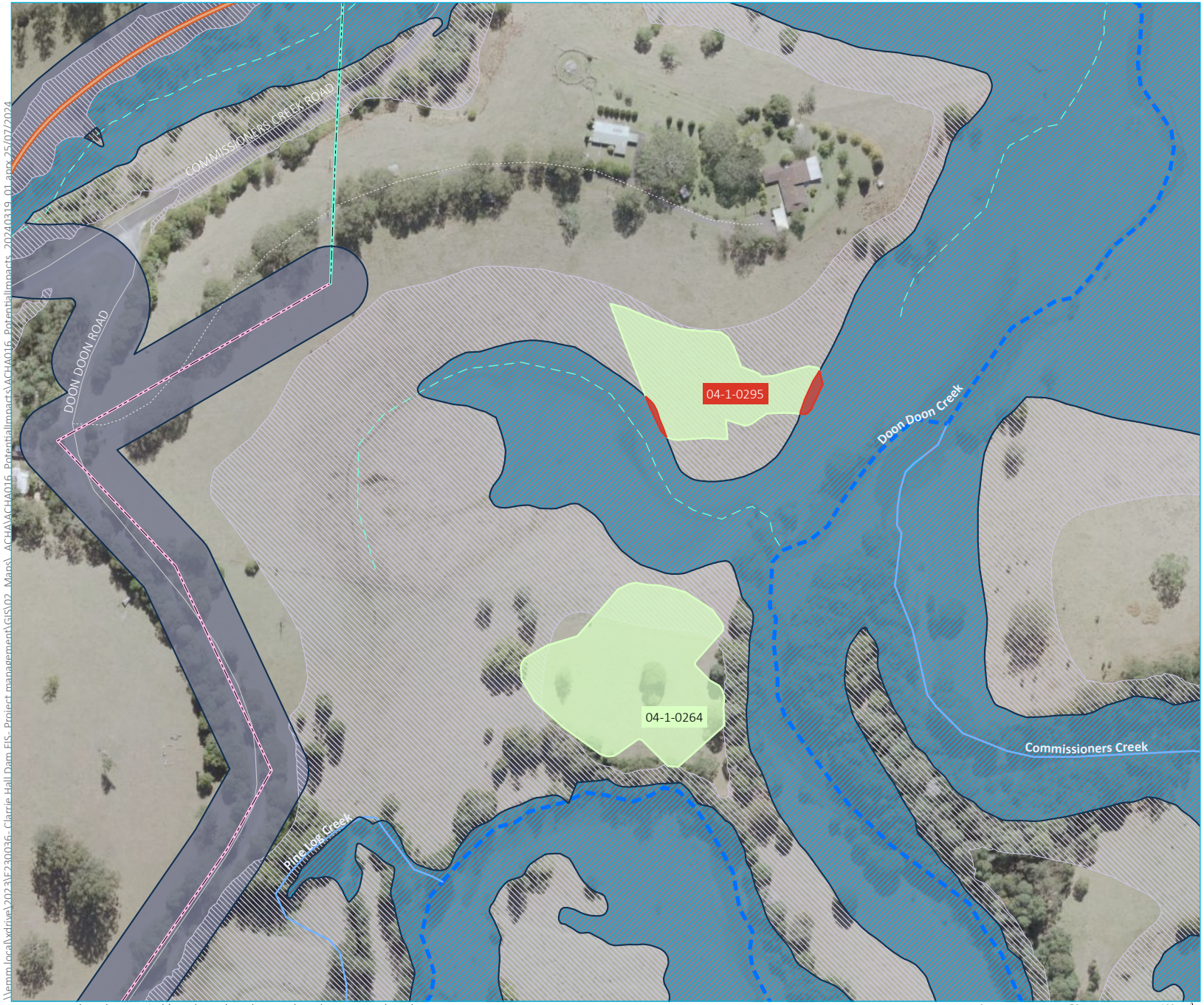
GDA2020 MGA Zone 56

N

Potential cultural heritage impacts by the proposal

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 8.1.3

EMM
creating opportunities



KEY

- Proposed construction disturbance footprint
- Existing inundation
- Inundation to FSL (61.5- 70 m AHD)
- FSL to PMF (70-77 m AHD)
- McCabes Bridge realignment

Transmission line

- Existing
- New

Subsurface cultural deposit impact

- Direct
- Indirect
- Avoidance

Strahler stream order

- 1st order
- 4th order
- 5th order

Existing environment

- Major road
- Minor road
- Vehicular track

Source: EMM (2024); EcoLogical (2023); KBS (2024); DCSSS (2023); MetroMap (2024)

0 50 100 m

GDA2020 MGA Zone 56

N

\\emm.local\xtdrive\2023\E230036 - Clarrie Hall Dam EIS - Project management\GIS\02_Maps_ACHA\ACHA016_PotentialImpacts\ACHA016_PotentialImpacts_20240319_01.aprx 25/07/2024

Potential cultural heritage impacts by the proposal

Clarrie Hall Dam Raising Project
Aboriginal Cultural Heritage Assessment
Figure 8.1.4

EMM
creating opportunities

9 Management strategy and recommendations

9.1 Key findings

- The ACHA concludes that 17 Aboriginal objects and/or sites are within the Proposal, along with a complex landscape of buried stone artefactual material (Section 6). Of the identified sites, up to 11 would be directly affected by the Proposal, being within the construction activities or on the edge of the inundation area, two further sites would be completely submerged. Some ~3.9 ha (78%) of identified areas of high artefact densities would be directly affected, in addition to 287 ha of the low-density stone artefact background scatter that is considered present across the entire project area.

- Recommendations are proposed for inclusion in the project approval to guide post-approval requirements for Aboriginal heritage. These include the development of an Aboriginal Cultural Heritage Management Plan to provide a framework for such activities, as well as direction on its content including additional archaeological investigation and recovery of significant cultural materials, the development of an Interpretation Strategy and Plan to provide acknowledgement and other visual/educational opportunities for the Aboriginal and broader local community.

9.2 Management strategy

9.2.1 Summary of findings and impacts

The assessment outlined in the preceding sections, including Aboriginal consultation with the Bundjalung traditional owners, included cultural mapping, field survey and test excavations. Each of these activities identified various areas and locales of archaeological and/or cultural value.

Due to the initiation of the Proposal in various forms since 2017, the investigations of the project area have extending across multiple assessments. This report attempts to synthesize the data, which in some instances extends back over 40 years. The assessment is heavily reliant on NOHC (2018) that undertook significant field survey of the project area and ELA (2021) which undertook subsurface investigations of a smaller number of potential deposits identified by NOHC (2018). Cumulatively, these form the key components of an ACHA. In addition, additional tasks were implemented for this report. These primarily sought to fill gaps in the previous works, or to further explore key issues raised during these works, primarily in relation to intangible and cultural values and further exploration of key significant sites.

Ultimately, on ratifying this data, some 17 Aboriginal objects and/or potential sites were identified within the or near the Proposal and including a complex pattern of surface and buried stone artefactual material notably along the edge of the now inundated Doon Doon Creek. The identified sites include ~5 ha areas of past foci (dense stone artefacts) divided across some nine disparate locales, two rockshelters, two culturally modified trees, and a natural chalcedony raw material outcrop. A further two areas of past foci and a grinding groove (composed of natural sandstone outcrop with pitting) are present above the FSL, but within the PMF. Cultural deposits were typically on the surface or within the upper ~30 cm of the soil profile. In addition to these discrete high and/or moderately significant sites, a broader background scatter of low-density stone artefacts (1-23/m^2) was documented across the entire project area. Substantive listings undertaken by NOHC (2018), ELA (2021) and this report have been incorporated into this broader background scatter. While important in demonstrating the longevity of Aboriginal people in the region, these deposits have limited scientific significance and comparable cultural materials are prevalent across Australia.

Of these sites, 11 would be directly affected by the Proposal, while two further sites would be inundated -a process that has been argued in Section 8 as a form of conservation, albeit restricting future access for the local Aboriginal community. Notably, additional investigations were undertaken of the highly significant CHD-RS1 (#04-1-0286) and one of two overhangs can be avoided by the Proposal through minor engineering solutions and CHD-

ST1 (#04-1-0285), a significant culturally modified tree has also been avoided through project re-design. Of those sites that would be adversely affected, a large portion reflect surface and/or sub-surface stone artefactual material, and which can be suitably mitigated prior to inundation. In so doing, these would provide further information on the past use of the region, which has been a focus of consultation with the RAPs over the last several years. Given these findings and the potential impacts – both Proposal-specific and cumulative – additional Aboriginal heritage requirements and mitigation activities are proposed for subsequent stages of the Proposal, and these are incorporated into the recommendations below.

9.2.2 Post-approval requirements

In NSW, Aboriginal objects are provided with statutory protection by the *National Parks and Wildlife Act 1974*. In general, where a proposed activity will result in harm to an Aboriginal object, an application must be made, and an Aboriginal Heritage Impact Permit (AHIP) must be granted before any harm may occur. If granted, the AHIP will contain conditions intended to manage and mitigate the identified impact and allowing harm to proceed. As the Proposal is an SSI project, an AHIP is not required. The identified harm and any mitigation measures will instead be assessed through the EIS and, if consent to harm is granted, included within the Proposal's conditions of approval. The conditions of approval of a SSI project generally incorporate Aboriginal heritage management requirements based on advice from Heritage NSW, and the recommendations of this assessment (Section 9.3).

While some post-approval management and recommendations are included in NOHC (2018) and ELA (2021), it is proposed that Section 9.3 supersedes any previous direction. Section 6 undertook a synthesis and re-interpretation of the previous findings by these two studies as well as undertaking additional works. As such, several of the previous recommendations are no longer relevant (e.g. undertaking test excavations of PADs in NOHC [2018], which has now already occurred), while others do not align with the cultural assemblage as now presented. However, it is noted that many of the proposed mitigation measures in ELA (2021) broadly align with those presented in Section 9.3 and Appendix H.

For the purposes of this Proposal, recommendations below include the development of an Aboriginal Cultural Heritage Management Plan (ACHMP) to provide the post-approval management framework for all future Aboriginal heritage requirements for the Proposal. The recommendations also outline the further specific mitigation measures to be included in the ACHMP that should be implemented prior to and through the Proposal life, and which are elaborated upon in Appendix H of this report. These include measures to ensure the avoidance of Aboriginal objects and sites outside of the FSL, including CHD-ST1 (#04-1-0285), conservation of the upper overhang of CHD-RS1 (#04-1-0286), the recording and recovery of CHD-ST2 (#04-1-0285), investigate and salvage (conservation *ex situ*) areas of high significance (including CHD-AS48 [#04-1-0249], CHD-A55 [#04-1-0281], CHD PAD 9 [#04-1-0288], CHD PAD2 [#04-1-0295], CHD PAD 1 [#04-1-0296] and areas of CHD-RS1 [#04-1-0286] and CHD BMP 05-0036 [#04-1-0090] where adversely affected), archival recording of all identified sites subject to impact any other recovery and/or collection procedures, completing any post-excavation analyses and reporting, and lodging the various documentation with appropriate public repositories.

Any additional excavations will require the full support of the Aboriginal participants in the Proposal. This is especially the case for the rockshelters proposed for inundation. It is concluded here that CHD BMP 05-0036 (#04-1-0090) would be submerged, but otherwise unaffected, and as such mitigation is not considered required. However, the RAPs may wish for such investigations since future access would be lost. As outlined in Section 2.4, while there has been some changing views over the last several years, there now appears support for further archaeological salvage of the lower rockshelter within CHD-RS1 (#04-1-0286) in advance of inundation. While the specific methodologies and quantum of these excavations would be developed as part of the ACHMP in consultation with the Proposal team and Aboriginal participants, a number of guiding principles should be adopted. These are presented in Appendix H.

In the case of the CHD background artefact scatter, no further mitigation measures are recommended. It has been demonstrated that 1–23 artefacts/m^2 would be expected intermittently and disparately across the Proposal, which reflects the ephemeral use of the region by Aboriginal people for several millennia. Recovery of such cultural material would have limited scientific value. However, it is acknowledged that the RAPs may wish to collect some of, or all identified, cultural materials, which included infrequent exotic materials and formal tool types that may assist education. Where desired, collection of such cultural materials should be incorporated into the ACHMP.

In addition to the tangible cultural materials within the Proposal, a wide range of intangible and cultural values were identified. Few of these were within the Proposal, but the project area is dominated by Wollumbin and nearby Byrrill and Commissioners Creeks, all of significant value to the local Aboriginal community. To address and further explore these values and as further offset of proposed harm to the cultural assemblage (Section 8), it is recommended that an interpretation strategy, interpretation plan, and their implementation be developed to explore, develop and present Aboriginal heritage values of the site. As with the ACHMP, guiding principles to be integrated into these documents are presented in Appendix H.

9.3 Recommendations

Where feasible, Council should consider modifying the Proposal design to avoid identified Aboriginal objects and/or sites identified and areas of significant buried cultural material (or where they have a high likelihood of being present) within the additional disturbance area.

Where altering the design is not feasible, the following recommendations should be integrated into the management for the Proposal:

- Prior to construction ground disturbance, an Aboriginal Cultural Heritage Management Plan (ACHMP) must be developed by a heritage specialist in consultation with the Registered Aboriginal Parties (RAPs) to provide the post-approval framework for managing archaeological mitigation and Aboriginal heritage within the Proposal area. The ACHMP should include the following issues and consider guiding principles presented in Appendix H of this report:
    - Processes, timing, communication methods and project involvement (e.g. on-site activities) for maintaining Aboriginal community consultation and participation through the remainder of the Proposal. This should include a grievance mechanism that is readily available and designed for use by the local Aboriginal community.
    - If not previously completed, discuss and identify any areas of design optimisation with the RAPs to avoid or further minimise harm to identified Aboriginal sites, objects and place.
    - Detail description and methods to conserve portions of CHD-RS1 (#04-1-0286) above the proposed FSL. This may include engineering solutions and/or ongoing monitoring to ensure the site's retention during, and following, the initial flooding of the Proposal.
    - Detail descriptions and methods to avoid any inadvertent impacts to identified Aboriginal objects and/or sites and areas of archaeological sensitivity outside of the construction activities (e.g. CHD-ST1 [#04-1-0295)]. This should include, but not be limited to, cultural inductions for all personnel and subcontractors outlining their location and significance, fencing and clear marking of heritage sites and zones of interest in close proximity to proposed works, where needed appropriate screening for sensitive and gender-specific areas, and any additional requirements identified by the Aboriginal community. A suitable regime of monitoring these activities should also be outlined, including locations, methods, personnel and timing.

- Detail descriptions and methods of any additional investigative and/or mitigate archaeological actions that may be required prior to construction works commencing or during the Proposal. These should include, but not limited to, archival recording of all identified Aboriginal objects, sites and places, suitable recovery or relocation, documentation and analysis of any archaeological sites proposed for direct impacts (Table 8.1), recovery of CHD-ST2 (#04-1-0303) and management of any archaeological excavation of areas of significant buried cultural material (namely CHD-AS48 [#04-1-0249], CHD-A55 [#04-1-0281], CHD PAD 9 [#04-1-0288], CHD PAD2 [#04-1-0295], CHD PAD 1 [#04-1-0296] and inundated portions of CHD-RS1 [#04-1-0286] and CHD BMP 05-0036 [#04-1-0090] where supported by RAPs) and where direct impacts are proposed. Further details of these activities are presented in Section 9.2 and Appendix H. For these activities, details of location/s, methods, personnel, and timing should be included.

- Description and methods for undertaking further Aboriginal cultural heritage assessment, investigation and mitigation of any areas of the Proposal that have changed following completion of the ACHA and/or during the final design and construction phases of the Proposal.

- Description and methods of post-excavation analysis and reporting of the archaeological investigations and activities implemented as part of the ACHMP. For excavations, these should include suitable collection and processing of stone artefacts, and chronological, soil, and environmental samples.

- Procedures for managing the unexpected discovery of Aboriginal objects, sites and/or human remains during the Proposal.

- Procedures for the curation and long-term management of cultural materials recovered or relocated as part of the works outlined in the ACHMP and any preceding stages associated with the Proposal.

- Processes for reviewing, monitoring, and updating the ACHMP as the Proposal progresses.

- A heritage-interpretation strategy must be developed by a heritage specialist to identify the interpretive values of the Proposal, and specifically Aboriginal heritage values across the project area, and to provide direction for potential interpretive opportunities for the Proposal and/or off-site (e.g. at Uki and/or Murwillumbah). This strategy should be made available for consultation and feedback with the RAPs. Following consultation and feedback on the strategy, a heritage interpretation plan would refine the strategy with content (visual and textual) and design details in order to allow the implementation stage. The interpretation strategy and interpretation plan must include consideration of guiding principles presented in Appendix H.

- The Construction Environment Management Plan (CEMP), or equivalent, should reinforce how the cultural landscape is considered throughout the Proposal and detail the rehabilitation of the disturbance footprint. Rehabilitation of areas where infrastructure is not remaining after construction of the Proposal should be undertaken to determine suitable ecological communities and other factors in returning the cultural landscape as close to its current state as feasible.

- Consultation should be maintained with the RAPs during the finalisation of the assessment process and throughout the Proposal.

- A copy of the ACHA should be lodged with AHIMS and provided to each of the RAPs after finalisation.

- Where the heritage consultant changes through the Proposal, suitable hand over should be undertaken to minimise loss or mistranslation of the intent of the information, findings and future steps in heritage management occur.

References

AAJV, 2020. Windsor Bridge Replacement Project: Salvage excavation report - Aboriginal Heritage, Sydney.

Australia ICOMOS, 2013. The Burra Charter and Indigenous Cultural Heritage Management.

Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M, Testoni I, 2019. *Australian Rainfall and Runoff: A Guide to Flood Estimation*. Commonwealth of Australia (Geoscience Australia).

Bannerman, S. M., and P. A. Hazelton, 1990. *Soil Landscapes of Murwillumbah-Tweed Heads 1:100,000 Sheet.* Department of Land and Water Conservation.

Bowler, J. M., H. Johnston, J. M. Olley, J. R. Prescott, R. G. Roberts, W. Shawcross, and N. A. Spooner, 2003. New Ages for Human Occupation and Climatic Change at Lake Mungo, Australia. *Nature* 421(6925):837–840.

Bradshaw, C. J. A., Ulm, S., Williams, A. N., Bird, Roberts, R. G., Jacobs, Z., Laviano, F., Weyrich, L. S., Friedrich, T. Norman, K., Saltré, F., 2019. Minimum Founding Populations for the First Peopling of Sahul. *Nature Ecology & Evolution* 3(7):1057–1063.

Brunker, R.L., Cameron, R.G, Tweedale, G., Reiser, R., 1972. Tweed Heads 1:250 000 Geological Sheet SH/56-03, 1st edition, Geological Survey of New South Wales, Sydney.

Cousins, A., 1933. The northern rivers of New South Wales. Sydney: Shakespeare Head Press.

DECCW, 2010. Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales.

DECCW, 2010b. Aboriginal cultural heritage consultation requirements for proponents 2010. Hurstville, NSW.

Eco Logical Australia, 2021. Clarrie Hall Dam Raising EIS – Aboriginal Heritage Assessment and Management Plan. Report prepared for Tweed Shire Council.

EMM, 2023a. Doon Doon Creek and Tweed River – geomorphology modelling. Prepared for Tweed Shire Council.

EMM, 2023b. Clarrie Hall Dam raising – surface water assessment. Prepared for Tweed Shire Council.

Fagherazzi, S., Wiberg, P.L., 2009, Importance of wind conditions, fetch, and water-levels on wave-generated shear stresses in shallow intertidal basins. *Journal of Geophysical Research,* 114: doi:10.1029/2008JF001139.

Felix-Faure, J., Walter, C., Balesdent, J., Chanudet, V., Avriller, J-N., Hossann, C., Baudoin, J-M., Dambrine, E., 2019. Soils drowned in water impoundments: a new frontier. *Frontiers in Environmental Science* 7: 10.3389/fenvs.2019.00053.

Fox, I., Slabb, K., 2016. First People. In DeGood, M. (ed.) *The Fragile Edge: A Natural History of the Tweed Coast.* Boganger NSW.

Gould, R., 1977. *Puntutjarpa Rockshelter and the Australian Desert Culture.* Anthropological Papers of the American Museum of Natural History.

Kellogg Brown & Root

- 2023a. Clarrie Hall Dam Raising State Significant Infrastructure Application – Scoping Report. Prepared for Tweed Shire Council.

- 2023b. Clarrie Hall Dam raising – Flood impact assessment. Prepared for Tweed Shire Council.

Langley, M., Clarkson, C., Ulm, S., 2011. From Small Holes to Grand Narratives: The Impact of Taphonomy and Sample Size on the Modernity Debate in Australia and New Guinea. *Journal of Human Evolution* 2 61(2).

Longhurst, R. I., 1980. The Gold Coast: Its First Inhabitants. *John Oxley* 1 (2), 15-24.

MWH

- 2009, Tweed District Water Supply Augmentation Options Study – Stages 1 and 2 – Coarse Screen Assessment of Options. Report prepared for Tweed Shire Council.
- 2010, Tweed District Water Supply Augmentation Options Study – Stage 3 – Fine Screen Assessment of Shortlisted Options. Report prepared for Tweed Shire Council.

Navin Officer Heritage Consultants Pty Ltd, 2018. Proposed Raising of Clarrie Hall Dam, Murwillumbah NSW: Archaeological Assessment and Aboriginal Cultural Assessment. Report prepared for Tweed Shire Council.

Office of Environment and Heritage, 2011a. Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW.

NSW Heritage Office, 1996. Archaeological Assessments: Archaeological Assessment Guidelines.

O'Connell, J. F., Allen, J., Williams, M. A. J., Williams, A. N., Turney, C. S. M., Spooner, N. A., Kamminga, J., Brown, G., Cooper, A., 2018. When Did Homo Sapiens First Reach Southeast Asia and Sahul? *Proceedings of the National Academy of Sciences* 115(34):8482–8490.

Piper, A., 1979. *An archaeological survey of Aboriginal sites within the proposed Doon Doon Creek Dam (re-location) area of inundation*.

Southern Cross University (2008) *Preliminary Archaeological Overview for Proposed Raising of Clarrie Hall Dam.*

Sullivan & Dallas, (1978) *An archaeological survey of the proposed Doon Doon Creek dam site*.

Tindale, N., 1974. *Aboriginal Tribes of Australia: Their Terrain, Environmental Controls, Distribution, Limits, and Proper Names.* Berkeley University of California Press.

Tobler, R., A. Rohrlach, J. Soubrier, P. Bover, B. Llamas, J. Tuke, N. Bean, A. Abdullah-Highford, S. Agius, A. O'Donoghue, I. O'Loughlin, P. Sutton, F. Zilio, K. Walshe, A. N. Williams, C. Turney, S. Richards, R. Mitchell, E. Kowal, J. Stephen, L. Williams, W. Haak, and A. Cooper, 2017. Aboriginal Mitogenomes Reveal 50,000 Years of Regionalism in Australia. *Nature* 544(7469):180–184.

Tweed Shire Council, 2017. Draft Aboriginal Cultural Heritage Management Plan.

Uniake, J., 1825. *Narrative of Mr. Oxleys Expedition to Port Curtis and Moreton Bay' in Geographical Memoirs of N.S.W*. Baron Field (ed), London.

Vilhena, R.M., dos Anjos Mascarenha, M.M., Sales, M.M., de Araújo Romão, P., Pereira da Luz, M., 2019. Estimating the wind-generated wave erosivity potential: the case of the Itumbiara Dam reservoir. *Water* 11 (342): doi:10.3390/w11020342.

Williams, A. N., (2013) A New Population Curve for Prehistoric Australia. *Proceedings of the Royal Society B: Biological Sciences* 280(1761):20130486.

Williams, A. N., F. Atkinson, M. Lau, and P. S. Toms, 2014. A Glacial Cryptic Refuge in South-East Australia: Human Occupation and Mobility from 36 000 Years Ago in The. *Journal of Quaternary Science* 29(8):735– 748.

Williams, A. N., A. Burrow, P. S. Toms, O. Brown, M. Richards, and T. Bryant, 2017. The Cranebrook Terrace Revisited: Recent Excavations of an Early Holocene Alluvial Deposit on the Banks of the Nepean River, NSW, and Their Implications for Future Work in the Region. *Australian Archaeology* 83(3):100–109.

Williams, A. N., P. Mitchell, R. S. Wright, and P. S. Toms, 2012. A Terminal Pleistocene Open Site On The Hawkesbury River, Pitt Town, New South Wales. *Australian Archaeology* 74(1):85–97.

Williams, A. N., S. Ulm, T. Sapienza, S. Lewis, and C. S. M. Turney, 2018. Sea-Level Change and Demography during the Last Glacial Termination and Early Holocene across the Australian Continent. *Quaternary Science Reviews* 182:144–154.

Williams, A.N., S. Ulm, C. S. M. Turney, D. Rohde, and G. White, 2015a. Holocene Demographic Changes and the Emergence of Complex Societies in Prehistoric Australia. *PLoS ONE* 10(6):e0128661.

Williams, A. N., P. Veth, W. Steffen, S. Ulm, C. S. M. Turney, J. M. Reeves, S. J. Phipps, and M. Smith, 2015b. A Continental Narrative: Human Settlement Patterns and Australian Climate Change over the Last 35,000 Years. *Quaternary Science Reviews* 123(2015):91–112.

Abbreviations

Abbreviations	
AEP	Annual Exceedance Probability
AHD	Australian Height Datum
ACHA/ACHAR	Aboriginal cultural heritage assessment report
AHIMS	Aboriginal Heritage Information Management System
ACHMP	Aboriginal Cultural Heritage Management Plan
BP	Years before present
c.	circa
CHD	Clarrie Hall Dam
cm	centimetres
DEC	Department of Environment and Conservation, now Heritage NSW
DECCW	Department of Environment Climate Change and Water, now Heritage NSW
DPC	Department of Premier and Cabinet
DPE	Department of Planning and Environment, now DPIE
DPIE	Department of Planning, Industry and Environment
EIS	Environmental Impact Statement
EMM	EMM Consulting Pty Ltd
EP&A Act	*Environmental Planning and Assessment Act 1979*
ESD	Ecologically sustainable development
FGS	Fine grained siliceous
FSL	Full Supply Level
g	grams
GIS	geographical information system
GPS	global positioning system
ha	hectare
ICOMOS	International Council on Monuments and Sites
IMTC	Indurated mudstone/tuff/chert
km	kilometres
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
m	metres

Abbreviations	
m^2	square metres
mm	millimetres
n	Number
NSW	New South Wales
OEH	Office of Environment and Heritage, now Heritage NSW
PAD	Potential archaeological deposit
PMF	Probable Maximum Flood level
RAP	Registered Aboriginal Party
SEARs	Secretary's Environmental Assessment Requirements
t	Tonne
TP	Test pit

Glossary

Many of these definitions have been taken from the *Code of Practice for archaeological investigation of Aboriginal objects in NSW* (DECCW 2010).

Aboriginal object: A physical manifestation of past Aboriginal activity. The legal term is defined in the *National Parks and Wildlife Act 1974* Section 5 as: any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains.

Typical examples include stone artefacts, grinding grooves, Aboriginal rock shelters which by definition include physical evidence of occupation, midden shell, hearths, stone arrangements and other landscape features which derive from past Aboriginal activity.

Archaeological survey: A method of data collection for Aboriginal heritage assessment. It involved a survey team walking over the land in a systematic way, recording information. Activities are not invasive or destructive.

Aboriginal culturally modified tree: A tree of sufficient age to have been mature at the time of traditional Aboriginal hunter-gatherer life and therefore generally of more than 220 years ago with evidence of bark or cambium wood removal for the purpose of implement manufacture, footholds, bark sheet removal for shelter, or extraction of animals or other food. Care must be taken to distinguish Aboriginal scars from the much more common natural causes of branch tear, insect attack, animal impact, lightning strike and dieback. Culturally modified tree recognition guidelines exist to distinguish these features. Naturally scarred trees are often misidentified as Aboriginal culturally modified trees.

Aboriginal site: The location where a person in the present day can observe one or more Aboriginal objects. The boundaries of a site are limited to the extent of the observed evidence. In the context of this report a 'site' does not include the assumed extent of unobserved Aboriginal objects (such as archaeological deposit). Different archaeologists can have varying definitions of a 'site' and may use the term to reflect the assumed extent of past Aboriginal activity beyond visible Aboriginal objects. Such use of the term risks defining all of Australia as a single 'site'.

Aboriginal stone artefact: A stone object with morphological features derived from past Aboriginal activity such as intentional fracture, abrasion or impact. Artefacts are distinguished by morphology and context. Typically flaked stone artefacts are distinguished from naturally broken stone by recognition of clear marginal fracture initiation (typically herzian/conchoidal or wedging initiation) on highly siliceous stone types which can often be exotic to the area. Care must be taken to distinguish modern broken stone in machine impacted contexts and therefore context must be carefully considered as well as morphology.

Aggradation: a term used in geology for the increase in land elevation, typically in a river system, due to the deposition of sediment.

AHIMS: Aboriginal Heritage Information Management System — a computer software system employed by the Office of Environment and Heritage to manage many aspects of Aboriginal site recording and permitting. AHIMS includes an Aboriginal sites database which can be accessed via an internet portal.

Archaeological deposit: Aboriginal objects occurring in one or more soil strata. The most common form of archaeological deposit relates to the presence of a single conflated layer of Aboriginal stone artefacts worked into the topsoil through **bioturbation**.

Backed artefact: A thin flake or blade-flake that has been shaped by secondary flaking (**retouch**) along one lateral margin. The retouched margin is typically steep and bipolar to form a blunt 'back' in the manner of a modern scalpel blade. Distinctive symmetrical and asymmetrical forms are typically found called geometric **microliths** and Bondi points respectively. A thick symmetrical form, called an Elouera, is typically the size of a mandarin segment.

Bioturbation: is the reworking of soils and sediments by animals or plants. Its effects include changing texture of sediments (diagenetic), bioirrigation and displacement of microorganisms and non-living particles.

Bipolar flaking: Where the stone to be worked is rested on an anvil or other stone before being hit by the hammerstone. This results in the presence of negative flake scars on both ends of the core.

Bondi point: See backed artefact definition.

Brown podosols: Topsoils have loamy textures. A2 horizons are common, there is a clear boundary onto the B horizon. They have a sandy clay to heavy clay texture (typically occur on upper and mid-slopes).

Chocolate Soils: Soils that are typically formed in a basaltic parent material where slope or bedrock strata influence drainage. Surface horizons comprise loam, clay loam or silty clay loam. There is a gradual boundary to a brown or brownish black B horizon. There is no A2 horizons.

Conchoidal: A term used in relation to fracture surfaces on Aboriginal stone artefacts - bulb-like in the manner of a bulbous protrusion on a bivalve shell.

Elouera: See backed artefact definition.

Eraillure scar: The small flake scar on the dorsal side of a flake next to the platform. It is the result of rebounding force during percussion flaking.

Exposure: estimates the area with a likelihood of revealing buried artefacts or deposits, not just an observation of the amount of bare ground.

Geometric microlith: See backed artefact definition.

Grinding grooves: Grinding grooves typically derive from the sharpening of stone hatchet heads on sandstone rock. Grooves appear as elliptical depressions of around 25 cm length with smooth bases. Although mostly occurring in association with water to wash the abraded stone dust away from the groove, such sites have been recorded away from water. Narrow grooves or broad abraded areas may occur less commonly and may be derived from spear sharpening or other grinding activities.

Haematite: a pigment featured in ochre used for tinting with a permanent colour.

Holocene: A period of time generally 10,000 years, which marks the end of the last ice age, to the present.

Igneous: relating to or involving volcanic or plutonic processes.

Indurated mudstone/tuff (IMT): the fine textured, very hard, yellowish, orange, reddish-brown or grey rocks from which stone artefacts are made.

Isotropic: Having a physical property that has the same value when measured in different directions. In relation to stone used for stone tools a fracture path is not hindered by layer boundaries or other favoured plane of cleavage.

Keeping place: A room or facility with the express and exclusive purpose of storing Aboriginal cultural heritage materials with accompanying documentation in a secure and accessible manner which protects their cultural heritage values.

Knapping: This term is used in reference to stone tool production. Specifically, it relates to the production and shaping of a block of stone (e.g. a cobble) into a stone tool. The process is called knapping, while the individual undertaking the task is often called a knapper. A knapping floor or event often referenced in the literature relates to an archaeological deposit, usually of high densities of stone artefacts, where researcher's believe this process has occurred in a given locale.

Krasnozems: Mainly loams, clay loams and silty clay loams with a clear or gradual boundary to a dark reddish brown B horizon. Clays are typically light to medium and occasionally heavy.

Lithosols: Soils that have little or no profile development. They occur on steep slopes and are usually shallow and are left mainly as uncleared native bushland.

Microlith: Very small fragments of flakes retouched into geometric shapes and usually present on tools like barbed spears, arrows and sickles.

Midden: A collection of shells and associated economic remains resulting from Aboriginal food gathering and processing activity. Middens comprise shellfish remains of consistent size in a rich dark earth matrix commonly associated with stone artefacts, fish bone and animal bone although shells are commonly the most obtrusive element.

Open stone artefact site/stone artefact site: An unenclosed area where Aboriginal stone artefacts occur – typically exposed from a topsoil archaeological deposit by erosion. Typically, the term is used to refer to two or more artefacts although this is an arbitrary distinction. A general 'rule of thumb' boundary definition employed by archaeologists is that artefacts or features more than 50 m apart are regarded as separate sites, however there is no theoretical imperative dictating such as rule. (The 50 m separation rule is used for the most part in EMM's work).

Pirri point: A leaf-shaped stone implement with unifacial retouch extending from the lateral margins to a central keel running the length of the dorsal surface.

Pleistocene: A period of time 2.6 million years ago to 10,000 years ago. Reference to 'Pleistocene sites' generally means reference to sites older than 10,000 years.

Podosols: Soils with accumulations of organic matter, iron and aluminium. They are usually sand textured to depth. Yellow and red podosols are generally acid neutral. Yellow podosols have coarse to medium textured A horizons.

Point cluster: A group of GPS points used to identify the locations of individual artefacts in the field.

Potential Archaeological Deposit (PAD): An area where there is an inferred presence of Aboriginal objects in the soil based on the environmental context which is typically associated with discovery of Aboriginal objects in analogous areas. This is not strictly a 'site' type, although AHIMS records it as such for the purpose of associating Aboriginal heritage Impact Permits with geographical areas.

Red podosols: Podosols with a pronounced texture contrast and clear to abrupt boundaries between A and B horizons. A2 is often massive and gravelly.

Retouch: The modification of the edges of a flake or tool by the removal of a series of small flakes.

Siliceous Sands: Sands that are usually found on coarse-grained sandstones and in sandstone colluvium. They are often sandstone outcrops present in the landscape. The topsoil has a loamy sand to light sandy clay.

Scarp: a steep slope characterised by outcropping bedrock. In this report, scarp refers to a combination of landform elements including scarp foot slopes, scarps, and cliff lines where outcropping sandstone is present in the landscape 10% and above.

Spit/s: This term reflects an arbitrary unit of depth that archaeologists excavate when lacking evidence of a stratigraphy within the soil profile. Commonly, archaeologists remove vertical intervals of 5, 10 or 20 cm, each representing a spit, down the soil profile. Through this process, archaeologists can determine the depth at which archaeological materials are found, even in soil profiles with no clear divisions or boundaries.

Spur: the lateral crests of land that descend from the summit of hills or ridges. Spurs typically extend, with decreasing elevation, closer to streams and valley floors than the main crest of a hill.

Taphonomic: the events and processes, such as burial in sediment, leading to the degradation, decomposition or preservation of objects.

Thumbnail scraper: A thumbnail sized thin flake with steep unidirectional retouch or use-wear around a convex working edge.

Transect: A sample unit which is walking line or corridor across the project area.

Upsidence: phenomena that occurs when mining approaches and undermines river valleys. It can result in cracking and buckling of river beds and rock bars and localised loss of water flow.

Visibility: The amount of bare ground on exposures which might reveal artefacts or other archaeological materials.

Yellow earths: predominantly sandy-textured soils with earthy porous fabric, weak profile differentiation and gradual or diffuse boundaries except for the darker A1 horizon.

Yellow podosols: Podosols which typically occur on the upper slopes of steep landscapes and on the mid to lower slopes of others. The A2 soil horizon is present in most profiles and the boundary change to the B horizon is generally clear. The B horizon is typically sandy clay to heavy clay.

Appendix A

Previous assessments undertaken for the project

EMM
creating opportunities

A.1 NOHC (2018)

Document control

Project no.:	
Project client:	Tweed Shire Council
Document description:	Archaeological Assessment and Aboriginal Cultural Heritage Assessment
Project Manager:	Nicola Hayes
Authors:	Adrian Cressey, Lucy Blackam
Internal review:	Nicola Hayes; Kerry Navin
Document status:	Final V8
Local Government Area:	Tweed Shire

Document revision status

Author	Revision number	Internal review	Date issued
Adrian Cressey	6.1 (redacted)	Nicola Hayes	25.1.2018
Adrian Cressey	7 (redacted)	Kerry Navin	26.1.2018
Adrian Cressey	7.3 (redacted)		8.3.2018
Adrian Cressey	7.6 (redacted)	Nicola Hayes	5.6.2018
Nicola Hayes	8		18/6/18

Copyright to this report rests with the Tweed Shire Council except for the following:

- The Navin Officer Heritage Consultants logo and business name (copyright to this rests with Navin Officer Heritage Consultants Pty Ltd);
- Generic content and formatting which is not specific to this project or its results (copyright to this material rests with Navin Officer Heritage Consultants Pty Ltd);
- Descriptive text and data relating to Aboriginal objects which must, by law, be provided to OEH for its purposes and use;
- Information which, under Australian law, can be identified as Indigenous intellectual property; and
- Content which was sourced from and remains part of the public domain.

Cover photographs: Field photos, NOHC, October 2017

EXECUTIVE SUMMARY

The Proposed Development

- Tweed Shire Council is proposing to raise the Clarrie Hall Dam as a larger water supply is needed by 2026 to meet the demands of the Shire's growing population, and to mitigate the adverse impacts of climate change (Tweed Shire Council 2017).

- The Clarrie Hall Dam is located on Doon Doon Creek, a tributary of the South Arm of the Tweed River. The Dam is situated 15 km southwest of Murwillumbah, NSW.

- This report documents the results of an Archaeological Assessment and Aboriginal Cultural Heritage Assessment for the proposed raising of Clarrie Hall Dam.

- The assessment included Aboriginal consultation, Aboriginal and historical literature and database review, and field survey of the subject land.

- All archaeological objects and sites have cultural value for present-day Aboriginal people, as they were created by ancestral Aboriginal people and provide tangible evidence of past occupation of the landscape. It should be noted that independent of archaeological sites and objects within the study area, the landscape, flora, and fauna of the Doon Doon Creek Valley is of high cultural significance to the local Aboriginal community.

Results

- The Clarrie Hall Dam proposal has the potential to impact 81 Aboriginal sites and three historical site

Aboriginal Sites

Nine Aboriginal sites are registered on the OEH AHIMS as occurring in, the Clarrie Hall Dam study area. These comprise:

- two open campsites/artefact scatters- 04-1-0012 & 04-1-0130
- five artefact scatters/ isolated find sites- 04-1-0009, 04-1-0010, 04-1-0015, 04-1-0011, 04-1-0194
- two rock shelters - 04-1-0014, 04-1-0090

Six previously recorded but unregistered Aboriginal sites are located in, or adjacent to (within 25 metres of the outer boundary of the study area) the Clarrie Hall Dam study area. These comprise:

- three open campsites – CH1, CH3, CH6, CH7, CH8
- one artefact - CH5

Sixty previously unidentified and unrecorded Aboriginal sites were identified during archaeological field survey of the Clarrie Hall Dam study area. These comprise:

- Twenty-one stone artefact scatters -

  CHD-A4, CHD-A6, CHD-A8, CHD-A16, CHD-A17, CHD-A19, CHD-A22, CHD-A26, CHD-A27, CHD-A30, CHD-A31, CHD-A32, CHD-A34, CHD-A36, CHD-A40, CHD-A41, CHD-A43, CHD-A48, CHD-A49, CHD-A50, CHD-A55

- Thirty-three Aboriginal isolated finds (single stone artefacts) -

  CHD-A1, CHD-A2, CHD-A3, CHD-A5, CHD-A7, CHD-A9, CHD-10, CHD-11, CHD-12, CHD-13, CHD-A14, CHD-15, CHD-A18, CHD-A21, CHD-A23, CHD-A24, CHD-A25, CHD-A28,

CHD-A29, CHD-A33, CHD-A35, CHD-A37, CHD-A38, CHD-A39, CHD-A42, CHD-A44, CHD-A45, CHD-A46, CHD-47, CHD-A51, CHD-A52, CHD-A53, CHD-A54

- Two grinding grooves sites - CHD-A20, CHD-A57
- One Aboriginal rock shelter - CHD-RS1
- One culturally restricted Aboriginal site - CHD-A56
- One possible Aboriginal scarred tree - CHD-ST1
- One possible chalcedony knapping resource - CHD-G1

Ten previously unrecorded Aboriginal Potential Archaeological Deposits (PADs) unassociated with surface artefacts were identified during archaeological field survey of the Clarrie Hall Dam study area.

- CHD-PAD1, CHD-PAD2, CHD-PAD3, CHD-PAD4, CHD-PAD5, CHD-PAD6, CHD-PAD7, CHD-PAD8, CHD-PAD9, CHD-PAD10

Historical sites

Three historical sites were identified during archaeological field survey.

- CHD-H1 - Building platform and associated plantings (Frances Garner Property)
- CHD-H2 - Crams Farm Complex
- CHD-H3 - Doon Doon Hall

Impacts & Mitigation Measures

Aboriginal Sites

Site Number	Feature(s)	Significance Assessment	Potential Impact	Impact Group	Mitigation
CHD-A1	**isolated find & PAD**	**moderate (local)**	**permanent inundation**	**direct**	**surface artefact collection & subsurface testing**
CHD-A2	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A3	isolated find (cultural significance)	low (local)	not directly impacted - very close to flood inundation	indirect	mark on maps
CHD-A4	**artefact scatter**	**low (local)**	**permanent inundation**	**direct**	**surface artefact collection**
CHD-A5	isolated find	low (local)	not impacted	indirect	mark on maps
CHD-A6	artefact scatter & PAD	moderate (local)	not directly impacted - very close to flood inundation	indirect	mark on maps
CHD-A7	**isolated find**	**low (local)**	**permanent inundation**	**direct**	**surface artefact collection**
CHD-A8	**artefact scatter**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A9	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A10	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A11	**isolated find (cultural significance)**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A12	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A13	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A14	**isolated find (cultural significance)**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A15	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**

Site Number	Feature(s)	Significance Assessment	Potential Impact	Impact Group	Mitigation
CHD-A16	artefact scatter & PAD	moderate (local)	not directly impacted	indirect	mark on maps
CHD-A17	artefact scatter & PAD	moderate (local)	surface scatter – not directly impacted very close to flood inundation. PAD - partial permanent and partial flood inundation	indirect PAD (direct)	subsurface testing
CHD-A18	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A19	artefact scatter	low (local)	not directly impacted	indirect	mark on maps
CHD-A20	**sandstone pitting/holes (cultural significance)**	**low (local)**	**flood inundation**	**direct**	**discuss with aboriginal stakeholders**
CHD-A21	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A22	**artefact scatter**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A23	isolated find & pad	moderate (local)	not directly impacted	indirect	mark on maps
CHD-A24	**isolated find (cultural significance)**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A25	isolated find	low (local)	not directly impacted	indirect	mark on maps
CHD-A26	artefact scatter	low (local)	not directly impacted	indirect	mark on maps
CHD-A27	**artefact scatter & PAD**	**moderate (local)**	**flood inundation**	**direct**	**surface artefact collection & subsurface testing**
CHD-A28	**isolated find (cultural significance)**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A29	**isolated find (cultural significance)**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**

Site Number	Feature(s)	Significance Assessment	Potential Impact	Impact Group	Mitigation
CHD-A30	**artefact scatter & PAD**	**moderate (local)**	**surface scatter - permanent inundation. PAD - combination of partial inundation and flood inundation**	**direct**	**surface artefact collection & subsurface testing**
CHD-A31	**artefact scatter**	**low (local)**	**permanent inundation**	**direct**	**surface artefact collection**
CHD-A32	artefact scatter	low (local)	not directly impacted	indirect	mark on maps
CHD-A33	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A34	artefact scatter	low (local)	not directly impacted	indirect	mark on maps
CHD-A35	**isolated find & PAD**	**moderate (local)**	**surface scatter - flood inundation. PAD - combination of partial inundation and flood inundation**	**direct**	**surface artefact collection & subsurface testing**
CHD-A36	**artefact scatter & PAD**	**moderate (local)**	**permanent inundation**	**direct**	**surface artefact collection & subsurface testing**
CHD-A37	**isolated find & PAD**	**moderate (local)**	**permanent inundation**	**direct**	**Surface Artefact Collection & Subsurface Testing**
CHD-A38	**isolated find & PAD**	**moderate (local)**	**surface scatter - flood inundation. PAD - combination of partial inundation and flood inundation**	**direct**	**surface artefact collection & subsurface testing**
CHD-A39	**isolated find**	**moderate (local)**	**flood inundation**	**direct**	**surface artefact collection. associated CHD PAD9 to be tested.**
CHD-A40	**artefact scatter**	**moderate (local)**	**permanent inundation**	**direct**	**surface artefact collection. associated CHD PAD9 to be tested.**
CHD-A41	**artefact scatter**	**moderate (local)**	**flood inundation**	**direct**	**surface artefact collection. associated CHD PAD9 to be tested.**
CHD-A42	**isolated find**	**low (local)**	**permanent inundation**	**direct**	**surface artefact collection**

Site Number	Feature(s)	Significance Assessment	Potential Impact	Impact Group	Mitigation
CHD-A43	artefact scatter	low (local)	not directly impacted	indirect	mark on maps
CHD-A44	**isolated find**	**low (local)**	**permanent inundation**	**direct**	**surface artefact collection**
CHD-A45	**isolated find**	**low (local)**	**permanent inundation**	**direct**	**surface artefact collection**
CHD-A46	isolated find	low (local)	not directly impacted - very close to flood inundation	indirect	mark on maps
CHD-A47	isolated find	low (local)	not directly impacted - very close to flood inundation	indirect	mark on maps
CHD-A48	**artefact scatter & PAD**	**moderate (local)**	**surface scatter - permanent inundation. PAD - combination of partial inundation and flood inundation**	**direct**	**surface artefact collection & subsurface testing**
CHD-A49	artefact scatter	low (local)	not directly impacted - very close to flood inundation	indirect	mark on maps
CHD-A50	artefact scatter	low (local)	not directly impacted	indirect	mark on maps
CHD-A51	**isolated find**	**low (local)**	**permanent inundation**	**direct**	**surface artefact collection**
CHD-A52	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A53	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A54	isolated find	low (local)	not directly impacted - (some distance from study area)	possible indirect	N/A
CHD-A55	**artefact scatter & PAD**	**moderate (local)**	**permanent inundation**	**direct**	**surface artefact collection & subsurface testing**
CHD-A56	Restricted Site	TBA	not directly impacted - 75 m from study area	indirect	Client to liaise with TBLALC re: any works located between CHD A6 and CHDA9
CHD-A57	grinding groove	moderate (local)	not directly impacted	indirect	mark on maps

Site Number	Feature(s)	Significance Assessment	Potential Impact	Impact Group	Mitigation
CHD-PAD1	**PAD**	**cannot be assessed prior to excavation**	**permanent inundation**	**direct**	**subsurface testing**
CHD-PAD2	**PAD**	**cannot be assessed prior to excavation**	**flood inundation**	**direct**	**subsurface testing**
CHD-PAD3	**PAD**	**cannot be assessed prior to excavation**	**flood inundation**	**direct**	**subsurface testing**
CHD-PAD4	**PAD**	**cannot be assessed prior to excavation**	**flood inundation**	**direct**	**subsurface testing**
CHD-PAD5	**PAD**	**cannot be assessed prior to excavation**	**permanent inundation**	**direct**	**subsurface testing**
CHD-PAD6	**PAD**	**cannot be assessed prior to excavation**	**permanent inundation**	**direct**	**subsurface testing**
CHD-PAD7	**PAD**	**cannot be assessed prior to excavation**	**permanent inundation**	**direct**	**subsurface testing**
CHD-PAD8	**PAD**	**cannot be assessed prior to excavation**	**permanent inundation**	**direct**	**subsurface testing**
CHD-PAD9	**PAD**	**moderate (local)**	**partial permanent & partial flood inundation**	**direct**	**subsurface testing**
CHD-PAD10	PAD	cannot be assessed prior to excavation	not directly impacted	indirect	mark on maps
CHD-RS1	**rock shelter**	**moderate (local)**	**flood inundation**	**direct**	**further consultation required**
CHD-ST1	***scarred tree***	***moderate (local)***	***dam construction***	***possible direct***	***mark on maps - protective fencing if necessary. avoid impacts***
CHD-G1	**Chalcedony source**	**low (local)**	**permanent inundation**	**direct**	**Collect reference samples for possibility of future stone sourcing studies**

Site Number	Feature(s)	Significance Assessment	Potential Impact	Impact Group	Mitigation
04-1-0025	artefact scatter	N/A	already inundated	N/A	N/A
04-1-0026/0027	scarred tree & artefact scatter	N/A	already inundated	N/A	N/A
CH3	artefact scatter	low (local)	not directly impacted	indirect	mark on maps
CH5	**isolated find**	**low (local)**	**permanent inundation**	**direct**	**surface artefact collection**
CH6	**artefact scatter**	**moderate (local)**	**flood inundation**	**direct**	**surface artefact collection. associated CHD PAD9 to be tested.**
CH7	**artefact scatter**	**moderate (local)**	**flood inundation**	**direct**	**surface artefact collection. associated CHD PAD9 to be tested.**
CH8	**artefact scatter**	**moderate (local)**	**flood inundation**	**direct**	**surface artefact collection. associated CHD PAD9 to be tested.**
04-1-0011	**isolated find**	**low (local)**	**permanent inundation**	**direct**	**surface artefact collection**
04-1-0010	**isolated find**	**low (local)**	**permanent inundation**	**direct**	**surface artefact collection**
04-1-0009	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
04-1-0012	artefact scatter	N/A	already inundated	N/A	N/A
04-1-0014	**rock shelter**	**high (local)**	**permanent inundation**	**direct**	**subsurface salvage**
04-1-0015	artefact scatter	N/A	already inundated	N/A	N/A
04-1-0016	grinding grooves	N/A	already inundated	N/A	N/A
04-1-0090	**rock shelter**	**moderate (local)**	**permanent inundation**	**direct**	**further consultation required**
04-1-0130	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
04-1-0194	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**

Historic Sites

Site Number	Feature(s)	Significance Assessment	Potential Impact	Impact Group	Mitigation
CHD-H1	building ruin/platform	Not significant	permanent inundation	direct	none
CHD-H2	Cram's Farm Building Complex	locally significant (b)	Cram's House - not directly impacted	indirect	mark on maps
			Bails & Dairy - not directly impacted	indirect	mark on maps
			Pig Stye – flood inundation	direct	archival recording (possible)
			Pecan Tree - not directly impacted	indirect	mark on maps
CHD-H3	Doon Doon Hall	locally significant (d)	not directly impacted	indirect	mark on maps

Recommendations

It is recommended that:

1. Where possible, cultural heritage sites should be avoided by the proposed Clarrie Hall Dam development. Where this is not feasible the following management and mitigation strategies should be followed

2. All Aboriginal sites within the study area are of cultural significance to the local Aboriginal community. Also, independent of archaeological sites and objects within the study area, the landscape, flora, and fauna of the Doon Doon Creek Valley are of high cultural significance. These cultural values should be taken into consideration when assessing the impacts of the proposal.

3. Surface artefact collection should be conducted at all Aboriginal sites of low local scientific significance in the Clarrie Hall Dam study area prior to development impacts.

4. Surface artefact collection should be conducted at all Aboriginal sites of moderate local scientific significance in the Clarrie Hall Dam study area prior to development impacts.

5. An archaeological subsurface testing program (where applicable) should be conducted, and developed in consultation with the RAPs, at all Aboriginal sites of moderate local scientific significance in the Clarrie Hall Dam study area prior to development impacts. The aim: to ascertain the presence and archaeological significance of associated deposits.

    i. If the archaeological deposits are assessed to be of low scientific significance (at either a local or state level), no further archaeological works will be necessary prior to approval for development-related impacts.

    ii. If the archaeological deposits are assessed to be of moderate to high significance (at either a local or state level), then a program of archaeological salvage will be required in order to retrieve the requisite amount of information from the site prior to approval for development related impacts.

6. An archaeological subsurface testing program (where applicable) should be conducted, and developed in consultation with the RAPs, at all areas identified as Potential Archaeological Deposits (PADs) within the Clarrie Hall Dam study area. The aim: to ascertain the presence and significance of archaeological deposits.

    i. If the archaeological deposits are assessed to be of low scientific significance (at either a local or state level), no further archaeological works will be necessary prior to approval for development related impacts.

    ii. If the archaeological deposits are assessed to be of moderate to high significance (at either a local or state level), then a program of archaeological salvage will need be undertaken in order to retrieve the requisite amount of information from the site prior to approval for development related impacts.

7. If scarred tree site CHD-ST1 can be avoided by construction related impacts it should be fenced and its location clearly marked on development maps and plans.

8. If impacts to scarred tree site CHD-ST1 are unavoidable, then further assessment and consultation with the Aboriginal community will be necessary to decide on appropriate mitigation measures.

9. Consultation with RAPs regarding mitigation measures for impacts to site CHD-A20, CHD-A56, 04-1-0090, and CHD-RS1 are ongoing.

10. Samples of non-artefactual stone material should be taken from site CHD-G1 (chalcedony source) in order to allow stone sourcing studies in the future.

11. A return to country protocol or long term management plan should be developed in consultation with the RAPs for any Aboriginal artefacts that are collected/salvaged during mitigation works associated with this project.

12. All Aboriginal sites recorded during this assessment will be submitted for listing on the NSW AHIMS.

13. Archival recording should be conducted of historic sites within the inundation area assessed as locally significant prior to approval for development related impacts.

14. No harm should come to any of the sites listed in this report, until approvals for impacts have been sought and gained.

15. Information in this report relating to the exact location of Aboriginal sites should not be published or promoted in the public domain;

16. The protocols for the unanticipated discovery of archaeological material and suspected human remains (presented in Appendix 4) should be implemented as necessary during activities involving ground surface disturbance and excavation.

17. A copy of this report should be provided to each of the RAPs for their comment.

18. A copy of this report should be provided to the OEH for its information and records.

~ o0o ~

TABLE OF CONTENTS

1. INTRODUCTION 1

1.1 PROJECT DESCRIPTION 1
1.2 STUDY AIMS 1
1.3 PROJECT FRAMEWORK 2
1.4 THIS REPORT 2
1.4.1 Outline 2
1.4.2 Restricted Information 2
1.4.3 Confidentiality 2

2. DESCRIPTION OF THE AREA 6

2.1 LOCATION OF PROPOSED ACTIVITY 6
2.2 ENVIRONMENT 6
2.3 ABORIGINAL OBJECTS AND/OR PLACES 7
2.4 ABORIGINAL PEOPLE'S USE OF THE LANDSCAPE 7

3. STUDY METHODOLOGY 11

3.1 CONTRIBUTORS 11
3.2 LITERATURE AND DATABASE REVIEW 11
3.3 FIELD METHODOLOGY 12
3.3.1 Site Recording 12
3.4 SAMPLING STRATEGY 12
3.5 RECORDING PARAMETERS 13
3.5.1 Aboriginal Sites and PADs 13
3.5.2 Historical Sites and Features 16

4. CONSULTATION PROCESS 18

4.1 STAGE 1 18
4.2 STAGE 2 AND 3 19
4.3 FIELD PARTICIPATION 19
4.4 STAGE 4 ONWARDS 20

5. ABORIGINAL HERITAGE CONTEXT 21

5.1 ABORIGINAL HISTORY 21
5.1.1 Ethnohistory 21
5.1.2 Regional Aboriginal Cultural Context 22
5.2 MATERIAL EVIDENCE OF ABORIGINAL LAND USE 24
5.2.1 Regional Archaeological Context 24
5.2.2 Clarrie Hall Dam Raising Study Area 24
5.3 SURVEY UNITS AND LANDFORM MAPPINGSITE LOCATION MODEL 27
5.4 LIMITS ON USE OF EXISTING INFORMATION 28

6. HISTORICAL CONTEXT 29

6.1 HISTORICAL OVERVIEW 29
6.1.1 Exploration 29
6.1.2 Land Tenure 29
6.1.3 Timber Getting 30
6.1.4 Pastoralism 32
6.1.5 Clarrie Hall Dam 32
6.2 PREVIOUS CULTURAL HERITAGE STUDIES 33
6.3 PREDICTIVE HISTORICAL ARCHAEOLOGY STATEMENT 33

7. RESULTS 35

7.1 SUMMARY 35
7.1.1 Aboriginal Sites 35
7.1.2 Historical sites 36
7.2 ABORIGINAL SITES 37
7.3 PREVIOUSLY RECORDED SITES 127

7.4 HISTORICAL SITES 132
7.5 INVENTORY OF SITE LOCATIONS 139
7.6 SURVEY COVERAGE AND VISIBILITY VARIABLES 149
7.7 ANALYSIS AND DISCUSSION 164
7.7.1 Distribution Aboriginal sites 164
7.7.2 Landform Distribution 165
7.7.3 Artefact Materials 165

8. CULTURAL HERITAGE VALUES AND STATEMENT OF SIGNIFICANCE 167

8.1 ASSESSMENT CRITERIA 167
8.2 CULTURAL HERITAGE VALUES IDENTIFIED 168
8.2.1 Aboriginal cultural significance 168
8.2.2 Historical value 168
8.2.3 Scientific (archaeological) value 169
8.3 HISTORICAL HERITAGE 174
8.3.1 Assessment criteria 174
8.3.2 Significance assessment 175

9. THE PROPOSED ACTIVITY 178

9.1 HISTORICAL OVERVIEW 178
9.2 PROPOSED PROJECT & POTENTIAL HARM 178
9.2.1 Dam Wall Construction Area 178
9.2.2 Inundation Area 179
9.3 IMPACT ON ABORIGINAL CULTURAL HERITAGE VALUES 179

10. STATUTORY AND POLICY CONTEXT 180

10.1 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979 180

11. AVOIDING AND MINIMISING HARM 181

11.1 IMPACT ASSESSMENT 181
11.2 MITIGATION MEASURES 182
11.3 DESCRIPTION OF HOW ESD (ECOLOGICAL SUSTAINABLE DEVELOPMENT) PRINCIPLES HAVE BEEN CONSIDERED 183
11.4 INPUT BY ABORIGINAL STAKEHOLDERS 185

12. RECOMMENDATIONS 197

13. REFERENCES 199

APPENDIX 1 AHIMS AND OTHER HERITAGE REGISTER SEARCH RESULTS 201

APPENDIX 2 RECORD OF ABORIGINAL CULTURAL HERITAGE CONSULTATION REQUIREMENTS FOR PROPONENTS 2010 206

APPENDIX 3 DESCRIPTIONS OF SAMPLE AREAS 214

APPENDIX 4 UNANTICIPATED DISCOVERY PROTOCOLS 249

APPENDIX 5 CULTURALLY RESTRICTED AND SENSITIVE ABORIGINAL SITES 253

Tables

Table 2.1 Lot and DP Numbers for listed (AHIMS) and non-listed Aboriginal heritage located in and around the study area prior to archaeological survey 8

Table 2.2 Recorded Aboriginal Sites in and around the CHD study area (note: not all sites are registered on AHIMS) 9

Table 3.1 Matrix showing the basis for assessing the archaeological potential (shown in bolded black text) of a potential archaeological deposit. 16

Table 4.1 Responses to Submissions – Preliminary Methodology 20

Table 7.1 Previously recorded sites within study area that were not re-found during the 2017 archaeological survey 131

Table 7.2 Inventory of Site Locations 139

Table 7.3 Survey Coverage Data 150

Table 7.4 Landform Summary – Surveyed Areas 159

Table 7.5 Stone artefact materials in study area 166

Table 8.1 Sites that cannot be assessed prior to excavation 169

Table 8.2 Sites of low scientific significance 171

Table 8.3 Sites of Moderate (local) scientific significance 172

Table 8.4 Sites of High (local) scientific significance 173

Table 11.1 Responses to Submissions – Draft ACHA 185

Table 11.2 Summary of Impacts to Aboriginal Sites 191

Table 11.3 Summary of Impacts to Historic Sites 196

Figures

Figure 1.1 Topographic Map of the Clarrie Hall Dam (CHD) study area up to the 77 m contour (black outline) 3

Figure 1.2 Cadastral Map of the Clarrie Hall Dam (CHD) study area up to the 77 m contour (blue) 4

Figure 1.3 Aerial Map of Clarrie Hall Dam Study Area up to the 77 m contour (black outline) 5

Figure 2.1 Example of the valley floor landscape in the southern portion of the CHD study area 7

Figure 5.1 General locations of previously recorded sites in and around the Clarrie Hall Dam study area (32 sites in total, 8 sites are not listed on AHIMS) 29

Figure 6.1 Extract of Parish of Torrens map which overlays the study area in blue and green 31

Figure 6.2 Construction of Clarrie Hall Dam 1983 (Photo from State Library of New South Wales. Titled: Clarrie Hall Dam) 32

Figure 7.1 Artefact at site CHD-A1 37

Figure 7.2 Location of site CHD-A1 - facing northeast 37

Figure 7.3 General location of site CHD-A1 showing anticipated area of PAD associated with site 38

Figure 7.4 Artefact at site CHD-A2 39

Figure 7.5 Location of site CHD-A2 - facing northeast 39

Figure 7.6 Stone identified as culturally significant; site CHD-A3 40

Figure 7.7 Artefacts at site CHD-A4 41

Figure 7.8 Location of site CHD -A4 - facing southeast 41

Figure 7.9 Artefact at site CHD-A5 41

Figure 7.10 Location of site CHD-A5 - facing northwest 41

Figure 7.11 Artefact at site CHD-A6 42

Figure 7.12 Location of site CH -A6 - facing south 42

Figure 7.13 General location of site CHD-A6 and anticipated area of PAD associated with the site 43

Figure 7.14 Artefact at site CHD-A7 44

Figure 7.15 Location of site CHD-A7 - facing northwest 44

Figure 7.16 Artefact at site CHD-A8 45

Figure 7.17 Location of site CHD A8 - facing north 45

Figure 7.18 Artefact at site CHD-A9 46

Figure 7.19 Location of site CHD-A9 - facing northwest 46

Figure 7.20 Artefact at site CHD-A10 46

Figure 7.21 Location of site CHD-A10 - facing northwest 46

Figure 7.22 Artefact at site CH- A11 47

Figure 7.23 Location of site CH -A11 - facing northwest 47

Figure 7.24 Artefact at site CHD-A12 48

Figure 7.25 Location of site CHD-A12 - facing northeast 48

Figure 7.26 Artefact at site CHD-A13 49
Figure 7.27 Location of site CHD-A13 - facing southwest 49
Figure 7.28 Artefact at CHD-A14 50
Figure 7.29 Location of site CHD-A14 - facing southwest 50
Figure 7.30 Artefact at site CHD-A15 50
Figure 7.31 Location of site CHD-A15 - facing northwest 50
Figure 7.32 Artefacts at site CHD-A16 51
Figure 7.33 Location of site CHD-A16 - facing south 51
Figure 7.34 Location of Site CHD-A16 showing anticipated extent of PAD associated with the site 52
Figure 7.35 Sample of artefacts at CHD-A17 54
Figure 7.36 Greywacke ground edge axe 54
Figure 7.37 Location of site CHD-A17 - facing south 54
Figure 7.38 Ground exposure at CHD-A17 54
Figure 7.39 Location of site CHD-A17 showing anticipated extent of PAD associated with the site 55
Figure 7.40 Location of site CHD-A18 - facing south 56
Figure 7.41 Artefacts at site CHD-A19 57
Figure 7.42 Location of site CHD-A19 - facing west 57
Figure 7.43 CHD-A20 - Holes in sandstone platform identified as culturally significant 58
Figure 7.44 Artefact at site CHD-A21 59
Figure 7.45 Location of site CHD-A21 - facing east 59
Figure 7.46 Artefact at site CHD-A22 60
Figure 7.47 Location of site CHD-A22 - facing east 60
Figure 7.48 Artefact at site CHD-A23 61
Figure 7.49 Location of site CHD-A23 - facing northwest 61
Figure 7.50 Location of site CHD-A23 showing anticipated extent of PAD associated with the site 62
Figure 7.51 Artefact at site CHD-A24 63
Figure 7.52 Location of site CHD-A24 - facing north 63
Figure 7.53 Artefact at site CHD-A25 64
Figure 7.54 Location of site CHD-A25 - facing northeast 64
Figure 7.55 Artefacts at site CHD-A26 65
Figure 7.56 Location of site CHD-A26 - facing north 65
Figure 7.57 Artefacts at site CHD-A27 66
Figure 7.58 Location of site CHD-A27 - facing north 66
Figure 7.59 Location of site CHD-A27 PAD - facing southeast 66
Figure 7.60 Location of site CHD-A27 showing anticipated extent of PAD associated with the site 67
Figure 7.61 Possible ochre identified as culturally significant at site CHD-A28 68
Figure 7.62 Possible ochre identified as culturally significant at site CHD-A29 69
Figure 7.63 An artefact at site CHD-A30 70

Figure 7.64 Location of site CHD-A30 - facing south 70
Figure 7.65 Location of site CHD-A30 showing anticipated extent of PAD associated with the site 71
Figure 7.66 Artefacts at site CHD-A31 72
Figure 7.67 Location of site CHD-A31 - facing east 72
Figure 7.68 Some artefacts at site CHD-A32 73
Figure 7.69 Location of site CHD-A32 - facing north 73
Figure 7.70 Artefact at site CHD-A33 74
Figure 7.71 Location of site CHD-A33 - facing south 74
Figure 7.72 Artefact at site CHD-A34 75
Figure 7.73 Location of site CHD A34 - facing south 75
Figure 7.74 Artefact at site CHD A35 76
Figure 7.75 Location of site CHD A35 - facing southwest 76
Figure 7.76 Location of site CHD-A35 showing anticipated extent of PAD associated with site 77
Figure 7.77 Location of site CHD-A36 - facing southwest 78
Figure 7.78 Artefact at site CHD-A36 78
Figure 7.79 Location of site CHD-A36 showing anticipated extent of PAD associated with the site 79
Figure 7.80 Artefact at site CHD-A37 80
Figure 7.81 Location of site CHD A37 - facing northeast towards Two Sisters peaks 80
Figure 7.82 Location of site CHD-A37 showing anticipated extent of PAD associated with the site 81
Figure 7.83 Artefact at site CHD-A38 82
Figure 7.84 Location of site CHD-A38 - facing east 82
Figure 7.85 Location of site CHD-A38 showing anticipated extent of PAD associated with the site 83
Figure 7.86 Artefact at site CHD A39 84
Figure 7.87 Location of site CHD-A39 - facing west 84
Figure 7.88 Artefact at site CHD A40 85
Figure 7.89 Location of site CHD-A40 - facing north 85
Figure 7.90 Some artefacts at site CHD A41 86
Figure 7.91 Location of site CHD-A41 - facing south 86
Figure 7.92 Location of site CHD-A42 - facing west 87
Figure 7.93 Artefacts at site CH- A43 88
Figure 7.94 Location of site CHD-A43 - facing north 88
Figure 7.95 Location of site CHD-A44 - facing south 89
Figure 7.96 Artefact at site CHD-A45 90
Figure 7.97 Location of site CHD-A45 - facing north 90
Figure 7.98 Artefact at site CHD-A46 91
Figure 7.99 Location of site CHD-A46 - facing west 91
Figure 7.100 Artefact at site CHD-A47 92

Figure 7.101 Location of site CHD A47 - facing east 92
Figure 7.102 Artefact at site CHD-A48 93
Figure 7.103 Location of site CHD-A48 - facing east 93
Figure 7.104 Location of site CHD-A48 showing anticipated extent of PAD associated with the site 94
Figure 7.105 Artefact at site CHD A49 95
Figure 7.106 Location of siteCHD-A49 - facing west 95
Figure 7.107 Artefact at site CHD-A50 96
Figure 7.108 Location of site CHD-A50 - facing northwest 96
Figure 7.109 Artefact at site CHD-A51 97
Figure 7.110 Location of site CHD-A51 - facing northeast 97
Figure 7.111 Artefact at site CHD-A52 98
Figure 7.112 Location of site CHD-A52 - facing south 98
Figure 7.113 Artefact at site CHD A53 99
Figure 7.114 Location of site CHD-A53 - facing southwest 99
Figure 7.115 Artefact at site CHD-A54 100
Figure 7.116 Location of site CHD-A54 - facing northeast 100
Figure 7.117 Sample of artefacts at CHD-A55 101
Figure 7.118 Example of exposure at CHD-A55 101
Figure 7.119 Location of site CHD-A55 showing anticipated extent of PAD associated with the site 102
Figure 7.120 Grinding groove at site CHD-A57 103
Figure 7.121 Location of site CHD-A57 - facing northeast 103
Figure 7.122 Location of CHD PAD1 - facing north 104
Figure 7.123 Aerial view showing anticipated extent of CHD PAD 1 105
Figure 7.124 Location of CHD PAD2 (foreground) - facing southeast 106
Figure 7.125 Aerial view showing anticipated extent of CHD-PAD2 107
Figure 7.126 Location of CHD PAD3 - facing north 108
Figure 7.127 Aerial view of showing anticipated extent of CHD-PAD3 109
Figure 7.128 Location of CHD-PAD4 - facing north 110
Figure7.129 Aerial view of showing anticipated extent of CHD-PAD4 111
Figure 7.130 Location of site CHD-PAD5 - facing west towards submerged grinding grooves 112
Figure 7.131 Aerial view of showing anticipated extent of CHD-PAD5 113
Figure 7.132 Location of CHD-PAD6 - facing south 114
Figure 7.133 Aerial view of showing anticipated extent of CH- PAD6 115
Figure 7.134 Location of CHD-PAD7 - facing west 116
Figure 7.135 Aerial view of anticipated extent of CHD-PAD7 117
Figure 7.136 Location of CHD-PAD8 - facing west 118
Figure 7.137 Aerial view of anticipated extent of CHD-PAD8 119
Figure 7.138 Location of CHD-PAD9 - facing west 120

Figure 7.139 Aerial view of anticipated extent of CHD-PAD9 121
Figure 7.140 Aerial view of anticipated extent of CHD-PAD10 123
Figure 7.141 Site CHD-RS1 - facing east 124
Figure 7.142 Scarred tree site CH-ST1 - facing northwest 126
Figure 7.143 Example of outcropping chalcedony 127
Figure 7.144 View of site CHD-G1 - facing northwest 127
Figure 7.145 View of CHD-RS1 looking south 128
Figure 7.146 Soil deposit in CHD-RS1 128
Figure 7.147 Panoramic view of CHD-RS1 looking west 128
Figure 7.148 Site CHD-RS2 - facing north 129
Figure 7.149 AHIMS site #04-1-0090 - facing northwest 130
Figure 7.150 Aerial photograph of Doon Doon Creek showing position of former building 132
Figure 7.151 Crams Farm House 135
Figure 7.152 Crams Farm House on original stumps 136
Figure 7.153 The Pecan Tree 136
Figure 7.154 The Bails and Dairy 136
Figure 7.155 The Pig Styes 136
Figure 7.156 Features of site CHD-H2 (Crams Farm site complex) 137
Figure 7.157 Exterior of Doon Doon Hall 139
Figure 7.158 Exterior of Doon Doon Hall 139
Figure 7.159 Locations of Aboriginal sites and PADs within or directly adjacent to the northern section of the Clarrie Hall Dam study area 143
Figure 7.160 Locations of Aboriginal sites and PADs within or directly adjacent to the mid-north section of the study area 144
Figure 7.161 Locations of Aboriginal sites and PADs within or directly adjacent to the middle section of the Clarrie Hall Dam study area 145
Figure 7.162 Locations of Aboriginal sites and PADs within or directly adjacent to the southern section of the Clarrie Hall Dam study area 146
Figure 7.163 Locations of historic sites within or directly adjacent to the Clarrie Hall Dam study area 147
Figure 7.164 Landform mapping for the surveyed area and demarcation of area subject to sampling strategy (white) 148
Figure 7.165 Locations of survey units and Landforms 160
Figure 7.166 Locations of survey units and Landforms 161
Figure 7.167 Locations of survey units and Landforms 162
Figure 7.168 Locations of survey units and Landforms 163
Figure 7.169 Breakdown of artefact material types encountered during survey 166

1. INTRODUCTION

1.1 Project Description

Clarrie Hall Dam is located on Doon Doon Creek a tributary of the South Arm of the Tweed River, with a catchment area of 60 km^2. The dam is 15 km southwest of Murwillumbah in northern NSW. The dam wall is 43 m high, and has a 5 m wide crest that is 175 m long. Clarrie Hall Dam has a storage capacity of 15,000 ML. The primary function of the dam is to store drinking water for the Tweed Shire.

Construction of the present dam commenced in 1974 and was completed in 1983. The present full capacity datum level is 61.5 m AHD. The current Full Service Level (FSL) of the dam is RL61.5 m. Dam storage levels have been >90% of storage capacity for most of the period 1986 to 2015, with only one period of low storage in 2001-2003 when capacity was well below 75% and dropped to 40% briefly in 2003.

Tweed Shire Council is seeking to raise the Clarrie Hall Dam.

The proposal seeks to raise Full Storage Level (FSL) of the Clarrie Hall Dam to RL70.0 m, resulting in a storage capacity of about 42,399 megalitres. The maximum Probable Flood (MPF) level would be RL77.0 m.

The result will be that all areas within the catchment of the dam between RL61.5 m and RL70.0 m would be inundated most of the time. Areas between RL70.0 m and RL77.0 m may be inundated intermittently.

The Clarrie Hall Dam project will be classified as State Significant Infrastructure (SSI) in accordance with Schedule 3(4) of *State Environment Planning Policy (State and Regional Development) 2011*. The proposal is a development that may be carried out without consent by virtue of the State Environmental Planning Policy (Infrastructure) 2007, meaning it would normally be carried out under Part 5 of the EP&A Act 1979. However, due to the cost being over $30 million, it then becomes State Significant Infrastructure as per Clause 14(1) and Schedule 3 of the State and Regional Development SEPP.

An Environmental Impact Statement (EIS) is required to accompany the application to raise the dam. The project involves a number of activities that are likely to cause harm to cultural heritage sites, through damage to artefacts or disturbance of artefacts.

This report documents the results of an archaeological and cultural heritage assessment for the raising of the Clarrie Hall Dam.

The Clarrie Hall Dam study area is defined (for this heritage assessment) as the area between the present shoreline of the dam up to the MPF level (RL77.0m), as well as the proposed dam construction area located immediately north of the current dam wall.

Figure 1.1 (topographic), Figure 1.2 (cadastral), and Figure 1.3 (aerial) show the study area up to the 77 metre contour.

The report was commissioned by Tweed Shire Council.

1.2 Study Aims

The objective of this report is to identify and assess, through archaeological survey and background research, the Aboriginal and non-Aboriginal heritage constraints and possible impacts of the proposed raising of the Clarrie Hall Dam.

1.3 Project Framework

The proposed raising of the Clarrie Hall Dam will be assessed under:

- *National Parks and Wildlife Amendment Bill 2010*
- *NSW Heritage Act 1977 and Heritage Amendments Acts 1998 and 2009*

If the project is determined to be State Significant Infrastructure (SSI) the following legislative requirements apply:

- Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A ACT)

1.4 This Report

1.4.1 Outline

This report:

- Describes the proposed development/works etc (Section 1);
- Provides a description of the study area (Section 2);
- Describes the study methodology (Section 3);
- Describes consultation with Aboriginal people (Section 4);
- Provides an Aboriginal heritage context for the study area (Section 5);
- Provides an historic heritage context for the study area (Section 6);
- Describes the results and analysis of the archaeological survey (Section 7);
- Describes the cultural heritage values and significance statement of the study area (Section 8);
- Describes the proposed activity (Section 9);
- Describes the statutory and policy context of the proposal (Section 10);
- Provides actions to avoid and minimise harm (Section 11); and
- Provides management recommendations based on the results of the investigation (Section 12).

1.4.2 Restricted Information

Information in this report relating to the exact location of Aboriginal sites should not be published or promoted in the public domain.

Information provided by Aboriginal stakeholders in this report has been specifically identified as requiring access restrictions due to its cultural sensitivity. Specifically, information related to restricted site CHD-A56 has high cultural sensitivity.

Details of this site are provided in Appendix 5 of non-redacted version of this report.

1.4.3 Confidentiality

Appendix 5 in this report has been classified as confidential and has been removed.

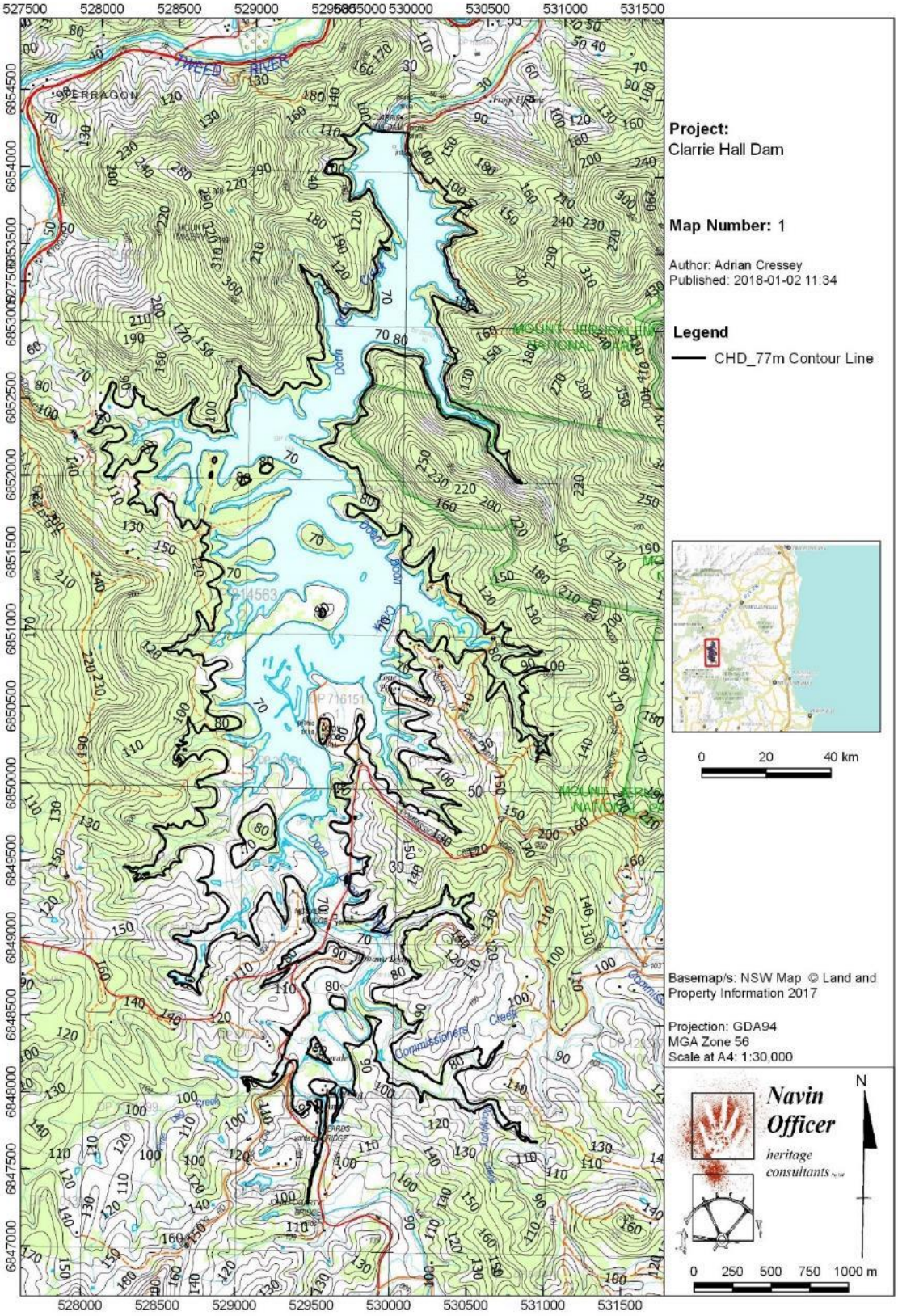


Figure 1.1 Topographic Map of the Clarrie Hall Dam (CHD) study area up to the 77 m contour (black outline)

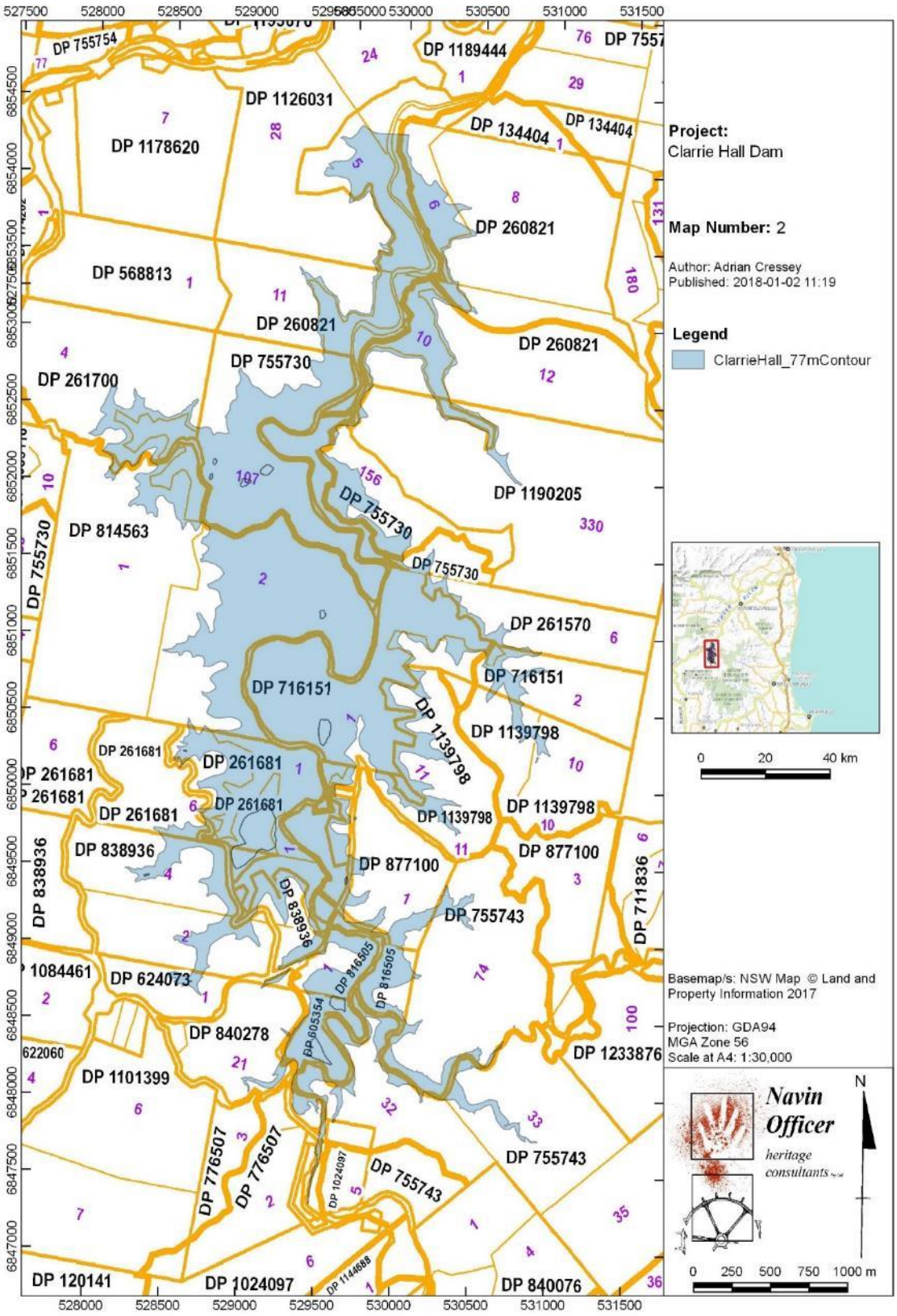


Figure 1.2 Cadastral Map of the Clarrie Hall Dam (CHD) study area up to the 77 m contour (blue)

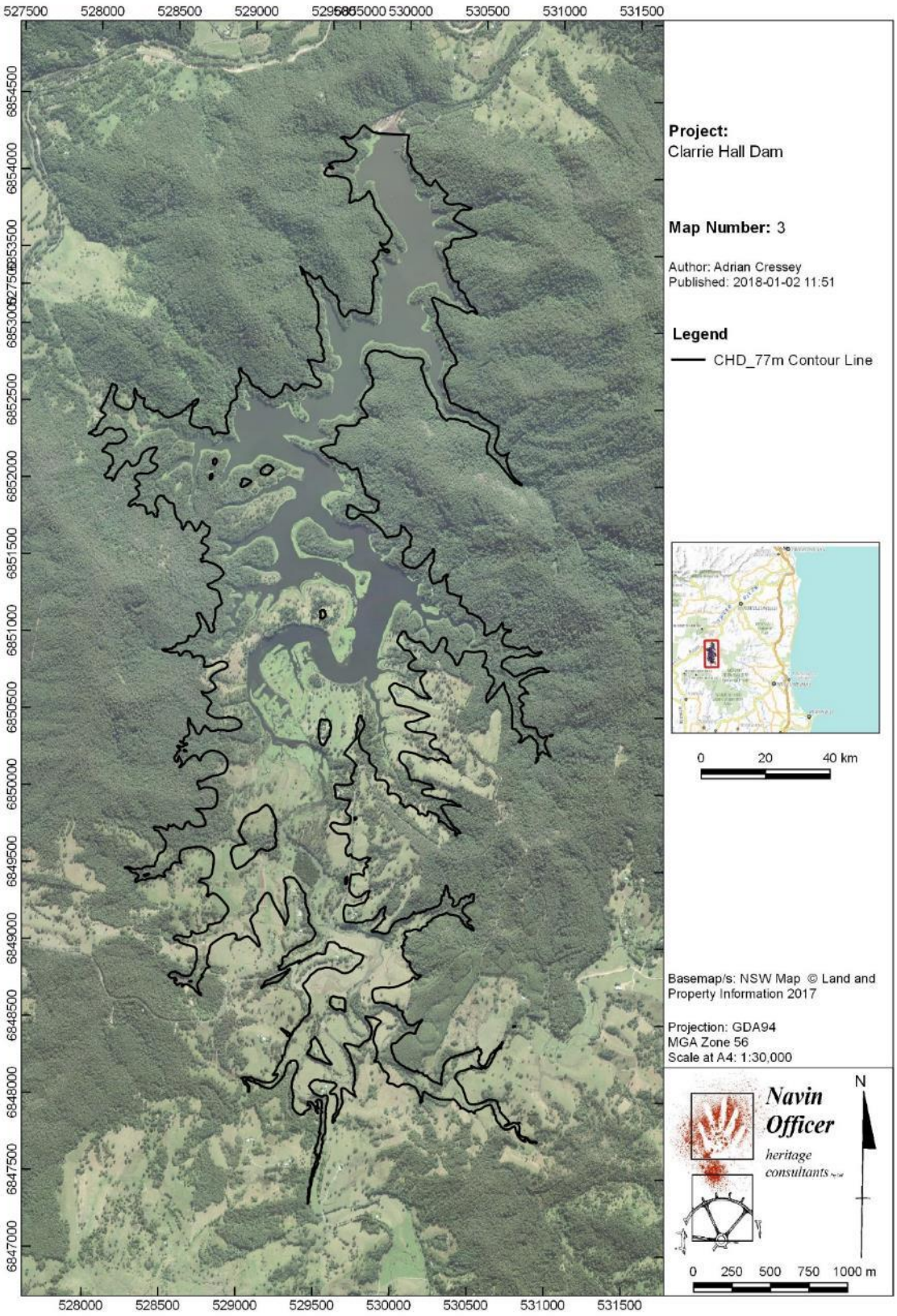


Figure 1.3 Aerial Map of Clarrie Hall Dam Study Area
up to the 77 m contour (black outline)

2. DESCRIPTION OF THE AREA

2.1 Location of proposed activity

The Clarrie Hall Dam (CHD) study area is located 15 km southwest of Murwillumbah, is in the upper reaches of the Tweed River catchment, and covers the former upper and middle reaches of Doon Doon Creek. The Doon Doon Creek valley also takes in waters draining from Commissioner's Creek, Doughboy Creek, Blakes Creek, and Pine Log Creek.

The valley is bordered by Byrill Ridge to the west, Mount Jerusalem National Park to the east, and the ridges and peaks of the Nightcap National Park to the south. Clarrie Hall Dam has views to Mount Warning/Wollumbin.

The study area falls within the Tweed Shire Council.

2.2 Environment

The landscape geomorphology is ancient, produced by complex interactions of tectonics, rock lithology and drainage development through time. Late Tertiary volcanism and folding have influenced drainage and rock types. These longer term geological processes are relevant to mineralization and the spatial pattern of mineral resources, and also distributions of lithic resources sought after by Aboriginal people such as outcrops of fine-grain volcanic rocks, quartz vein outcrops, and fluvial pebble gravels. Late Tertiary and Quaternary river diversions likewise determine distributions of river gravels, important both as host mineral bodies and alluvial terrace sites utilized by Aboriginal people as preferred camp sites.

The northern portion of Clarrie Hall Dam is characterised on the eastern and western edges by narrow creek gullies with steep-sided valleys of Doon Doon Creek and its tributaries (Department of Commerce 2008).

The southern portion of the study area is very different to the north portion. From Crams Farm southwards the study area is characterised by broad, moderate-low gradient spur lines transitioning to low gradient valley floors and soakways, some with permanent stream flow. A well-watered landscape would be inferred prior to European impact.

The Clarrie Hall Dam is in the eastern margin of the Clarence-Moreton Basin and geologically the area forms part of the remnant caldera of the Mount Warning shield volcano. The area has three distinctive geomorphological features that underlie the zone. These features include the central elevated massif (Mount Warning), the dissected outer rim and the erosion caldera (Department of Commerce 2008).

In terms of underlying geology, the CHD study area is split between two formations. The northern portion of the study area overlays Chillingham Volcanics, formed during the Triassic, and characterised by rhyolite, rhyolitic tuff, and claystone. The southern portion of the study area, where most Aboriginal sites would be expected to be found, given the lower gradient topography, overlays the Bundamba Group, formed during the Triassic-Jurassic, and characterised by sandstone, siltstone, claystone, and conglomerate (Brunker et. al. 1972). The drainage networks and topography of the region are structurally controlled by the geology of the Mount Warning Massif.

The study area is covered by a mixture of native eucalypt forest and open pasture heavy farmland. Vegetation has been heavily influenced by European land use, especially logging and farming, with most of the forest in the study area no more than 50 years of age.

Cattle grazing, and dairying are the primary farming impacts in the area, both at present and historically. It is likely that these land use practices over the past 170 years will have impacted on the archaeological sites within the study area.

European settlement in the area brought timber getting and the selection of land in the Tweed Valley. One of the earliest tasks was to begin felling and shipping the cedar out of the Tweed. The

introduction of industry to the area meant further settlers sought land in a prosperous area. Pastoralism followed the forestry industry soon after. The pastoralism required the further clearing of the ground for stock and pasture. This often-involved ringbarking trees and their later removal. This is known to result in the destruction of scarred trees.

Clearing and ploughing of the land also disturbs Aboriginal campsites. While the stone artefacts used by Aboriginal people are themselves resilient, the cumulative impact of ploughing disperses the artefacts and can reduce the integrity of the sites.

Figure 2.1 Example of the valley floor landscape in the southern portion of the CHD study area

2.3 Aboriginal objects and/or places

Lot and DP Numbers for Aboriginal heritage recordings within the CHD study area are provided in Table 2.1.

Recorded Aboriginal sites and places within the CHD study area and surrounds are listed in Table 2.2. Sites and places which occur within the CHD study area are bolded in Table 2.2.

The locations of these sites will be discussed further and mapped in Section 5 of this report, which is focussed on the Aboriginal Heritage Context of the CHD study area.

2.4 Aboriginal People's Use of the Landscape

The CHD study area incorporates mid-slopes and spurs transitioning into low gradient basal slopes and valley floors adjacent to Doon Doon Creek and its tributaries. Doon Doon Creek would have been a focus for Aboriginal occupation and use, for its natural resources.

The major ridges and watersheds surrounding the study area would have offered the most effective through-access routes across the rugged and incised terrain. The spurs that link the high ridges with the more fertile and better watered valley floor would have been heavily utilised by the local Aboriginal population

A discussion of the nature and distribution of archaeological traces that Aboriginal activity is likely to have left in the landscape is included in Section 5, which generates a predictive model of Aboriginal site location.

Table 2.1 Lot and DP Numbers for listed (AHIMS) and non-listed Aboriginal heritage located in and around the study area prior to archaeological survey

Aboriginal Heritage Recording	Lot/DP Number
04-1-0001	DP1178620, Lot 7
CH1, CH2	DP260821, Lot 9
04-1-0026 04-1-0027	DP44745, Lot 1
04-1-0025	DP755730
04-1-0013 04-1-0089	DP814563, Lot 1
04-1-0012 04-1-0015 04-1-0194 CH6 CH7 CH8	DP814563, Lot 2
04-1-0014 04-1-0090	DP716151, Lot 1
04-1-0015 CH3	DP261570, Lot 6
04-1-0113 04-1-0114 04-1-0116 04-1-0117 04-1-0188	Mount Jerusalem National Park
04-1-0129 04-1-0130 CH5	DP261681
04-1-0131	DP838936, Lot 3
04-1-0009	DP816505, Lot 1
04-1-0010 04-1-0011	DP816505

Table 2.2 Recorded Aboriginal Sites in and around the CHD study area (note: not all sites are registered on AHIMS)

Site ID	Site name	Datum	Zone	Easting	Northing	Site status	Site features
04-1-0001		GDA	56	528100	6853895	valid	mythological burial
04-1-0009	**BMP-05-0029**	**GDA**	**56**	**529664**	**6848664**	**valid**	**artefact**
04-1-0010	**BMP-05-0030**	**GDA**	**56**	**529964**	**6848753**	**valid**	**artefact**
04-1-0011	**BMP-05-0031**	**GDA**	**56**	**529927**	**6848943**	**valid**	**artefact**
04-1-0012		**GDA**	**56**	**529571**	**6850965**	**Valid (intermittently inundated)**	**open camp site**
04-1-0013		GDA	56	528485	6851301	valid	rock shelter
04-1-0014		**GDA**	**56**	**530508**	**6851081**	**valid**	**rock shelter**
04-1-0015		**GDA**	**56**	**529612**	**6851075**	**valid (intermittently inundated)**	**open camp site**
04-1-0016		GDA	56	529791	6851075	destroyed (inundated)	grinding grooves
04-1-0025	Mount Misery Byrrill, BMP-05-0070	AGD	56	529403	6852289	valid? inundated?	open camp site
04-1-0026	Mount Misery Byrrill	AGD	56	530003	6852989	destroyed inundated	scarred tree
04-1-0027	Mount Misery; Byrrill; BMP-05-0072	AGD	56	530003	6852989	destroyed inundated	open camp site
04-1-0089		GDA	56	528005	6850699	valid	open camp site
04-1-0090		**GDA**	**56**	**530389**	**6851046**	**valid**	**rock shelter**
04-1-0113	BMP-05-0088	GDA	56	533197	6850145	valid	rock shelter
04-1-0114	BMP-05-0089	GDA	56	532998	6850498	valid	rock shelter

Site ID	Site name	Datum	Zone	Easting	Northing	Site status	Site features
04-1-0115		GDA	56	531601	6851098	valid	stone arrangement
04-1-0116		GDA	56	532098	6850549	valid	shell midden
04-1-0117		GDA	56	531803	6850850	valid	artefact
04-1-0129		GDA	56	528678	6850139	valid	open camp site
04-1-0130		**GDA**	**56**	**528846**	**6849948**	**valid**	**artefact**
04-1-0131		GDA	56	527854	6849705	valid	open camp site
04-1-0188	Rockface Road Tweed ACH Artefact	GDA	56	532368	6849559	valid	artefact
04-1-0194	**Byrrill Ridge 4 Tweed ACH Artefacts**	**GDA**	**56**	**528978**	**6850447**	**valid**	**artefact**
	CH1*	GDA	56	530098	6854194	valid	open campsite
	CH2*	GDA	56	530148	6854147	valid	open campsite
	CH3*	GDA	56	530449	6851204	valid	open campsite
	CH4*	GDA	56	530898	6849806	valid	unknown
	CH5*	**GDA**	**56**	**539053**	**6850210**	**valid**	**artefact**
	CH6*	**GDA**	**56**	**529099**	**6851010**	**valid**	**open campsite**
	CH7*	**GDA**	**56**	**529203**	**6851108**	**valid**	**open campsite**
	CH8*	**GDA**	**56**	**529299**	**6851204**	**valid**	**open campsite**

**Site is not registered on AHIMS*

3. STUDY METHODOLOGY

3.1 Contributors

Field survey was carried out by archaeologists Adrian Cressey and Julia Maskell (NOHC); Ian Fox, Des Williams, and Warren Phillips (Tweed Byron LALC); Jason McDonald, Paul Buxton, and Adam Mazarella (McDonald Family); and Mleeka Hart, and Mark Rotumah (Tweed Co-op).

This report was prepared by Adrian Cressey, with background research performed by Julia Maskell and Lucy Blackham. Adrian has a Bachelor Archaeological Practice with Honours from the Australian National University (ANU) and a Diploma in Environmental Science from the Canberra Institute of Technology (CIT). Julia has a Bachelor of Arts with Honours in Archaeology from the University of Queensland (UQ). Lucy has a Bachelor of Archaeological Practice and Masters of Archaeological Science from the ANU.

Internal review of this report was completed by Nicola Hayes and Kerry Navin.

3.2 Literature and Database Review

A range of archaeological and historical data was reviewed for the CHD study area and its surrounds. This literature and data review was used to determine if known Aboriginal and historical sites were located within the area under investigation, to facilitate site prediction on the basis of known regional and local site patterns, and to place the area within an archaeological and heritage management context. The review of documentary sources included heritage registers and schedules, local histories, and archaeological reports.

Aboriginal literature sources included the Aboriginal Heritage Information Management System (AHIMS) maintained by the NSW Office of Environment and Heritage (OEH) and associated files and catalogue of archaeological reports. Sources of historical information included regional and local histories, heritage studies and theses; parish maps; and where available, other maps, such as portion plans.

Searches were undertaken of the following statutory and non-statutory heritage registers and schedules:

- Statutory Listings:
  - Aboriginal Heritage Information Management System (AHIMS) (NSW OEH);
  - The National Heritage List (Australian Heritage Council);
  - The Commonwealth Heritage List (Australian Heritage Council);
  - The State Heritage Register (NSW Heritage Branch, Office of Environment and Heritage); and
  - Heritage Schedule(s) from the Tweed Council Local Environmental Plan 2012.
- Non-Statutory Listings:
  - The Register of the National Estate (Australian Heritage Council); and
  - Register of the National Trust of Australia (NSW).

3.3 Field Methodology

Field survey of the project area was undertaken between 16 and 27 October, 2017.

The archaeological field survey was completed on foot by 5-8 people walking transects and/or selected traverses, spaced a regular distance apart such as between approximately 5-50 m apart. The exact nature and arrangement of the transects/traverses conducted depended on an in-field assessment of visibility constraints and cultural and archaeological sensitivity.

Extra focus was applied to locations of already recorded sites or PADs and areas yielding high ground surface visibility/ exposures.

Where feasible, all old-growth native trees in the study area were inspected for the presence of culturally derived scars.

Aboriginal field participants were encouraged to communicate knowledge regarding the cultural heritage values of the study area, archaeological and cultural sites, and the overall landscape.

The project team consulted with the Aboriginal community in order to conduct the cultural assessment program in a culturally sensitive manner have treated all information provided with respect (and in confidence, where requested and required).

3.3.1 Site Recording

All encountered surface archaeological objects, sites, potential archaeological deposits and places of Aboriginal cultural value were documented.

All sites had the following details recorded using standardised recording forms:

- Site name, recorder and date
- Site type
- GPS coordinates
- Landscape and landform character
- Context information – cultural/spiritual location, proximity to other objects/sites etc
- Site dimensions
- Site condition and potential to be larger
- Site content including numbers and artefact types, raw materials and detailed recording of a sample of artefacts.
- Photos
- Any other relevant information, such as oral information and informant details.

3.4 Sampling Strategy

The project aimed to undertake a full archaeological survey of the project area, however, due to the steep topography, difficult access, and heavily vegetated nature of the eastern and western margins of the northern portion of the CHD study area, a sampling strategy was employed.

The sampling strategy was put in place following further in-field discussion with representatives of the RAPs. A boat was used to enable sampling of all areas too difficult to access directly by foot.

The sampling strategy was completed in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCEW 2010), and included the inspection of all landforms (and all individual instances of that landform) to be impacted.

3.5 Recording Parameters

3.5.1 Aboriginal Sites and PADs

The archaeological survey aimed at identifying material evidence of Aboriginal occupation as revealed by surface artefacts and areas of archaeological potential unassociated with surface artefacts. Potential recordings fall into two broad categories: sites and potential archaeological deposits.

Sites

A site is defined as any material evidence of past Aboriginal activity that remains within a context or place which can be reliably related to that activity.

Most Aboriginal sites are identified by the presence of three main categories of artefacts: stone or shell artefacts situated on or in a sedimentary matrix, marks located on or in rock surfaces, and scars on trees.

Frequently encountered site types within south-eastern Australia include stone artefact occurrences - including isolated finds and open artefact scatters, coastal and freshwater middens, rock shelter sites - including occupation deposit and/or rock art, grinding groove sites and scarred trees.

Stone Artefact Occurrences

Stone artefact occurrences are the most commonly recorded site type in Australia. They may consist of single artefacts - described as isolated finds; or as a distribution of more than one artefact – often described as an artefact scatter or 'open camp site' when recording surface artefacts, or as a subsurface artefact distribution when dealing with an archaeological deposit.

Where artefact incidence is very low, either in terms of areal distribution (artefacts per square metre) or density (artefacts per cubic metre), then the differentiation of the recording from background artefacts counts or *background scatter* may be an issue.

Isolated finds

An isolated find is a single stone artefact, not located within a rock shelter, and which occurs without any associated evidence of Aboriginal occupation within a radius of 60 m. Isolated finds may be indicative of:

- Random loss or deliberate discard of a single artefact;
- The remnant of a now dispersed and disturbed artefact scatter; and
- An otherwise obscured or sub-surface artefact scatter.

Except in the case of the latter, isolated finds may be considered to be constituent components of the *background scatter* present within any particular landform.

The distance used to define an isolated artefact varies according to the survey objectives, the incidence of ground surface exposure, the extent of ground surface disturbance, and estimates of *background scatter* or *background discard* densities. In the absence of baseline information relating to background scatter densities, the defining distance for an isolated find must be based on methodological and visibility considerations. Given the varied incidence of ground surface exposure and deposit disturbance within the study area, and the lack of background baseline data, the specification of 60 m is considered to be an effective parameter for surface survey methodologies. This distance provides a balance between detecting fine scale patterns of Aboriginal occupation and avoiding environmental biases caused by ground disturbance or high ground surface exposure rates. The 60 metre parameter has provided an effective separation of low density artefact occurrences in similar southeast Australian topographies outside of semi-arid landscapes.

Background scatter

Background scatter is a term used generally by archaeologists to refer to artefacts which cannot be usefully related to a place or focus of past activity (except for the net accumulation of single artefact losses).

There is no single concept for background discard or 'scatter', and therefore no agreed definition. The definitions in current use are based on the postulated nature of prehistoric activity, and often they are phrased in general terms and do not include quantitative criteria. Commonly agreed is that background discard occurs in the absence of 'focused' activity involving the production or discard of stone artefacts in a particular location. An example of unfocused activity is occasional isolated discard of artefacts during travel along a route or pathway. Examples of 'focused activity' are camping, knapping and heat-treating stone, cooking in a hearth, and processing food with stone tools. In practical terms, over a period of thousands of years an accumulation of 'unfocused' discard may result in an archaeological concentration that may be identified as a 'site'. Definitions of background discard comprising only qualitative criteria do not specify the numbers (numerical flux) or 'density' of artefacts required to discriminate site areas from background discard.

Artefact scatters

Artefacts situated within an open context are classed as an open artefact scatter (or ‘open camp site’) when two or more occur no more than 60 m away from any other constituent artefact. The 60 metre specification relates back to the definition of an isolated find (*Refer above*). The use of the term *scatter* is intended only to be descriptive of the current archaeological evidence and does not infer the original human behaviour which formed the site. The term *open camp site* has been used extensively in the past to describe open artefact scatters. This was based on ethnographic modelling suggesting that most artefact occurrences resulted from activities at camp sites. However, in order to separate the description from the interpretation of field evidence, the terms *artefact scatter*, artefact *distribution* or *artefact occurrence* are now more extensively used. The latter two options can also be used to categorise artefacts occurring in sub-surface contexts.

Rock shelter sites

In a rock shelter, a site is defined as one or more artefacts occurring within or immediately adjacent to the sheltered space. Unlike a single artefact in an open context, a rock shelter provides a probable occupational focus to the interpretation of a single artefact and can therefore be considered to be indicative of a site rather than a *background* occurrence. An exception would be a single artefact which may have been deposited in the shelter through natural processes.

Rock art

Any location containing one or more marks of Aboriginal origin on rock surfaces is classed as a site. Marks typically consist of grinding features such as grinding grooves for hatchet heads, and rock art such as engravings, drawings or paintings. The boundaries of these sites are defined according to the spatial extent of the marks, or the extent of the overhang, depending on which is most applicable to the spatial and temporal integrity of the site.

Scarred Trees

Trees with scars of Aboriginal origin form the other major type of artefactual evidence. Each tree is normally considered to be a separate site. The identification of a scar as Aboriginal in origin is dependent on a set of inter-related interpretive criteria. The credibility of alternative causal explanations such as natural traumas and other types of human scarring must be tested for each scar.

A range of diagnostic criteria has been developed to assist in the identification of Aboriginal scarred trees. The following criteria are based on archaeological work conducted by Simmons (1977) and Beesley (1989), and the field manual for Aboriginal scarred trees developed by Long (2005):

1. The scar does not normally run to ground level: (scars resulting from fire, fungal attack or lightning nearly always reach ground level). However, ground termination does not necessarily discount an Aboriginal origin (some ethno-historical examples of canoe scars reach the ground);

1(a). If a scar extends to the ground, the sides of the original scar must be relatively parallel: (natural scars tend to be triangular in shape;

2. The scar is either approximately parallel sided or concave, and symmetrical: (few natural scars are likely to have these properties except fire scars which may be symmetrical but are wider at the base than their apex. Surveyors marks are typically triangular, and often adzed);

3. The scar should be reasonably regular in outline and regrowth: scars of natural origin tend to have irregular outlines and may have uneven regrowth;

4. The ends of the scar should be 'shaped', either squared off, or pointed (often as a result of regrowth): (a 'keyhole' profile with a 'tail' is suggestive of branch loss);

5. A scar which contains adze or axe marks on the original scar surface is likely to be the result of human scarring. Their morphology and distribution may lend support to an interpretation of an Aboriginal origin: (marks produced after the scarring event may need to be discounted);

6. The scar must date to the time of Aboriginal bark exploitation within its region: The traditional Aboriginal exploitation of bark probably ceased in most regions between 100 and 150 years ago. However, in some locations associated with Aboriginal settlement, the Aboriginal removal of bark may have continued to the present day, or restarted as part of new cultural movements.

7. The tree must be endemic to the region: (and thus exclude historic plantings).

Field based identification of Aboriginal scars, is based on surface evidence only and will not necessarily provide a definitive classification. In many cases the possibility of a natural origin cannot be ruled out, despite the presence of several diagnostic criteria or the balance of interpretation leaning toward an Aboriginal origin. For this reason interpretations of an Aboriginal origin are qualified by the recorder's degree of certainty. The following categories were used:

- Aboriginal scar - This is a scar where an Aboriginal origin is considered the most likely. The scar conforms to all of the criteria and a natural origin is considered unlikely and improbable;

- Probable Aboriginal scar - This is a scar that conforms to all of the criteria and where an Aboriginal origin is considered to be the most likely. Despite this, a natural origin cannot be ruled out; and

- Possible Aboriginal scar - This is a scar which conforms to all or most of the criteria and where an Aboriginal origin cannot be reliably considered as more likely than alternative natural causes. The characteristics of this scar will also be consistent with a natural cause.

Potential Archaeological Deposits

A potential archaeological deposit, or PAD, is defined as any location where the potential for subsurface archaeological material is considered to be moderate or high, relative to the surrounding study area landscape. The potential for subsurface material to be present is assessed using criteria developed from the results of previous surveys and excavations relevant to the region. Where necessary, PADs can be given an indicative rating of their 'archaeological potential' based on a combined assessment of their potential to contain artefacts, and the potential archaeological value of the deposit. Table 3.1 illustrates the matrix on which this assessment is based. Locations with low potential for artefacts fall below the threshold of classification. In such cases the potential incidence of artefactual material is considered to be the same as, or close to that for background scatter. Where there is moderate potential for artefacts, the predicted archaeological potential parallels the

potential significance of the deposit. For deposits with high potential for artefacts, the assessed archaeological potential is weighted positively.

The boundaries of PADs are generally defined by the extent of particular micro-landforms known to have high correlations with archaeological material. A PAD may or may not be associated with surface artefacts. In the absence of artefacts, a location with potential will be recorded as a PAD. Where one or more surface artefacts occur on a sedimentary deposit, a PAD may also be identified where there is insufficient evidence to assess the nature and content of the underlying deposit. This situation is due mostly to poor ground surface visibility.

Table 3.1 Matrix showing the basis for assessing the archaeological potential (shown in bolded black text) of a potential archaeological deposit.

		Potential to contain Aboriginal objects		
		Low	*Moderate*	*High*
Potential archaeological significance	*Low*	---	**low**	**moderate**
	Moderate	---	**moderate**	**high**
	High	---	**high**	**high**

In the case of rock shelters contexts, the following criteria are used as guidelines for identifying the presence of potential archaeological deposits:

- Shelter should contain a sediment floor at least around one square metre in area;
- Deposit must be at least 15 cm deep (determined by inserting tent pegs);
- Deposit should be relatively compact and show evidence for a significant period of accumulation (deposit should not be spongy and contain only clean sand derived from recent stone weathering);
- The shelter space should be at least one metre high and one metre deep (but exceptions may occur, such as where the deposit is deep); and
- The shelter should be relatively dry.

3.5.2 Historical Sites and Features

Historical archaeology refers to the 'post-contact' period and includes: domestic, commercial and industrial sites as well as most maritime sites. It is the study of the past using physical evidence in conjunction with historical sources. The three primary types of places or items that may form part of the historical archaeology context include:

1. Below ground evidence, including building foundations, occupation deposits, features and artefacts; and above ground evidence, including buildings, works, industrial structures and relics that are intact or ruined;
2. Areas of land that display evidence of human activity or occupation; and
3. Shipwrecks, deposits and structures associated with maritime activities.

Within these broad parameters, an historical archaeological site may include:

- Topographical features and evidence of past environments (that is, resident in pollens and diatoms);
- Evidence of site formation, evolution, redundancy and abandonment (that is, features and materials associated with land reclamation, sequences of structural development, demolition/deconstruction, and renewal);
- Evidence of function and activities according to historical theme/s represented (for example, an industrial site may contain diagnostic evidence of process, products and by-products);
- Evidence associated with domestic occupation including household items and consumables, ornaments, personal effects and toys;
- Evidence of diet including animal and fish bones, and plant residues;
- Evidence of pastimes and occupations including tools of trade and the often fragmentary signatures of these activities and processes;
- Methods of waste disposal and sanitation, including the waste itself which may contain discarded elements from all classes of artefact as well as indicators of diet and pathology; and
- Any surviving physical evidence of the interplay between site environment and people.

The information found in historical archaeological sites is often part of a bigger picture which offers opportunities to compare and contrast results between sites. The most common comparisons are made at the local level, however, due to advances in research and the increasing sophistication and standardisation of methods of data collection, the capacity for wider reference (nationally and, occasionally, internationally) exists and places added emphasis on identification and conservation of historical archaeological resources.

4. CONSULTATION PROCESS

The NSW DECCW has produced a document *Aboriginal cultural heritage consultation requirements for proponents 2010* (NSW DECCW 2010) that sets out the requirements for 'consulting with those Aboriginal people who can provide information about the significance of Aboriginal cultural heritage as part of the heritage assessment process that informs any AHIP application' (ibid:1).

The requirements apply to all activities throughout NSW that have the potential to harm Aboriginal *objects* or places and that also require an AHIP. The requirements specify four stages of consultation:

Stage 1 - notification of project proposal and registration of interest

Stage 2 - presentation of information about the proposed project

Stage 3 – gathering information about cultural significance

Stage 4 – review of draft cultural heritage assessment report

4.1 Stage 1

An advertisement was placed in the *Tweed Daily News* (Appendix 2) on the 26 July, 2017, and the *Tweed Link* on the 8 August, 2017.

Letters were sent to the:

- Tweed Byron Local Aboriginal Land Council;
- Aboriginal Advisory Committee: Tweed Shire Council;
- North Coast Local Land Services;
- NSW OEH;
- Native Title Services Corporation Ltd; and
- Office of the *Registrar Aboriginal Land Rights Act 1983*.

A search was made of the National Native Title Tribunal registers on 11 July 2017.

Following advice received from OEH, letters were sent to:

- Aaron Talbott & Natalene Mercy
- Banjalang Aboriginal Corporation
- Baryulgil Square Co-operative Society Ltd
- Bundjalung Elders Council Aboriginal Corporation
- Burabi Aboriginal Corporation
- Burra:Waj:Ad
- Canowindrra Tweed Byron Aged and Disabled Aboriginal Corporation
- Minjungbal Cultural Museum

- Tweed Aboriginal Co-operative Society Pty Ltd
- Bundjalung Tribal Society
- Tweed Byron Local Aboriginal Land Council
- Durahrwa Training and Development Aboriginal Corporation
- Jackie McDonald
- Jason McDonald

The closing date for expressions of interest was 25 August 2017.

Registrations of interest were received from:

- Tweed Byron Local Aboriginal Land Council
- Jackie McDonald
- Jason McDonald
- Kyle Slabb (c/o Tweed Byron LALC)
- Paul Buxton
- Mleeka Hart (Tweed Aboriginal Co-operative Society Pty Ltd

4.2 Stage 2 and 3

A preliminary survey methodology and cultural information request was sent to registered groups on 28 August, 2017. This included an invitation to all RAPs to participate in a workshop to discuss the preliminary survey methodology for the Clarrie Hall Dam raising project.

Following the preliminary methodology workshop on 7 September, 2017, the survey methodology was revised and sent to all RAPs on 19 September, 2017, for further comment.

A second workshop was held on 9 October, 2017, to ask for any further comment on the survey methodology and discuss the logistics of the upcoming archaeological survey field program.

4.3 Field Participation

Aboriginal representatives who participated in the field study were:

- Ian Fox, Des Williams and Warren Phillips (Tweed Byron LALC);
- Jason McDonald, Paul Buxton and Adam Mazarella (McDonald Family); and
- Mleeka Hart and Mark Rotumah (Tweed Co-op).

4.4 Stage 4 Onwards

The following steps are listed as a guide for future Aboriginal consultation, project approval submission, and heritage works for this Clarrie Hall Dam raising project.

- The Draft Aboriginal Cultural Heritage Assessment (ACHA) was provided to all registered Aboriginal parties (RAPs) for review and comment on 15 March, 2018;
- All registered Aboriginal parties (RAPs) were invited to a workshop held on 10 April, 2018, at the Tweed Heads Civic Centre, to discuss the Draft Aboriginal Cultural Heritage Assessment (ACHA) and the broader Clarrie Hall Dam raising project;
- Requests were made by RAPs at the workshop for further time to submit written comments, and this was agreed to Tweed Shire Council (TSC).
- Comments were received from Tweed Byron LALC, Jackie McDonald, and Mleek Hart (Tweed CoOp) up to the 21 May, 2018.
- The proponent should then submit the finalised ACHA report with the Environmental Impact Statement (EIS) report for the project to the Department of Planning & Environment in order to obtain project approval.
- The proponent should make the final ACHA report, and State Significant Infrastructure (SSI) application available to the RAPs within 14 days of the application submission.
- If the project receives the relevant approvals as an SSI project, heritage related impact mitigation measures outlined in Sections 11 and 12 of this report should be fully implemented prior to development related impacts.

Table 4.1 Responses to Submissions – Preliminary Methodology

Date	Type of Contact (email, phone etc)	Group	Comment	Response
1/9/17	Email	TBLALC	Suggested more than 5 days was necessary for the fieldwork Flagged access issues along northern portion of CHD study area and possible need for boat TBLALC prefers a targeted survey program following TSC cultural mapping project predictive modelling, rather than 'generic' foot survey Flagged that TBLALC should have a representative present at all times during field survey due to numerous known sites that are not listed on AHIMS. Requested that TBLALC be notified of all other RAPs registered for the project ASAP.	All these issues were discussed at the preliminary methodology workshop on 7/9/17

5. ABORIGINAL HERITAGE CONTEXT

5.1 Aboriginal history

5.1.1 Ethnohistory

The following section contains some terms from historical that are today considered inappropriate and may be offensive to Aboriginal people. They are only included for historical clarity in this report.

Early historical references to the Aboriginal people of the Tweed and surrounding districts are rare. Captain James Cook on May 15, 1770, 25 kilometres south of the Tweed River – 'discovered smoke in many places and saw a group of natives' (Cousins 1933:9). The first direct contact with the Aboriginal population of northern coastal NSW was made by the explorer Lieutenant John Oxley on October 31, 1823. Uniake describes the contact as occurring with 200 Aboriginal men approximately five kilometres from the mouth of the Tweed River (Uniake 1825:40).

From the 1820s until the early 1860s, the number of white people visiting the northern rivers district was generally limited to escaped convicts and wood-cutters exploiting the pine and cedar forests. 'Aboriginal people on the Tweed had early on assisted the first cedar-getters in guiding them to valuable stands of timber in return for rum and tobacco' (Longhurst 1980).

The early 1860s saw the arrival of white settlers under the Robertson Land Acts, and by 1863 the region was occupied by farmers. Relations between the Aboriginal population and white settlers were hostile at times.

Linguistic studies, using word lists compiled by early residents, suggest that the tribes in the Tweed and surrounding districts were part of a larger tribal and linguistic grouping stretching from the Clarence River in the south (Yamba-Iluka, NSW) to the Logan River in the north (Beenleigh, Queensland) and west to the Great Dividing Range (Tenterfield, NSW). (Tindale 1974). This linguistic area, known as Bandjalung, was probably divided into numerous dialect areas, roughly approximating tribal boundaries (Longhurst 1980:18).

The Clarrie Hall Dam study area is located within the tribal boundaries of the Bundjalung and specifically in the dialect of the Nganduwal/ Nagandowal. The Nganduwal/ Nagandowal is a dialect area which centred on the Tweed River basin. However, linguists note that the Minyangbal dialect (Tweed coast area) and the Nganduwal/ Nagandowal dialect are very similar and may have around 90% common word usage between the two (Fox and Slabb 2016:97).

The area around Wollumbin (Mount Warning) is recorded to be part of the Moorung-Moobar Clan area (Fox and Slabb 2016:96). The other clans in the Tweed area (closer to the coast) are Tul-gin-gin and Goodjinburra.

Joshua Bray arrived in the district in the early 1860s when he was Police Magistrate of Murwillumbah. His recollections are an important source of ethno-historic information about the Aboriginal people of the Tweed Valley. Bray (1901) describes a 'tribe' (probably a clan division) called Coodjingburra occupying the coast between the Tweed and Brunswick Rivers and approximately 10 miles inland from the coast. The Coodjingburra used to mix frequently with the Ballina and Richmond River Aboriginal groups.

Local Aboriginal Woman Jackie McDonald (pers comm.) has pointed out that her '*great great Grandmother, Kitty is mentioned in the Bray diaries'* as Kitty worked for Joshua Bray. Jackie is of the belief that Aboriginal people within the historic record should be mentioned by name wherever possible, rather than generic names such as *"natives, blacks or original inhabitants".*

N. C. Hewitt in the *Tweed Daily* 1923 Supplement quoted Henry Barnes of Dryaaba Station saying, 'Some disease came amongst the blacks about 1858 and nearly one third of them on the coast died.' In October 1923, a writer, 'Old Hand', in the *Northern Star* stated, 'Dysentery occurred among the blacks in 1865 and carried off hundreds of victims.'

Adrian Piper (1983 in LTRHS) noted:

> *Between 1820 and 1860 the Tweed River aborigines were able to accommodate the European impact on their subsistence economy. During the period they made contact with the vanguard of European society, explorers, escaped convicts, timber cutters and possibly the crews of whaling ships. Contact with these Europeans had little detectable impact on the indigenous economy, yet the disease they introduced set in train one of the major causes for the destruction of the Tweed River aborigines. In spite of the few Europeans involved in contact with aborigines in the Tweed Valley prior to 1860, disease had undermined their ability to withstand the major European incursion after 1864 (LTRHS 1999:15-16).*

William Marks in his personal diary (1872-1879), mentions the barter of honey, fish and oysters that transpired with the original inhabitants in exchange for 'goodies' of flour, sugar, tea and tobacco. Allison Smith, daughter of the first pilot at Tweed Heads, stated in an interview in 194; 'At that time [early 1870s] hundreds of natives camped within the present town site'.

Adrian Piper (1983) noted,

> *Between 1865 and 1875 the solid social fabric and economic [Aboriginal] structure collapsed as the basis of a viable society. The last recorded Booral ceremony took place on the Upper Tweed in about the mid eighteen seventies. This is significant for it emphasises how devastating the impact of farming into the Tweed Valley really was. The ritual life is perhaps the strongest and most enduring element of any society, yet in the Tweed Valley it barely survived fifteen years of contact with farmers. With the loss of both traditional land and the ritual essential to aboriginal society the Tweed aborigines became refugees in their own land (LTRHS 1999:53).*

The Aboriginal population of the Tweed area likely numbered at least 2000 at the time of European colonisation. Census figures indicate that within 50 years of European settlement up to 90% of the Aboriginal population had perished (Fox and Slabb 2016:103). The introduction of European diseases likely was a major contributing factor to this population decline.

It should be noted that, while considerable evidence exists for large scale Aboriginal population decline within the first 50 years of European settlement in the Tweed Valley, local Aboriginal people have continued to live in the region continuously to this day, and maintain a strong and uninterrupted cultural connection to the land, water, flora, and fauna of the region.

5.1.2 Regional Aboriginal Cultural Context

The Aboriginal community of the Tweed Valley have a wealth of traditional knowledge passed on through oral histories and traditional storytelling. Below are a selection of oral histories from the region, many of which are now being utilised to support and add depth to modern scientific research (Rossetto et al. 2017).

Wollumbin (Mount Warning), immediately north of the CHD study area, is a major feature of the Tweed Valley and many Aboriginal sites are positioned to recognise the spiritual value that the mountain holds.

5.1.2.1 Ngunthungulli Songline

This songline was recounted by Ngarakbal woman Charlotte Brown, and was recorded by Roland Robinson in the 1950's (Robinson 1989).

> *A big rock stands in the sea six miles from Byron Bay. A man named Nguthungulli made that rock. Nguthungulli is our Father. He's the Father of the whole world. Nguthungulli had a cave in the rock. After he made the rock, he told the four fairy woman, 'gilarmavell', to stay there. Then he went away from there and walked inland from the coast. He travelled over the mountains with his dog Korung. He had a walking stick, and when he put the*

stick into the ground He left behind a stone like a basin [Wollumbin, Mount Warning]. As he travelled He left the bean-trees [C. australe], and He named the different places on His journey. He named Woodenbong [where we are now], Nguthumbung. He went over the range to the head of the Condamine. When he knelt down at the river to drink, He left his handprints there in the stone.

5.1.2.2 The Sisters

The following story was originally told by Mr J. A. Gresty (Queensland Forest Service) and was first published 1947. The story has been adapted from an interpretive sign at Clarrie Hall Dam.

The two peaks below Wollumbin ("The Sisters") are associated with cultural hero *Gwyala,* the hunter. Gwyala was a hunter of long ago who had two hunting dogs, Ningeroongun and Barrajanda. The dogs were trained to capture kangaroos but one day ventured into a neighbouring camp and were killed. Gwyala was very distressed about the death of his dogs and took the remains of Ningeroongun and Barrajanda to Wollumbin. The dogs were buried under each of the two little peaks east of Wollumbin. Since that time the two peaks ("The Sisters") were known as Ningeroongun and Barrajanda.

5.1.2.3 Scarred Black Bean Trees (Castanospermum australe)

The following is recorded on an interpretive sign displayed at the Clarrie Hall dam wall. This story was told in 1956 by Tom Close Senior, a Bundjalung man. The story serves to warn children about the dangers of eating unprepared black bean seeds. Black bean seeds are highly toxic and require soaking in water before consumption.

Black Bean trees were a source of food that required special preparation to remove poisonous toxins.

Within the tribal grounds of the Bundjulung people there are growing along the banks of the rivers many Bean Trees, and there is one place where the Bean Trees flourish and grow that the trees are sacred to the witches, and none may touch them. For if they eat the bean of the tree the witches will punish them with death.

Now one day it so happened that a young man went along the bank of the river and he came to the place where the Bean Trees that are sacred to the witches were growing.

"The Beans growing upon these trees look good," *he said.* "I think that I should like to eat them. What harm could come to me, for the witches would surely not miss one bean from their trees that are sacred to them."

So the young man looked about for a bean that looked the nicest one to eat. "Ah! Here is one that looks nicer than all the other beans on the trees", *thought he. "*This is the bean that I will eat. As for the witches – they will never know, for they surely cannot miss one bean."

Now, no sooner that the young man had eaten the bean he began to feel sick. Then he became much worse and was very ill indeed. So ill did he become that he could neither rise nor sit up. So there he lay till death had claimed him. For the witches knew that he had eaten the beans of the Sacred Bean Trees which were forbidden to anyone of the tribe to eat.

And this is the story of the young man who ate the bean from the Bean Trees that are sacred to the witches. And to this day the very same trees are sacred to the witches, and no one may eat the beans from them, for if they do they will surely die, for the witches will punish them with death, as happened to the young man who ate the bean from the Bean Trees – that are sacred to the witches.

For then, as now, the witches will guard them, and they will see and know anyone who touches them.

The sacred theme surrounding Black Bean trees and the consumption of their produce without consent continues in an Aboriginal legend told by M. T. Close to Mildred Norledge, telling of a sacred grove of Black Bean trees with a seemingly heightened cultural restriction on access. Rosetto et. al. (2017) speculate that such restrictions may have been in place to maintain stock of this important resource.

> *Within the tribal grounds of the Kyogle tribes there are growing along the banks of the river many bean trees, and there is one place where the bean trees flourish and grow where the trees are more sacred to the Witches than the bean trees growing elsewhere. Sacred are all bean trees to the Witches, and none may touch them, least of all in the place where the trees that are more sacred grow, for if people eat the bean of the tree the witches will punish that do so with DEATH.*

5.2 Material evidence of Aboriginal land use

5.2.1 Regional Archaeological Context

Aboriginal occupation of the greater region has been dated to at least 20,000years BP (Before Present). The oldest published date for the Tweed area itself, is c. 4700 BP from shellfish remains at Banora Point (Fox and Slabb 2016:92).

The Tweed Valley had a range of living environments that included the coast, the river and the caldera country (Dallas 2009). These meant that a variety of food sources could be gathered from these varying environments. The hinterland area provided a range of macropods with a wide selection of plant materials including forest fruits, berries and nuts (Dallas 2009).

These broad areas have been the subject of considerable archaeological investigation both within the context of academic research and environmental impact assessments. The resulting corpus of information provides both an inventory of known sites for the region, and more importantly, a set of predictive statements which allow for the assessment of the unrecorded potential archaeological resource.

5.2.2 Clarrie Hall Dam Raising Study Area

Twenty-four previously recorded Aboriginal sites are listed on the Office of Environment and Heritage (OEH) Aboriginal Heritage Information Management System (AHIMS) in/near the project area within the following (GDA) map grid references with a buffer of 50 m:

- Eastings: 527905-532642
- Northings: 6849467-6855065

Sites comprise:

- seven open campsites/artefact scatters
  (04-1-0012, 04-1-0025, 04-1-0027, 04-1-0089, 4-1-0129, 04-1-0130 and 04-1-00150)
- seven artefact/isolated find sites
  (04-1-0009, 04-1-0010, 04-1-0011, 04-1-0017, 04-1-0130, 04-1-0188 and 04-1-0194)
- five rock shelters
  (04-1-0013, 04-1-0014, 04-1-0090, 04-1-0113, and 04-1-0114),
- one scarred tree (04-1-0026),
- one stone arrangement (04-1-0115),
- one shell midden (04-1-0116),

- one mythological burial (04-1-0001), and
- one grinding groove (04-1-0016).

Tweed Byron LALC have brought to the attention of NOHC that at least a further eight Aboriginal sites which are not listed on the AHIMS database have also been recorded in the study area.

A copy of the AHIMS search is provided in Appendix 1.

Three previous archaeological assessments are directly relevant to the study area. Two of these studies relate to the original construction of Clarrie Hall Dam and the third is a preliminary study of the proposed raising of the dam completed in 2008.

These studies are:

- *An archaeological survey of the proposed Doon Doon Creek dam site* (Sullivan and Dallas 1978);
- *An archaeological survey of Aboriginal sites within the proposed Doon Doon Creek Dam (re-location) area of inundation* (Piper 1979); and
- *Preliminary Archaeological Overview for Proposed Raising of Clarrie Hall Dam* (Southern Cross University 2008).

Sullivan and Dallas (1978) recorded multiple surface artefact scatters (DD1, DD2, DD3, DD4 and DD7) up to flood line for the original Clarrie Hall Dam. Isolated finds were also noted but not deemed to be sites and were not recorded in any detail. Sullivan and Dallas (1978) also recorded DD5 (a rock-shelter determined to be outside the dam impact area) and a rock shelter inside the dam impact area (DD6), and grinding grooves (DD8). Several flakes were located on the floor of DD6 and auguring was completed. One flake was recovered from subsurface deposits. Sullivan and Dallas (1978:3) concluded that the site was of low archaeological significance and had limited research potential.

Piper (1979) conducted another survey for the proposed Clarrie Hall Dam area of inundation. Piper re-found Sullivan and Dallas' DD8 site and then located new sites DD9 (scarred tree), DD10 (artefact scatter), and DD11 (isolated find). Piper's survey included the Doon Doon Creek and surrounding features up to the 100 m contour line.

In 2008, Southern Cross University (SCU) conducted a preliminary archaeological overview for the proposed raising of Clarrie Hall Dam. The study surveyed the area of the dam that was proposed to permanently inundated up to a flood level of 80.00 m RL and any impacts expected from the construction of the dam wall.

The study investigated twenty one registered/previously recorded sites in the study area. Five of the identified sites were inundated by the Dam's initial construction in 1983 and the remaining sixteen sites are within a two kilometre distance from the shoreline. The study recommended that a comprehensive archaeological cultural assessment should be conducted, and further opportunity be made for field surveys by boat of the dam island and remote sections in the west to northwest foreshore areas.

The SCU (2008) report indicated that the close proximity of Wollumbin (Mount Warning) to the dam is culturally very important due to the significance that Wollumbin holds in the Tweed Aboriginal belief systems (Steele 1984). SCU indicates that a further landscape analysis of the sites and Wollumbin would be valuable in any further assessments.

SCU (2008) identified eight new sites, CH1 through to CH8. Six of these sites were open artefact scatters described as 'open campsites', while the remaining two sites consisted of an isolated find, and a site of unknown typology.

Radiocarbon dating (unpublished) at a number of cave sites in the Tweed Valley was undertaken by Aboriginal community members in conjunction with Ian Fox and SCU in 2006. The Byrill Ridge Rock shelter (AHIMS #04-1-0013), which is located within the Doon Doon Creek catchment to the east of the CHD study area, was one of the sites sampled. While the earliest date of a sample from this site was approximately 3,000 BP, the results were said to be ambiguous, and of least use compared to the other rock shelters sampled in the study.

Interpretive signs at the Clarrie Hall Dam wall discuss two Aboriginal cultural items that were salvaged during construction of the original Clarrie Hall Dam in the 1980s. These were placed on display at the Dam wall following construction. The whereabouts of these items is now unknown.

These items were part of a culturally modified Black Bean Tree (*Castanoespermum australie*) and a section of sandstone that contained a grinding groove. The local Aboriginal community have brought

up the issue of management of these two salvaged items during the consultation process, and have voiced their frustration at the loss of these important cultural relics.

The Tweed Shire Council has been involved in the preparation of a draft Aboriginal Cultural Heritage Management Plan (ACHMP) (2017), which has been in development since 2012 and is supported by a Thematic History, incorporating the mapping of both known and predicted locations of Aboriginal cultural heritage.

This document has been prepared with considerable input from the local Aboriginal community. The Aboriginal site mapping presents broad general locations of sites (most of which is listed on the AHIMS database), while the predictive mapping broadly maps significant ridgelines, and spur crests descending from these ridgelines towards the valley floor.

Ridgelines and spur crests are known to have been heavily used by Aboriginal people for travelling through the landscape, and during the consultation process for this project, the local Aboriginal community has regularly impressed the importance of these significant throughways within the landscape.

5.3 Survey Units and Landform MappingSite Location Model

The most common Aboriginal site type present in the CHD study area and the broader region is the open artefact scatter (also termed open campsite on many of the AHIMS site cards for the region), which may occur almost anywhere that Aboriginal people have travelled and may be associated with hunting or gathering activities, domestic camps, or the manufacture and maintenance of stone tools. The density of artefacts represented in these scatters can vary dramatically and can be dependent on factors such as stream ordering and the permanence of water sources.

Previous survey results suggest that artefact scatters are most likely to be located on well-drained and locally elevated ground adjacent to permanent water sources. High site densities and relatively dense artefact concentrations can be expected in close proximity to permanent watercourses. Elevated sand bodies within valley floor contexts are a landscape element with high potential.

Isolated finds, generally defined as a single stone artefact which occurs without any associated evidence of Aboriginal occupation within a radius of 60 m, are also common in in the study area. Isolated finds may be indicative of: random loss or deliberate discard of a single artefact, the remnant of a now dispersed and disturbed artefact scatter, or an otherwise obscured or subsurface artefact scatter. Except in the case of the latter, isolated finds are considered to be constituent components of the *background scatter* of Aboriginal artefacts present within any particular landform.

Previous archaeological surveys around the Doon Doon Creek valley catchment and across the broader region suggest the following archaeological attributes and site location parameters for the study area.

- There are strong relationships between site location and distance from water sources. Distance to water varied from 10 m to 250 m.
- Good drainage, views over watercourses and views towards Wollumbin (Mount Warning) were important site location criteria.
- Campsites are often located adjacent drainage lines coming off Doon Doon Creek, or on what would have been the main creek line before inundation.
- Rock shelters located on the higher slopes coming off the valleys of Doon Doon Creek.
- Based on SCU's discussions with Aboriginal participants, the location of sites were largely connected to Wollumbin's (Mount Warning) position to sites, and the area should be considered in more of a landscape context (2008).

- These findings are consistent with a more generalised model of Aboriginal site location which notes that a majority of sites are situated on locally elevated, well drained and low gradient ground, located in relative proximity to a fresh or estuarine source.

- Based on the mapping contained in the Tweed Shire Councils draft ACHMP (2017), ridges and spur crests will have a strong relationship with site locations.

5.4 Limits on use of existing information

The data used to generate the general interpretation of Aboriginal prehistoric land use in the Clarrie Hall Dam study area has been drawn from previous archaeological work carried out on areas being developed, as well as a number of broad scale research projects, and on the data gathered during the current cultural heritage assessment.

These sources of data can be biased in their sampling of the landscape, and are limited in their scope. Consequently, the data currently available are unlikely to have provided a completely accurate and comprehensive representation of the distribution of archaeological sites across the landscape, or of the relative frequency of different site types.

Archaeological assessments commissioned for development projects are restricted to the specific footprint that will be impacted by the project. The area of land being assessed is specifically constrained, and in many cases, will not representatively sample the different landforms found across the wider region being studied.

These limitations will usually become less pronounced as more and more assessments are carried out in a region, since more and more areas of ground are being assessed. A systematic bias in the data can still easily occur, however, if the areas of ground are concentrated in one landform type over another. This could be the case if the assessments relate to development projects which preferentially occur on specific landforms – roads tend not to traverse steep slopes, wind-farms tend not to be built in valleys, and housing developments are preferentially situated on flat land, for example.

Data on uses of the land by Aboriginal groups in the post-contact period, including the present day, might be limited if activities practised by Aboriginal groups have not been reported in the public domain, and have not been reported to NOHC during consultations with Aboriginal groups. This could occur if land use practises are associated with knowledge that is culturally restricted.

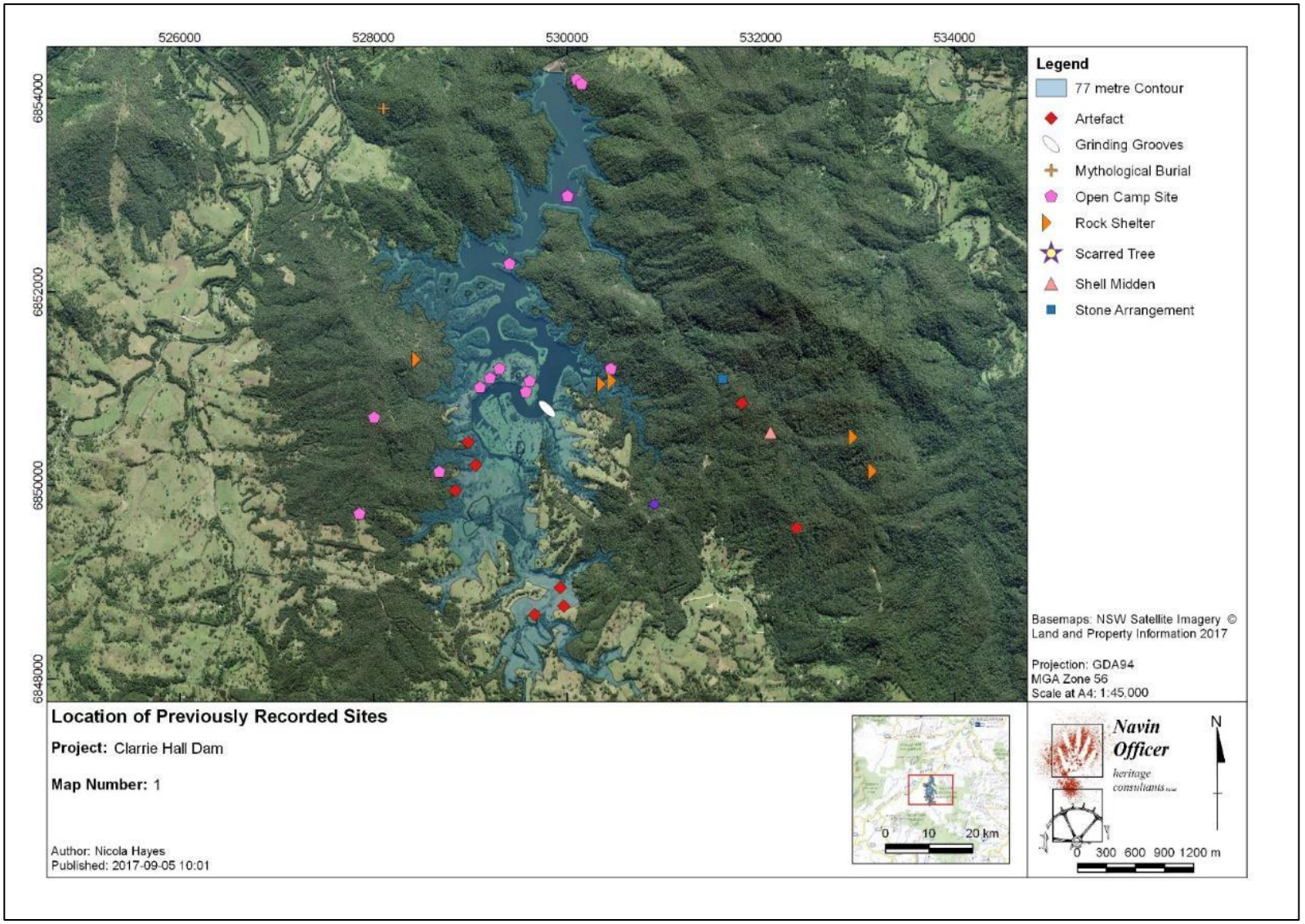


Figure 5.1 General locations of previously recorded sites in and around the Clarrie Hall Dam study area (32 sites in total, 8 sites are not listed on AHIMS)

6. HISTORICAL CONTEXT

The following historical background addresses the key historical influences on the study area over three levels – the regional, the district and the local.

The regional level operates by looking at the influences or historical themes that have an impact on the history of the region, the Tweed Shire. This historical, geographical and environmental landscape covers an area located on the Tweed River in northeastern New South Wales. This provides a broad context in which to consider the study area. For example, themes such as exploration, settlement and land tenure, apply at the local level as much as they do for the whole region.

The district level focuses on that area that directly encompasses the study area. In this instance, it involves considering the Tweed Shire focusing in on the Doon Doon Creek area, and the heritage within that administrative division. By considering the district, a more meaningful context for influences and themes on the local area, the study area itself, is able to be provided. For example, historical themes within the region such as defence, may not apply to the district or local study area. The added value of considering the district themes assists in providing a predictive model for historical archaeology within the study area. The absence or inability to procure historical information to themes which affect the district, should not be taken as meaning they are not represented in the archaeology of the study area. However, it should inform the potential for these themes to be present.

6.1 Historical Overview

6.1.1 Exploration

The north east coast [*of NSW*] was first observed in May, 1770, by Lieutenant James Cook. In the exploration of the coast Cook sailed north and charted Cape Byron, Mount Warning (Wollumbin) and Point Danger (Dallas 2008). It was not until 1823 that the Tweed River would be discovered by Lieutenant John Oxley in his exploration of the area. Oxley was commissioned by Governor Brisbane to locate a site for a new penal settlement (Boilaeu & Tweed 2006). While undertaking this assignment, Oxley encountered dangerous weather and sought shelter on a small island off Point Danger. In the process Oxley discovered the mouth of a large river and sent a mate and several crew to further investigate. The mate and several crew reported back to Oxley about the Tweed River (Boilaeu & Tweed 2006).

These initial investigations would later be followed by naval officer Henry John Rous who surveyed the Tweed area in 1828, at this point naming the river the Clarence not realising it had already been previously charted and named the Tweed River by John Oxley (Keats 1988).

6.1.2 Land Tenure

Initially the Tweed Rivers came under the surveillance of the Port Macquarie Commissioner of Crown Lands when the Gipp's Land Act of 1839 came into operation. The area itself eventually became its own division Clarence Pastoral District in 1842, the district extended from the Macleay River to Moreton Bay (Keats 1988).

Following the Robertson Land Acts of 1861 unoccupied, parcels of land from 40 to 320 acres (16.19 to 129.5 ha) could be selected on any remaining Crown Land. Often the only remaining portions were smaller holdings in timbered and comparatively marginal areas that were poorly watered. Selectors were often people of limited financial resources seeking opportunities on the land. It was not uncommon for them to work on the large well-established properties in the district in order to finance the acquisition of their farms under the Conditional Purchase system and the necessary improvements (Jansen 1991:3).

A Conditional Purchase required owners to reside on their allotment and carry out improvements, such as building a house and clearing and fencing the land. Only then could the grant be formalised and a title issued. In many cases 20 to 30 years elapsed before a title was issued. During that period

land might have been transferred several times due to the difficulties that selectors had in making regular payments or meeting conditions (Ferry 1988:118). Requirements were that a 25% deposit was needed to secure the purchase with the balance due in three years; improvements be made to the value of £1 per acre; and the land had to be occupied by the selector for at least three years. Interest was charged if the balance was not made by the due date (Jansen 1991:4).

When smaller, less viable farms were offered for sale they were frequently absorbed into larger neighbouring estates which had access to reliable sources of water and owners with sufficient capital to increase their holdings. In some instances, successful neighbouring selectors purchased the blocks, therefore increasing the viability and profitability of their own holding.

Tentative settlement occurred in 1844 with a small cedar camp in Terranora (Dallas 2008). Although the Robertson Land Acts became law in 1861, the Tweed wouldn't see its first selection occur until 1866 (Keats 1988). The Robertson Land Acts, though, did aid in an increase in settlement of the Tweed Valley area. Free selection soon attracted selections and their families over the next few years.

By the 1900's most of the accessible land east and north of Murwillumbah had been selected, requiring more land to be made available. This lead to more land becoming available in Chillingham, Tyalgum and the South Arm Valleys in the Tweed area in the period between 1904 through to 1914 and to some soldier settlement subdivisions after the first world war (Boilaeu & Tweed 2006). This created a larger influx in the area than had previously been seen with a total of 1224 conditional leases being taken or transferred between 1900 to 1909 (Boilaeu & Tweed 2006). Since this time only the South Arm retains its name whereas the other arms have now changed.

Doon Doon where the largest part of the Clarrie Hall Dam study area is located was first opened for selection in 1906 when this increase in selections in the area occurred, along with this came a school that later opened in the area in 1914 on Thomas Fogarty's lot. This lot is to the south of the study area and is not impacted by the dam (Boilaeu & Tweed 2006).

6.1.3 Timber Getting

The timber industry has been a major part of European settlement in Australia. Due to the Tweed Valleys vegetation, this meant that Cedar getters were among the first settlers of the area. Their movement into the Tweed area occurred by 1844 with the presence of Caffrey and Burgess as mentioned in the Tweed Daily Centenary Supplement on the 12 September, 1923

> *Messrs. Caffrey and Burgess of this place have each out on parties of sawyers in a recently located cedar brush near Point Danger at a small river named the Tweed, the cedar is spoken of as being of a first rate description and plentiful, the only drawback is the scarcity of coasting craft of a moderate draft of water to go there to load, the bar of the entrance to the Tweed has 10ft of water upon it at low water and is from all accounts much easier of access than many of the bar harbours frequented by cedar vessels to the southwards of this*

The cedar potential of the area had been known for many years prior to 1844. Captain Rous, a naval explorer and surveyor, had commented on the presence of cedar trees when he explored the Tweed in 1828 (Keats 1988). The cedar getters due to their isolation in the area basically conducted their own society. The isolation meant that the industry developed their own social behaviours, social justice and codes. The isolation was due to the nearest settlements existing in Moreton Bay and the Clarence River. If any emergency were to occur often the Commissioner for Crown Lands or the Border Police were too far away for any immediate justice to be conducted (Keats 1988).

Nearly every village and creek had a mill filling local needs as the industry rapidly expanded in the Tweed Valley. Larger Mills were established at Tyalgum, Byangum, Uki and Terragon. Another essential part of the industry were the bullockies, twenty-four teams existed on the South Arm alone, hauling timber between Byrrill Creek and Byangum (Tweed Regional Museum Website).

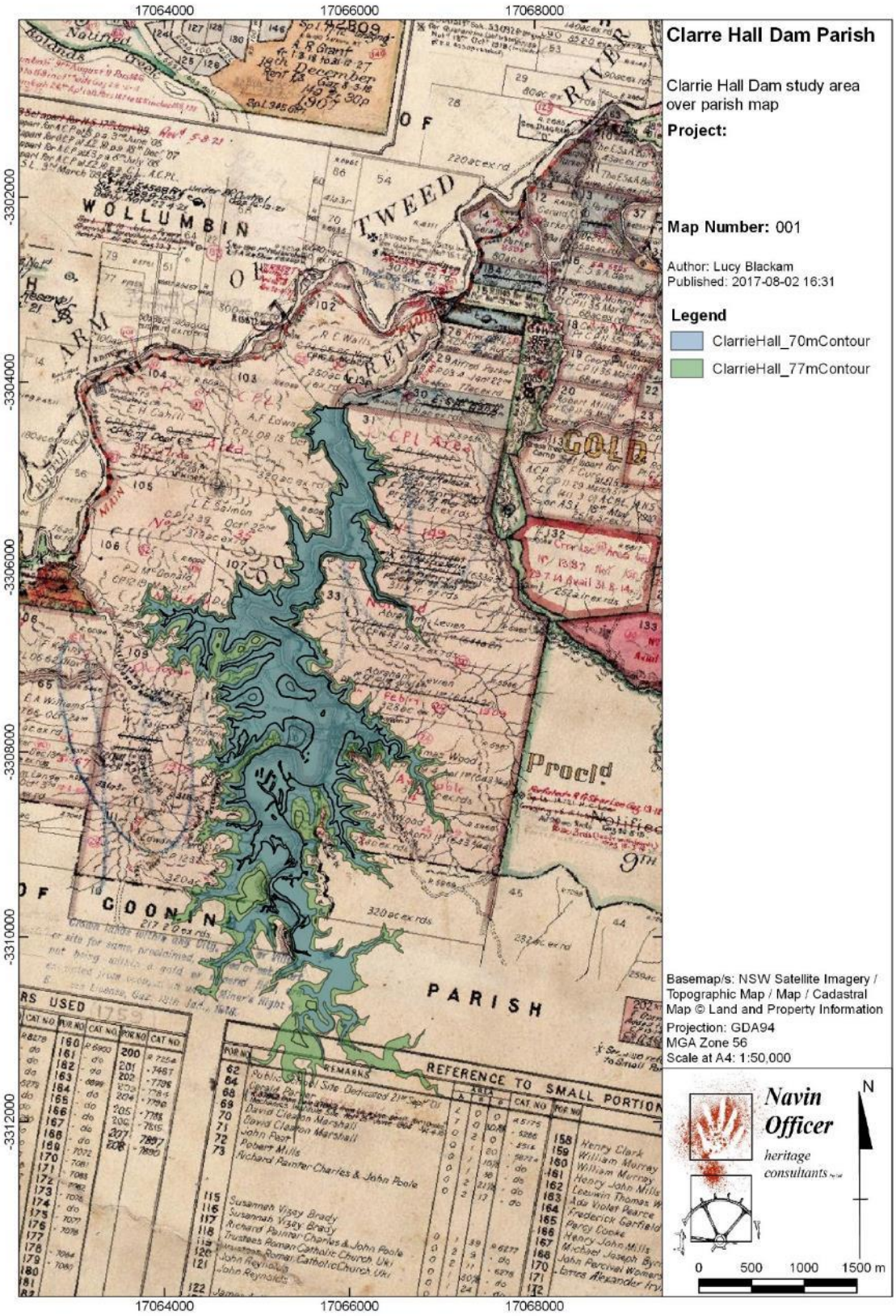


Figure 6.1 Extract of Parish of Torrens map which overlays the study area in blue and green

6.1.4 Pastoralism

The farming of livestock for purposes of producing meat and milk for consumption, has been undertaken within the Tweed Valley as a whole, since the early nineteenth century. Despite the diversity of industry and other commercial endeavours such as tourism and timber getting in the district, agriculture, sheep and cattle remain important industries today.

Due to the Tweed and Brunswick Rivers mainly consisting of rainforests this meant that only two pastoral leases were taken up in the area. These were on the head waters of the Tweed River in open timbered country (Keats 1988). The two pastoral leases were the Upper Walumban run off 6480 ha and the Tyalgrun (Tyalgum) run of 16200 ha; later these would be acquired by Samuel William Gray and Joshua Bray who would later become prominent figures in the Tweed Valley community (Keats 1988).

With the introduction of the 1862 Land Acts, there was an impetus for pastoralists to secure their tenure by improving runs through the building of infrastructure such as homesteads, fencing, stockyards, sheds and wool scours. Kass describes this as “the basis for acquiring land from the Crown as freehold as defence against selectors” (2003:41).

The concept of Closer Settlement that underlay the Land Acts, resulted in a breaking up of the large pastoral runs in the later part of the nineteenth century. The subsequent downsizing of landholdings meant that the raising and management of livestock became less viable and practicable for “squatters”, and wheat growing became an alternative, forming a “grazier” class with flexible production occurring instead.

6.1.5 Clarrie Hall Dam

Clarrie Hall Dam was designed and constructed between 1974 and 1983 by the Department of Public Works for the Tweed Shire Council. The dam was built to supply the Tweed Shire with drinking water and was designed to act as a further recreation area. The storage dam was given the name Clarrie Hall in honour of Clarrie Hall, who had been Shire President for 17 of the 26 years that he had served as Tweed Shire Councillor (Buckley n.d)

Figure 6.2 Construction of Clarrie Hall Dam 1983
(Photo from State Library of New South Wales. Titled: Clarrie Hall Dam)

6.2 Previous Cultural Heritage Studies

No historical heritage items are listed for the Clarrie Hall Dam study area (see Appendix 1).

The Register of the National Estate (Non-Statutory archive) has the Tweed River Valley (Place ID: 265) as a historic Indicative Place (see Appendix 1), significant for its spectacular panoramic views. The chief danger to the characteristics of this non-statutory listing is unsympathetic development.

6.3 Predictive Historical Archaeology Statement

The following predictive modelling for historical archaeological resources and landscapes is based on the preliminary historical research for the study area and the historical themes which relate to it. These have been divided into low, medium and high potential. Examples of the types of archaeological resources that might be expected under these themes are provided along with a brief statement. The potential is based on whether the historical themes are dominant, starting with the primary themes, followed by the secondary or interrelated themes under the dominant ones, and finally, the tertiary themes which are either underrepresented through the historical research, or represent entirely unrelated themes. These final themes may have greater influence on the broader region, but not on the study area in question.

This predictive model is a preliminary undertaking that has not utilised field or survey results as part of either a sampling strategy or comprehensive study.

The historical research considered both primary and secondary sources. The primary research focused on such items as parish and county maps, pastoral maps, land titles records, mine records, and contemporary newspapers.

Archaeological reports and publications that relate directly to the study area were not identified. It is envisaged that if they do exist, they constitute “grey literature” and access is limited for confidentiality.

Thorp (1990) concluded that the most accurate means of predicting archaeological potential is historical investigation within a specific study area, followed by survey. The researcher cannot assume that a regional investigation will provide the predictive model at a macro level.

High Potential (Primary Historical Themes)

Agriculture and Forestry: Examples include hay barn, wheat harvester, silo, dairy, rural landscape, farmstead, shelterbelt, silage pit, fencing, plough markings, shed, market garden, piggery, irrigation ditch, timber mill, springboards

One of the oldest themes represented in this study area and continued until the early twentieth century is likely to make this theme significantly represented in the archaeological footprint across the whole study area, with possible predominance of twentieth century items.

Pastoralism: Examples include pastoral station, shearing shed, slaughter yard, homestead, labour accommodation, domestic refuse pastoral landscape, fencing, grassland, well, water trough, wool store.

One of the oldest and ongoing themes represented in the study area, there is potential for pastoral evidence to be located across the study area. However, the impact of mining in particular areas, such is in the southern portion, may have significantly overwritten this footprint.

Land tenure: Examples include fences, survey mark, subdivision pattern, boundary hedge, stone wall, shelterbelt, river, rock engravings, shelters & habitation sites, cairn, survey mark, trig station.

Aerial imagery indicates that most of the study area landholdings retain in their boundaries the original footprint of land tenure through the decades.

Medium Potential (Secondary Historical Themes)

Industry: Examples include factory, workshop, depot, industrial machinery, timber mill, quarry, black smithy, foundry, kiln, smelter, tannery.

On the fringe of the Clarrie Hall Dam, there is moderate potential for examples of small industry to be located within the study area.

Convicts: Examples include ticket-of-leave and probationary living quarters, landscapes of control, lumber yard, quarry, convict-built structure, convict barracks, estate based on convict labour.

Potential is moderate, as most convict activities were focused further north towards Moreton Bay

Ethnic influences: Examples include place or object that exhibits an identifiable ethnic background.

Accommodation: Examples include holiday house, hostel, bungalow, mansion, shack, cave, humpy, homestead, cottage, house site (archaeological).

Labour: Examples include servant's quarters, shearing shed, kitchen.

Domestic Life: Examples include domestic artefact scatter, shed, arrangement of interior rooms, kitchen garden, pet grave, chicken coop, road camp.

The above four themes are to be treated as secondary themes to the primary themes listed previously. For example, they may all have moderate potential to be identified in archaeological resources pertaining to pastoralism – refuse from a homestead kitchen, a cottage for accommodating farming family, types of artefacts indicating ethnic influences, employee accommodation in a shearers quarters etc.

Low Potential (Tertiary Historical Themes, absent or unrelated to the study area)

Government and administration, Law and order, Migration, Fishing, Defence, Exploration, Technology, Science, Health, Events, Persons, Birth and Death, Towns, suburbs and villages, Communication, Commerce, Education, Welfare, Creative Endeavor, Religion, Social institutions, Sport

7. RESULTS

7.1 Summary

7.1.1 Aboriginal Sites

- Nine Aboriginal sites are registered on the OEH AHIMS as occurring in the Clarrie Hall Dam study area. These comprise:
    - Two open campsites/artefact scatters- 04-1-0012 and 04-1-0130
    - five artefact scatters/ isolated find sites- 04-1-0009, 04-1-0010, 04-1-0015, 04-1-0011, 04-1-0194
    - two rock shelters - 04-1-0014, 04-1-0090
- Six previously recorded but unregistered Aboriginal sites are located in, or adjacent to (within 25 metres of the outer boundary of the study area) the Clarrie Hall Dam study area. These comprise:
    - Five open campsites – CH1, CH3, CH6, CH7, CH8
    - one artefact - CH5
- Sixty previously unidentified and unrecorded Aboriginal sites were identified during archaeological field survey of the Clarrie Hall Dam study area. These comprise:
    - Twenty-one stone artefact scatters -

      CHD-A4, CHD-A6, CHD-A8, CHD-A16, CHD-A17, CHD-A19, CHD-A22, CHD-A26, CHD-A27, CHD-A30, CHD-A31, CHD-A32, CHD-A34, CHD-A36, CHD-A40, CHD-A41, CHD-A43, CHD-A48, CHD-A49, CHD-A50, CHD-A55
    - Thirty-three Aboriginal isolated finds (single stone artefacts) -

      CHD-A1, CHD-A2, CHD-A3, CHD-A5, CHD-A7, CHD-A9, CHD-10, CHD-11, CHD-12, CHD-13, CHD-A14, CHD-15, CHD-A18, CHD-A21, CHD-A23, CHD-A24, CHD-A25, CHD-A28, CHD-A29, CHD-A33, CHD-A35, CHD-A37, CHD-A38, CHD-A39, CHD-A42, CHD-A44, CHD-A45, CHD-A46, CHD-47, CHD-A51, CHD-A52, CHD-A53, CHD-A54
    - Two grinding grooves sites - CHD-A20, CHD-A57
    - One Aboriginal rock shelter - CHD-RS1
    - One culturally restricted Aboriginal site - CHD-A56
    - One possible Aboriginal scarred tree - CHD-ST1
    - One possible chalcedony knapping resource - CHD-G1

- Ten previously unrecorded Aboriginal Potential Archaeological Deposits (PADs) unassociated with surface artefacts were identified during archaeological field survey of the Clarrie Hall Dam study area.
    - CHD-PAD1, CHD-PAD2, CHD-PAD3, CHD-PAD4, CHD-PAD5, CHD-PAD6, CHD-PAD7, CHD-PAD8, CHD-PAD9, CHD-PAD10

7.1.2 Historical sites

- Three historical sites were identified during archaeological field survey.
    - CHD-H1 - Building platform and associated plantings (Frances Garner Property)
    - CHD-H2 - Crams Farm Complex
    - CHD-H3 - Doon Doon Hall

Sites and PADs are described below and their locations are shown on provided maps.

The Clarrie Hall Dam proposal has the potential to impact **82** Aboriginal sites and one historical site

7.2 Aboriginal Sites

CHD-A1 – Isolated Find & PAD

GDA Zone 56 – 529470.6850714

Aboriginal site CHD-A1 is an isolated find (Figure 7.1) visible in a vehicle track adjacent to a fence (Figure 7.2), and associated PAD.

Artefact:

1. chert core with at least 6 negative scars; 80 x 50 x 35 mm

The area of PAD associated with this site is approximately 150 x 100 (Figure7.3).

Topographically the site is situated on a low gradient mid-slope and spur crest with an easterly aspect, which becomes broad and flat closer to the termination of the land. This site has very good access to water given the termination of this spurline is directly adjacent to the original alignment of Doon Doon Creek.

Vegetation at this location is farming pastures underlying isolated Eucalypt trees.

The soil is characterised by dark brown sandy silt. Soil depth is unknown.

Ground surface exposure incidence across the landform is 2%, with 10% visibility within exposures. Existing impacts and disturbances in this area relate to de-vegetation, livestock, vehicle access and resultant sheet erosion.

Given the landscape position of this site, low gradient, proximity to the former alignment of Doon Doon Creek prior to dam constriction, and relatively low levels of disturbance, this area is assessed as having **high potential** for the presence of subsurface archaeological deposits.

Figure 7.1 Artefact at site CHD-A1

Figure 7.2 Location of site CHD-A1 - facing northeast

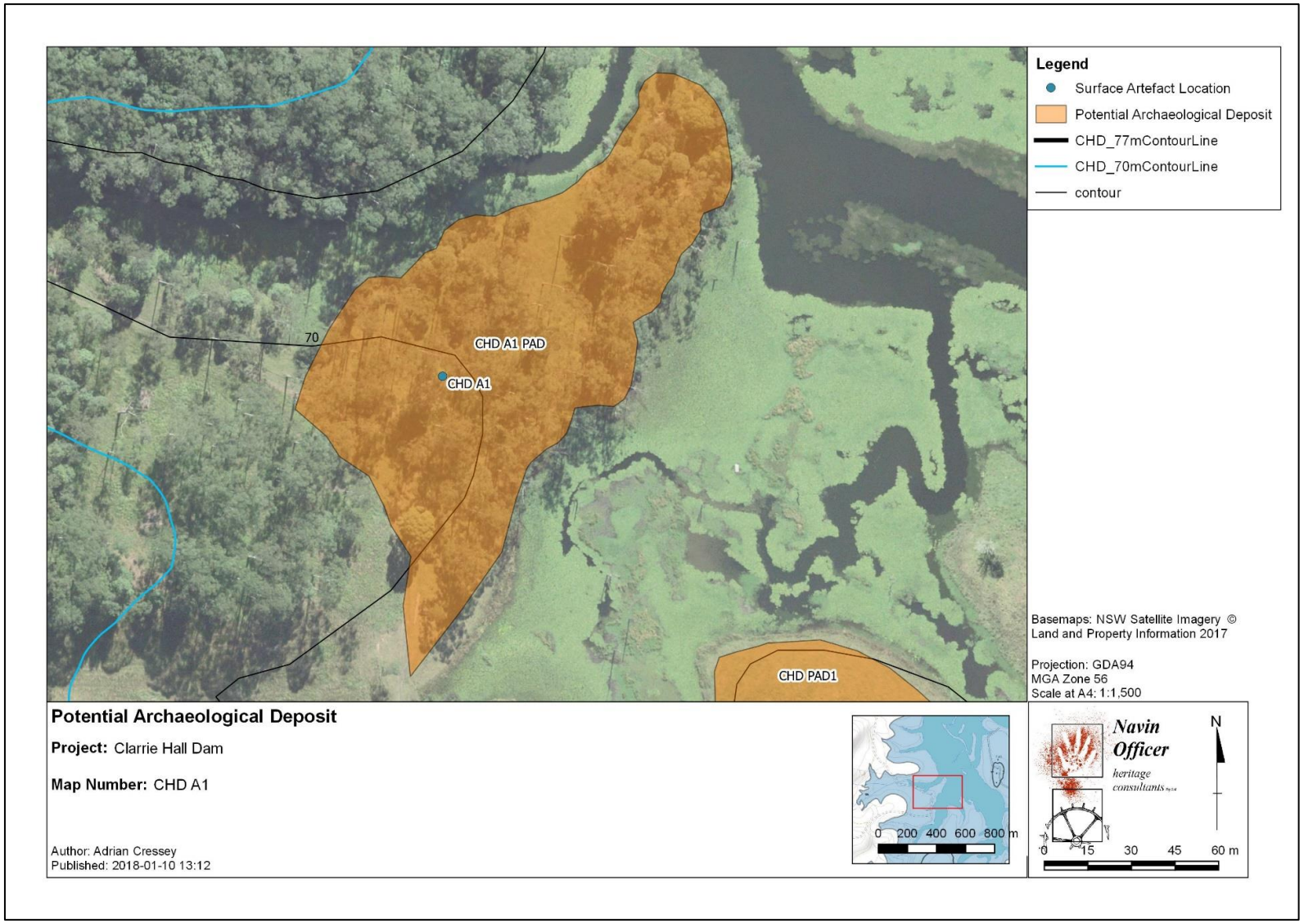


Figure 7.3 General location of site CHD-A1
showing anticipated area of PAD associated with site

CHD-A2 – Isolated Find

GDA Zone 56 – 528864.6850079

Aboriginal site CHD-A2 is an isolated find visible in a sheet erosion scald in a mid-slope context.

Artefact:

1. grey silcrete flake; 40 x 25 x 10 mm (Figure 7.4)

Topographically the site occurs in a low-moderate gradient mid-slope context (Figure 7.5). The location has a southerly aspect, and is in a mid-valley context, over 350 m from Doon Doon Creek.

Vegetation is characterised by open farming pastures, with dark brown sandy silty loam the underlying soil substrate. Soil depth is unknown but likely shallow.

Ground surface exposure incidence in the immediate area of the artefact is 80%, with 60% visibility within this exposure. Existing impacts and disturbances in this area relate to de-vegetation, livestock, vehicle access, and resultant sheet erosion.

Given the position of this site within the landscape, the significant distance from the nearest freshwater tributary, and the likely shallow soil depth, this area is assessed is assessed as having **low potential** for the presence of subsurface archaeological deposits

Figure 7.4 Artefact at site CHD-A2

Figure 7.5 Location of site CHD-A2 - facing northeast

CHD-A3 – Isolated Find (Cultural Significance)

GDA Zone 56 – 529413.6849013

Aboriginal site CHD-A3 is an isolated find identified as an artefact of cultural significance visible in an exposure caused by rill erosion.

Artefact:

1. light grey volcanic piece of stone with no evidence of having been percussively flaked; 40 x 35 x 20 mm (Figure 7.6)

Topographically the site is situated on the moderate-steep slopes of a stream bank.

The site has a southeasterly aspect and is covered by open farming pasture with some isolated Eucalypt trees.

The soil is a grey brown humic sandy silt. Soil depth is very shallow.

Ground surface exposure incidence in the immediate area of the artefact, is 20%, with 80% visibility within this exposure. Existing impacts and disturbances in this area relate to de-vegetation, livestock, vehicle access, sheet and rill erosion.

Given the steep localized gradient in combination with the shallow depth of the soil, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits

Figure 7.6 Stone identified as culturally significant; site CHD-A3

CHD-A4 – Artefact scatter

GDA Zone 56 – 528959.6849895

Aboriginal site CHD-A4 is a scatter of two stone artefacts (Figure 7.7). The artefacts were visible in a sheet erosion exposure.

Artefacts:

1. pink white chalcedony core; 40 x 25 x 10 m); and
2. pink white chalcedony flaked piece; 20 x 15 x 10 mm

Topographically the site is situated on the flat edges of a stream bank with a slight westerly aspect (Figure 7.8). A freshwater spring leaches out of the basal and mid-slopes directly southeast of the artefact scatter.

Vegetation is characterised by open farming pastures, with brown grey humic sand the underlying soil substrate. Soil depth is unknown.

Ground surface exposure incidence in the immediate area of the artefact is 80%, with 90% visibility within this exposure. Existing impacts and disturbances in this area relate to de-vegetation, livestock, vehicle access, and resultant sheet erosion.

Given the flat gradient and lower valley context of this site, low number of artefacts, very good visibility, and close proximity to fresh water (both springs and adjacent creek), this area is assessed as having **low to moderate potential** for the presence of subsurface archaeological deposits.

Figure 7.7 Artefacts at site CHD-A4

Figure 7.8 Location of site CHD -A4 - facing southeast

CHD-A5 – Isolated Find

GDA Zone 56 – 529025.6849594

Aboriginal site CHD-A5 is an isolated find visible on a vehicle track, which included a large amount of foreign gravels for weatherproofing.

Artefact:

1. chalcedony flaked piece; 20 x 15 x 10 mm (Figure 7.9)

Topographically the site occurs on the saddle of a spur crest in a mid-valley context (Figure 7.10) and is approximately 250 m from a tributary of Doon Doon Creek.

The site has a northwest aspect, and is covered by farming pastures, with dark brown loam the underlying soil substrate. Soil depth is unknown but is likely to be shallow.

Ground surface exposure incidence in the immediate area of the artefact is 90%, with 80% visibility within this exposure. Existing impacts and disturbances in this area relate to de-vegetation, livestock, vehicle access, sheet erosion, and imported gravels for track stabilisation.

Given the position of this site within the landscape, the significant distance from the nearest freshwater tributary, localised disturbance, and the likely shallow soil depth, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure 7.9 Artefact at site CHD-A5

Figure 7.10 Location of site CHD-A5 - facing northwest

CHD-A6 – Artefact Scatter & PAD

GDA Zone 56 – 5291986849745

Aboriginal site CHD-A6 is a scatter of three stone artefacts (Figure 7.11) visible on a vehicle access track (Figure 7.12), and associated PAD.

Artefacts:

1. white chert flake; 45 x 32 x 13 mm
2. black volcanic flake; 65 x 26 x 22 mm
3. black volcanic flake; 42 x 28 x 20 mm

Topographically the site is situated on a broad flat knoll/spur crest in a mid-valley context. The site is approximately 30 m from Doon Doon Creek, down a very steep and high embankment.

In terms of access to the valley floor the scatter is approximately 150 m south of the valley flats adjacent to Doon Doon Creek.

The scatter is associated with an area of PAD 220 x 260 m (Figure 7.13).

The site has an open aspect, with views towards the *The Sisters* peaks, and is covered by farming pastures with dark brown sandy loam the underlying soil substrate. Soil depth is unknown but estimated to be at least 30 cm.

Ground surface exposure incidence in the immediate area of the artefact is 35%, with 40% visibility within this exposure. Existing impacts and disturbances in this area relate to de-vegetation, livestock, vehicle access, and sheet erosion.

Given the position of the site within the landscape, the elevated position, flat gradient, easy access to the valley floor, and estimated soil depth, this site is assessed as having **moderate to high potential** for the presence of subsurface archaeological deposits.

Figure 7.11 Artefact at site CHD-A6

Figure 7.12 Location of site CH -A6 - facing south

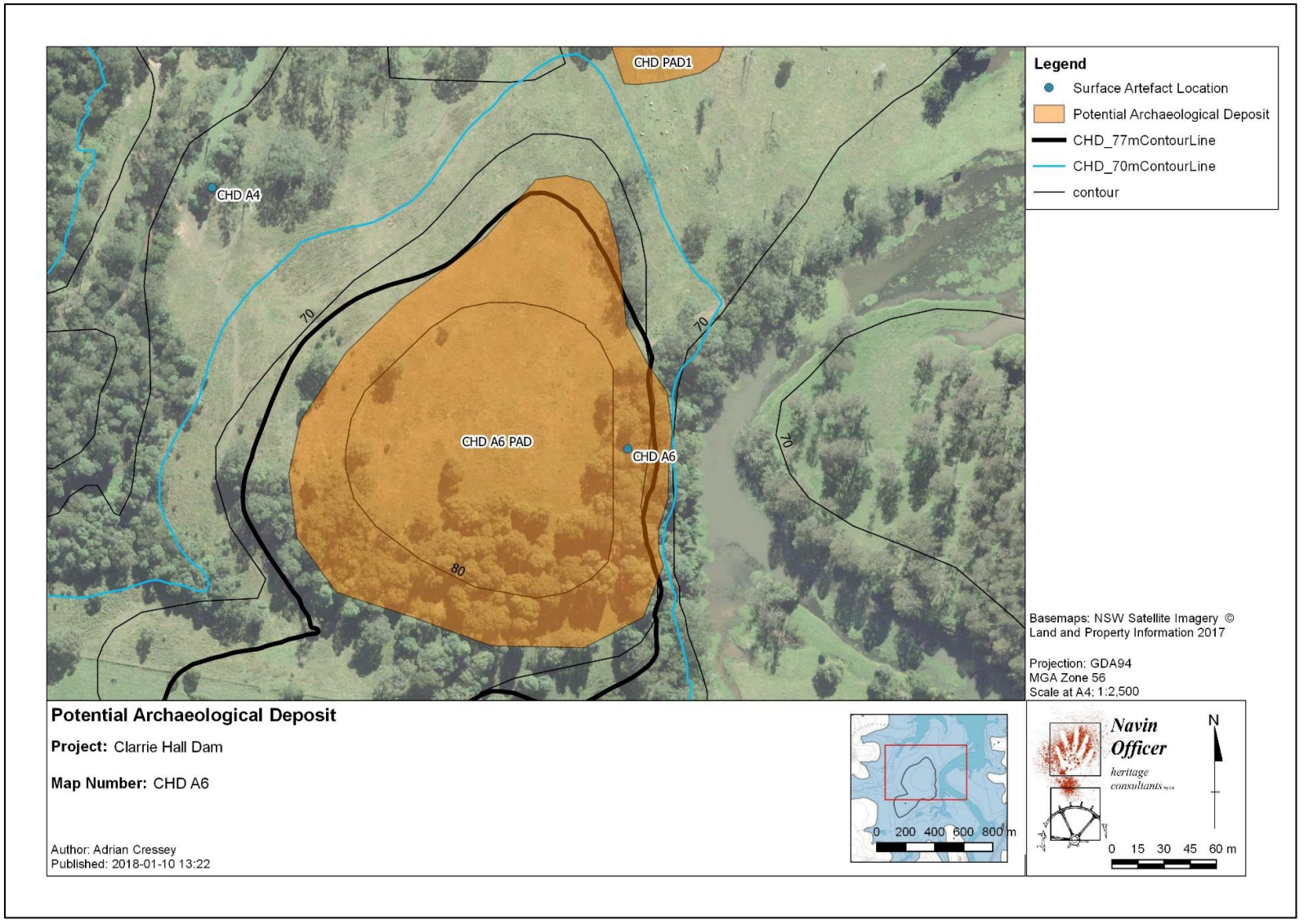


Figure 7.13 General location of site CHD-A6
and anticipated area of PAD associated with the site

CHD-A7 – Isolated Find

GDA Zone 56 – 5290036849231

Aboriginal site CHD-A7 is an isolated find visible in grass and unassociated with ground exposures.

Artefact:

1. rhyolite core with at least four negative scars; 60 x 50 x 30 mm (Figure 7.14).

Topographically the site is situated on moderate gradient slopes adjacent to a stream bank (Figure 7.15). The adjacent tributary would have been highly ephemeral prior to farming practices focussed on harvesting and storing surface water runoff. More permanent water resources are approximately 500 m to the northwest and west.

The site has a south-westerly aspect and is covered by farming pasture, with brown humic sandy silt the underlying soil substrate. Soil depth is unknown.

Ground surface exposure incidence in the broader area has of 2%, with on average 5% visibility within such exposures.

Existing impacts and disturbances in this area relate to de-vegetation, livestock, and some sheet erosion.

Given the gradient at this location and the significant distance from permanent sources of fresh water, this site is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure 7.14 Artefact at site CHD-A7

Figure 7.15 Location of site CHD-A7 - facing northwest

CHD-A8 – Artefact Scatter

GDA Zone 56 – 529026.6849156

Aboriginal site CHD-A8 is a scatter of two stone artefacts. The artefacts were visible in two separate erosion scalds in a mid-slope context.

Artefacts:

1. light grey rhyolite core with at least 6 negative scars; 55 x 55 x 27 mm (Figure 7.16)
2. pink grey silcrete core with at least 4 negative scars; 38 x 35 x 15 mm

Topographically the site is situated on moderate-steep gradient mid-slopes adjacent to a creek line (Figure 7.17). The adjacent tributary would have been highly ephemeral prior to farming practices focussed on harvesting and storing surface water runoff. More permanent water resources are approximately 500 m to the northwest and west.

The site has a northwesterly aspect and is covered by farming pasture, with brown humic sandy silt the underlying soil substrate. Soil depth is unknown.

Ground surface exposure incidence in the immediate area of the artefact is 40%, with 70% visibility within this exposure.

Existing impacts and disturbances in this area relate to de-vegetation, livestock, and sheet erosion.

Given the gradient at this location and the significant distance from permanent sources of fresh water, this site is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure 7.16 Artefact at site CHD-A8

Figure 7.17 Location of site CHD A8 - facing north

CHD-A9 – Isolated Find

GDA Zone 56 – 529324.6848931

Aboriginal site CHD-A9 is an isolated find visible in a rill erosion exposure

Artefact:

1. chalcedony core with at least four negative scars; 31 x 28x 26 mm (Figure 7.18).

Topographically the site is situated on a steep gradient mid-slope adjacent to a drainage line. This site is approximately 250 m southwest of Doon Doon Creek. The site has a southeasterly aspect and is covered by farming pasture, with brown humic sandy silt onto a dense orange clay. (Figure 7.19). Soil depth is approximately ranges from 5-15 cm.

Ground surface exposure incidence in the immediate area of the artefact is 40%, with 80% visibility within this exposure. Existing impacts and disturbances in this area relate to de-vegetation, livestock, sheet and rill erosion..

Given the gradient, position of this site within the landscape, the significant distance from Doon Doon Creek, and the shallow soil depth, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure 7.18 Artefact at site CHD-A9

Figure 7.19 Location of site CHD-A9 - facing northwest

CHD-A10 – Isolated Find

GDA Zone 56 – 529778.6849122

Aboriginal site CHD-A10 is an isolated find visible on a steep vehicle access track subject to considerable sheet erosion

Artefact:

1. white and grey chalcedony core with at least nine negative scars; 42 x 25 x 16 mm (Figure 7.20).

Topographically the site is situated on a steep gradient mid-slope adjacent to Donn Doon Creek. (Figure 7.21). The site has a southeasterly aspect and is covered by farming pasture, with brown sandy silt the underlying soil substrate. Soil depth is shallow.

Ground surface exposure incidence in the immediate area of the artefact is 90%, with 90% visibility within this exposure. Existing impacts and disturbances in this area relate to de-vegetation, livestock, and sheet erosion.

Given the steep gradient and shallow soil depth, this site is assessed as having low potential for the presence of subsurface archaeological deposits.

Figure 7.20 Artefact at site CHD-A10

Figure 7.21 Location of site CHD-A10 - facing northwest

CHD-A11 – Isolated Find (Cultural Significance)

GDA Zone 56 – 529994.6849137

Aboriginal site CHD-A11 is an isolated find identified as an artefact of cultural significance visible on a vehicle access track.

Artefact:

1. light grey coloured fine grained siliceous stone; did not display any artefactual characteristics from a scientific perspective; 38 x 35 x 28 mm, and (Figure 7.22).

   Des Williams (TBLALC – Senior Sites Officer) described the item as a cutting/chopping tool.

Topographically the site is situated on a steep gradient mid-slope and is about 100 m from Doon Doon Creek. The site has a southeasterly aspect and is heavily eroded through sheet and rill erosion (Figure 7.23). The broader area is forested with thick predominantly Eucalypt regrowth.

The soil is a grey yellow silty sand overlaying brow- red clay. Soil depth is very shallow

Ground surface exposure incidence in the immediate area of the artefact is 60%, with 60% visibility within this exposure. Existing impacts and disturbances in this area relate to de-vegetation, livestock, vehicle access, sheet and rill erosion.

Given the steep gradient, high level of disturbance, and shallow depth of the soil, this area is assessed as having low potential for the presence of subsurface archaeological deposits.

Figure 7.22 Artefact at site CH- A11

Figure 7.23 Location of site CH -A11 - facing northwest

CHD-A12 – Isolated Find

GDA Zone 56 – 529741. 6849545

Aboriginal site CHD-A12 is an isolated find visible at the base of an eroded embankment.

Artefact:

1. grey volcanic core with at least two negative scars; 86 x 50 x 36 mm (Figure 7.24).

Topographically the site occurs on moderate gradient mid-slope adjacent to a drainage line, and is about 150 m northeast of Doon Doon Creek (Figure 7.25). Significant erosion from cattle and surface

water runoff has created a large area of exposure, with a large amount of introduced gravels in some areas. The site has a southerly aspect, and is covered by farming pastures, with dark brown sandy silt the underlying soil substrate. Soil is about 25 cm in depth.

Ground surface exposure incidence in the immediate area of the artefact is 90%, with 80% visibility within this exposure. Existing impacts and disturbances in this area relate to de-vegetation, livestock, sheet and rill erosion. Soil is about 25 cm in depth.

Given the landform and gradient of this location, as well as the significant disturbance in the area, this site is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure 7.24 Artefact at site CHD-A12

Figure 7.25 Location of site CHD-A12 - facing northeast

CHD-A13 – Isolated Find

GDA Zone 56 – 529683.6849555

Aboriginal site CHD-A13 is an isolated find visible on a vehicle access track.

Artefact:

1. chalcedony flake; 36 x 25 x 10 mm (Figure 7.26)

Topographically the site is situated on a moderate gradient mid-slope adjacent to a drainage line. This site is approximately 150 m northeast of Doon Doon Creek (Figure 7.27). The site has a south-westerly aspect and is covered by farming pasture, with grey brown gravelly silt. Soil depth is unknown.

Ground surface exposure incidence in the immediate area of the artefact is 70%, with 90% visibility within this exposure. Existing impacts and disturbances in this area relate to de-vegetation, livestock, vehicle access, sheet and rill erosion.

Given the landform and gradient of this location, this site is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure 7.26 Artefact at site CHD-A13

Figure 7.27 Location of site CHD-A13 - facing southwest

CHD-A14 – Isolated Find (Cultural Significance)

GDA Zone 56 – 529314.6848218

Aboriginal site CHD-A14 is an isolated find identified as an artefact of cultural significance visible on grass adjacent to a small ephemeral creek.

Artefact:

1. brown coloured volcanic stone which did not display any artefactual characteristics from a scientific perspective; 130 x 105 x 36 mm (Figure 7.28)

   Des Williams (TBLALC – Senior Sites Officer) described the item as a left handed cutting/chopping tool

Topographically the site is situated on a low gradient bank adjacent to an ephemeral creek (Figure 7.29), approximately 80 m east of Doon Doon Creek.

The site has a westerly aspect and is covered by farming pasture, with dark brown silty loam the underlying soil substrate. Soil depth is unknown.

Ground surface exposure incidence in the immediate area of the artefact is 10%, with 10% visibility within this exposure.

Existing impacts and disturbances in this area relate to de-vegetation, livestock, and sheet erosion.

Given the valley floor context, poor drainage of the landform, and ephemeral nature of the creek line, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure 7.28 Artefact at CHD-A14

Figure 7.29 Location of site CHD-A14 - facing southwest

CHD-A15 – Isolated Find

GDA Zone 56 – 529055. 6848121

Aboriginal site CHD-A15 is an isolated find visible on a vehicle access track.

1. greywacke ground edge axe with at least four negative scars running along one of the edges; 210 x 130 x 45 mm (Figure 7.30).

Topographically the site is situated on low gradient bank of an ephemeral stream. (Figure 7.31). The site is approximately 250 m west of Doon Doon Creek, and is covered by farming pasture with dark brown silty sand the underlying soil substrate. Soil depth is unknown.

Ground surface exposure incidence in the immediate area of the artefact is 80%, with 80% visibility within this exposure.

Existing impacts and disturbances in this area relate to de-vegetation, livestock, vehicle access, and sheet erosion.

Given the landform, ephemeral nature of the creek line, and disturbance of the immediate area, this site is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure 7.30 Artefact at site CHD-A15

Figure 7.31 Location of site CHD-A15 - facing northwest

CHD-A16 – Artefact Scatter & PAD

GDA Zone 56 – 529007.6848166

Aboriginal site CHD-A16 is a scatter of six stone artefacts visible in a broad erosion scour in a mid-slope context above a dam, and associated PAD.

Artefacts:

1. cream quartzite flake with retouch; 60 x 37 x 7 mm (Figure 7.32)
2. white banded chalcedony flake; 36 x 22 x 4 mm
3. cream quartzite flake; 67 x 25 x 50 mm
4. grey chert flake; 21 x 21 x 4 mm
5. grey chert flake 22 x 7 x 2 mm
6. grey sandstone pebble identified by Des Williams as a 'grindstone' for wooden artefacts; 107 x 73 x 30 mm

Topographically the site is situated on a low gradient mid-slope/basal slope, immediately above an ephemeral creek line, which is now dammed. The erosion scald where the artefacts were visible is directly adjacent to a vehicle access track (Figure 7.33). Doon Doon Creek is about 350 m to the east.

An area of PAD (Figure 7.34) approximately 65 x 40 m has been identified with this scatter.

The site has a southerly aspect and is covered by farming pasture, with brown humic sandy silt the underlying soil substrate. Soil depth is unknown but likely shallow.

Ground surface exposure incidence in the immediate area of the artefacts is 80%, with 90% visibility within this exposure.

Existing impacts and disturbances in this area relate to de-vegetation, livestock, dam construction, vehicle access, and sheet erosion.

Given the landform, gradient, and significant disturbance, likely shallow soils, and significant surface water wash, this site is assessed as having a **moderate to high potential** for the presence of subsurface archaeological deposits, possibly in a disturbed context.

Figure 7.32 Artefacts at site CHD-A16

Figure 7.33 Location of site CHD-A16 - facing south

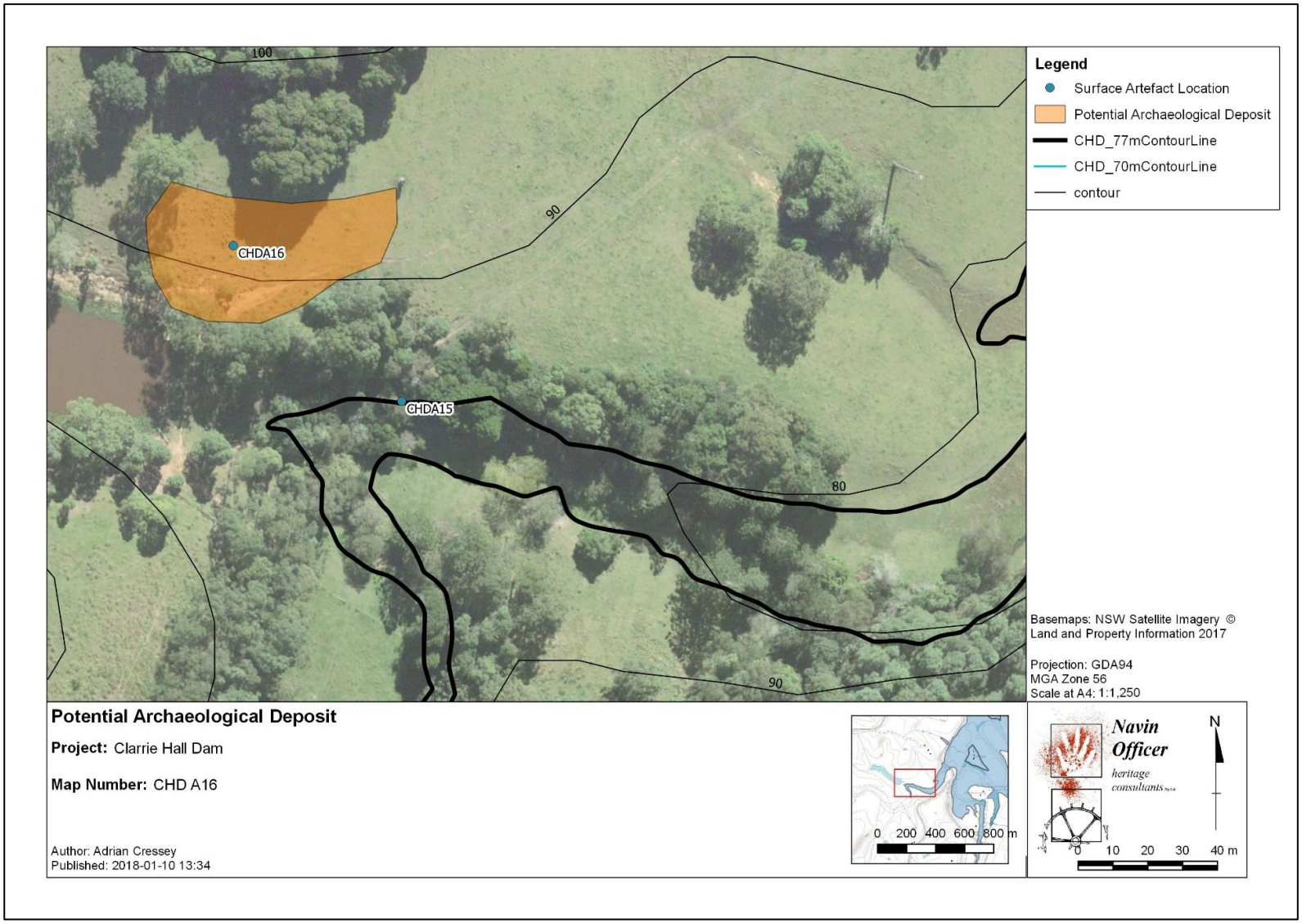


Figure 7.34 Location of Site CHD-A16 showing anticipated extent of PAD associated with the site

CHD-A17 – Artefact Scatter & PAD

GDA Zone 56 – 529657. 6848588

Aboriginal site CHD-A17 is a scatter of at least twenty-five artefacts and associated PAD (Figure 7.35). The artefacts were visible in a cattle track traversing the shoulder of the knoll crest.

Artefacts (sample):

1. greywacke ground edge axe with at least ten negative scars; 175 x 140 x 50 mm (Figure 7.36)
2. cream chalcedony flake; 43 x 40 x 6 mm
3. cream chalcedony flake; 25 x 16 x 5 mm
4. distal; portion of silcrete flake; 15 x 14 x 8 mm
5. cream chalcedony core with at least four negative scars; 65 x 48 x 28 mm
6. cream chalcedony flaked piece; 13 x 8 x 5 mm
7. cream chalcedony flake; 20 x 18 x 6 mm
8. cream chalcedony flaked piece; 15 x 10 x 6 mm

Topographically this site is situated on a broad flat knoll (Figure 7.37) measuring 100 x 80 m. The site overlooks Doon Doon Creek (25 m), and has easy access down to the adjacent valley flats via a low gradient terminal spur crest.

There is also a swampy overflow area during floods 50 m to the north of the site, which is easily accessible. The site has an open aspect and is covered predominantly by farming pasture, with some isolated trees.

Soil at the site is a dark brown sandy loam of at least 50 cm depth.

Ground surface exposure incidence across the landform as a whole is 2%, with 2% visibility within exposures. Ground surface exposure incidence in the immediate area of the artefact scatter is 90%, with 90% visibility within this exposure (Figure 7.38).

Existing impacts and disturbances in this area relate to de-vegetation, livestock, and sheet erosion.

Given the flat and locally elevated nature of this landform, close proximity to multiple fresh water sources, relatively deep soil profile, number of artefacts visible in a small area of exposure, and multiple tool types, this site is assessed as having **high potential** for the presence of *in situ* subsurface archaeological deposits.

Figure 7.35 Sample of artefacts at CHD-A17

Figure 7.36 Greywacke ground edge axe

Figure 7.37 Location of site CHD-A17 - facing south

Figure 7.38 Ground exposure at CHD-A17

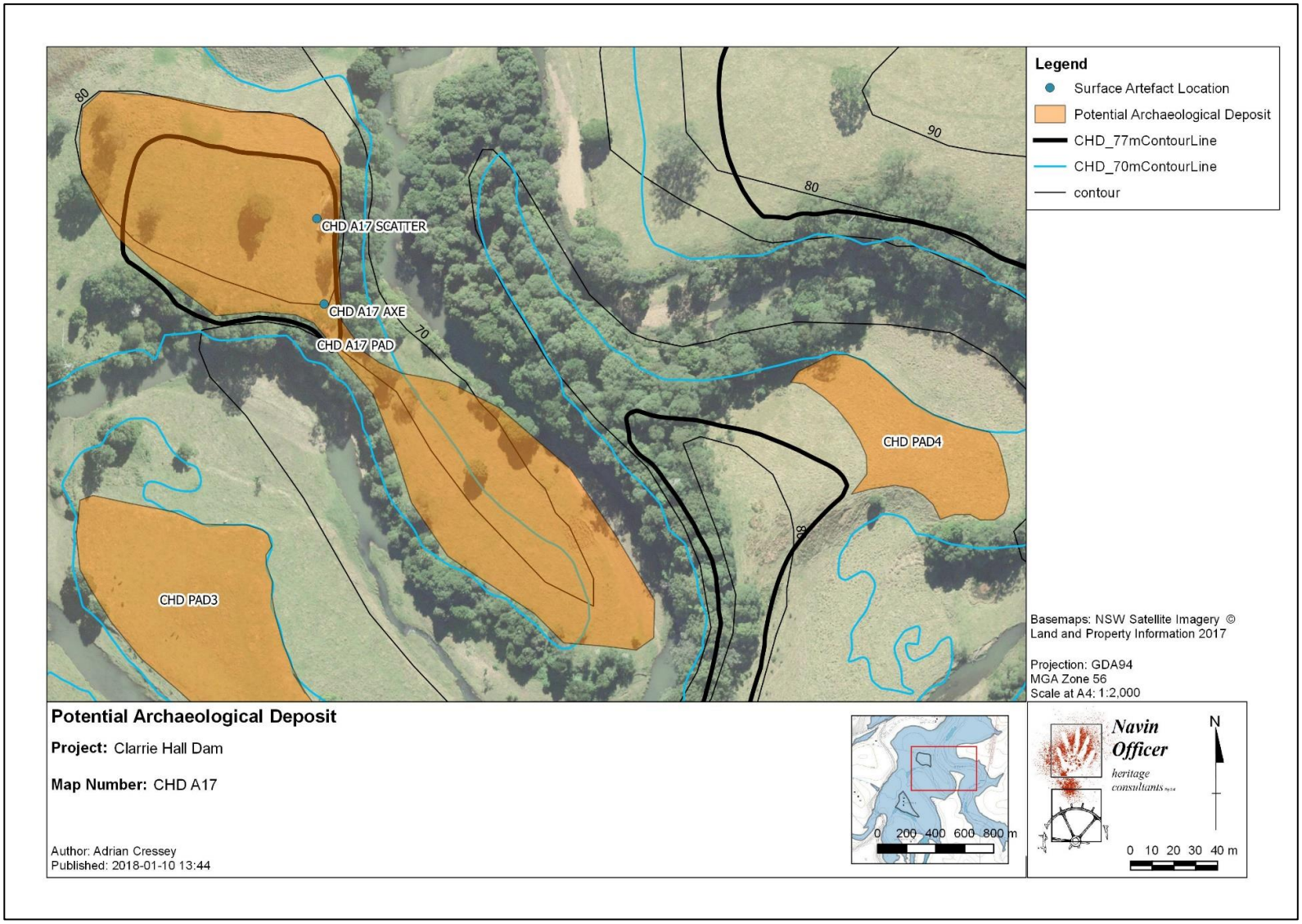


Figure 7.39 Location of site CHD-A17 showing anticipated extent of PAD associated with the site

CHD-A18 – Isolated Find

GDA Zone 56 – 529487.6848386

Aboriginal site CHD-A18 is an isolated find visible on a livestock track (Figure 7.40).

Artefact:

1. grey silcrete flake; 10 x 7 x 2 mm

Topographically the site is situated on the shoulder of a narrow crest, adjacent to an ephemeral creek line. Doon Doon Creek is approximately 80 m northeast of the site. Two houses are situated upslope of the site, and positioned on what would have been the most ideal localised landform for a campsite.

The site has an open aspect and is covered by farming pasture and some isolated trees, with brown sandy silt the underlying soil substrate. Soil depth is unknown.

Ground surface exposure incidence in the immediate area of the artefact is 70%, with 60% visibility within this exposure.

Existing impacts and disturbances in this area relate to de-vegetation, livestock, vehicle access, earthworks, and sheet erosion.

Given the localised disturbance around this site, and the upslope houses being located on the most favourable campsite location in the immediate area, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure 7.40 Location of site CHD-A18 - facing south

CHD-A19 – Artefact Scatter

GDA Zone 56 – 529525.6848279

Aboriginal site CHD-A19 is a scatter of three stone artefacts visible in two exposures that were approximately 30 m apart. The exposures were caused by a driveway and benching for a garage.

Artefacts:

1. white and grey chalcedony flake; 18 x 13 x 4 mm (Figure 7.41)
2. white and grey chalcedony flake; 12 x 10 x 3 mm (Figure 7.41)
3. grey chert core with at least 7 negative scars; 80 x 75 x 35 mm

Topographically the site is situated on the mid-slope and shoulder (Figure 7.42) of a broad knoll directly adjacent to Doon Doon Creek.

The site has an easterly to southeasterly aspect and is covered by farming pasture, with brown humic loam the underlying soil substrate. Soil depth is assessed to be moderate.

Ground surface exposure incidence in the immediate area of the artefact is 80%, with 90% visibility within this exposure.

Existing impacts and disturbances in this area relate to de-vegetation, livestock, driveway and garage construction, vehicle access, and sheet erosion.

Given the significant disturbance at this location, introduced gravels, and its continued use as a farm house block, this site is assessed as having **moderate potential** for the presence of subsurface archaeological deposits in a disturbed context.

Figure 7.41 Artefacts at site CHD-A19

Figure 7.42 Location of site CHD-A19 - facing west

CHD-A20 – Sandstone Pitting/Holes (Cultural Significance)

GDA Zone 56 – 529742. 6848117

This site consists of fifteen to twenty pitted holes in a sandstone platform descending into Doon Doon Creek. A number of rounded cobbles are sitting in some of the holes.

The site was identified as an area of cultural significance.

Some members of the Aboriginal community involved in the archaeological survey were of the opinion that the pitting may have been used during the processing of Black Bean seeds for consumption. The deep and steep sided nature of the holes was suggested to be the result of pounding rather than a grinding action.

Black Bean seeds were an important part of the pre-European Aboriginal diet in the coastal hinterland and rain forested portions of the Queensland and the north coast of New South Wales (Tuechler, Ferrier, & Cosgrove 2014, Harris 1975, Pedley 1993). These seeds are poisonous in their raw form, and require a multi-phased 3-5 day processing period, involving roasting, pounding, and leaching in running water, to release the toxins. This process was historically observed (Roth 1901) and has been passed on via cultural means.

From an archaeological perspective, these holes seem unlikely to have been used for processing Black Bean seeds or other food stuffs. The steep sided nature of the pitting suggests that they were not created by grinding, and in many cases, there is a clear ‘lip’ where the hole transitions onto the sandstone platform. These features suggest that the holes have been shaped by rounded stones being trapped and churned around in the hole, making it deeper and wider. The force of the water running across the surface of the hole prevents the stones from being dislodged.

If these holes were caused by a pounding motion it would be expected that the holes would be wider at the mouth, and that they would be larger. The lip on the inside of the holes suggests that they have been created by a force located inside the hole, rather than a force from above and moving into the hole.

Impacts to this site are limited to water action from the creek itself.

There is **no subsurface potential** at this site due its position within the creek line, and lack of soil.

Figure 7.43 CHD-A20 - Holes in sandstone platform identified as culturally significant

CHD-A21 – Isolated Find

GDA Zone 56 – 529712. 6848071

Aboriginal site CHD-A21 is an isolated find visible on the edge of a small cutting for a farm track.

Artefact:

1. quartzite flaked piece; 32 x 15 x 8 mm (Figure 7.44)

Topographically the site is situated on the moderate gradient slopes of a drainage line adjacent to Doon Doon Creek and an unnamed tributary (Figure 7.45).

The site has a northerly aspect and is covered by farming pasture, with brown sandy silt the underlying soil substrate. Soil depth is unknown.

Ground surface exposure incidence in the immediate area of the artefact is 70%, with 60% visibility within this exposure.

Existing impacts and disturbances in this area relate to de-vegetation, livestock, vehicle access, and sheet erosion.

Given the gradient, and disturbance in the immediate area, this site is assessed as having **low potential** for subsurface archaeological deposits.

Figure 7.44 Artefact at site CHD-A21

Figure 7.45 Location of site CHD-A21 - facing east

CHD-A22 – Artefact Scatter

GDA Zone 56 – 529744.6848075

Aboriginal site CHD-A122 is a scatter of two stone artefacts visible in a deep incised erosion scar in a mid-slope context associated with a vehicle track.

Artefact:

1. grey chert flake; 18 x 15 x 4 mm (Figure 7.46)
2. grey chert flake; 45 x 26 x 12 mm

Topographically the site is situated on the steep lower mid-slopes of a spurline (Figure 7.47) directly adjacent to Doon Doon Creek.

The site has a westerly aspect and is covered by farming pasture, with pale grey brown sandy silt overlying thick orange brown clay.

The soil depth is very shallow as evidenced by the large area of exposed clay.

Ground surface exposure incidence in the immediate area of the artefact is 80%, with 80% visibility within this exposure.

Existing impacts and disturbances in this area relate to de-vegetation, livestock, vehicle access, and sheet erosion.

Given the gradient, and disturbance in the immediate area, this site is assessed as having **low potential** for the presence of subsurface archaeological deposits

Figure 7.46 Artefact at site CHD-A22

Figure 7.47 Location of site CHD-A22 - facing east

CHD-A23 – Isolated Find & PAD

GDA Zone 56 – 529799.6848261

Aboriginal site CHD-A23 is an isolated find visible on a stock track, and associated PAD. On a previous visit to this location two other artefacts were present, but could not be re- found.

Artefact:

1. grey chert core with at least 6 negative scars; 43 x 28 x 27 mm (Figure 7.48).

Topographically the site is situated on the flat to low gradient crest of a bifurcating spurline. (Figure 7.49). The site lies equidistant from two sections of Doon Doon Creek, which is about 90 m to the east and west.

Potential archaeological deposits (CHD-PAD3 and CHD-PAD4) have been identified at the end of both bifurcating spur lines that descend from this site down to lower valley contexts adjacent to Doon Doon Creek.

The area of PAD associated with this site is approximately 60 x 50 m (Figure 7.50).

The site has an open aspect and is covered by farming pasture, with humic brown sandy silt the underlying soil substrate. Soil depth is unknown but likely shallow

Ground surface exposure incidence in the immediate area of the artefact is 50%, with 70% visibility within this exposure.

Existing impacts and disturbances in this area relate to de-vegetation, livestock, vehicle access, and sheet erosion.

Given the landscape context, low gradient, and key position as a likely junction for accessing lower valley resource zones, this site is assessed as having a **moderate to high potential** for the presence of subsurface archaeological deposits.

Figure 7.48 Artefact at site CHD-A23

Figure 7.49 Location of site CHD-A23 - facing northwest

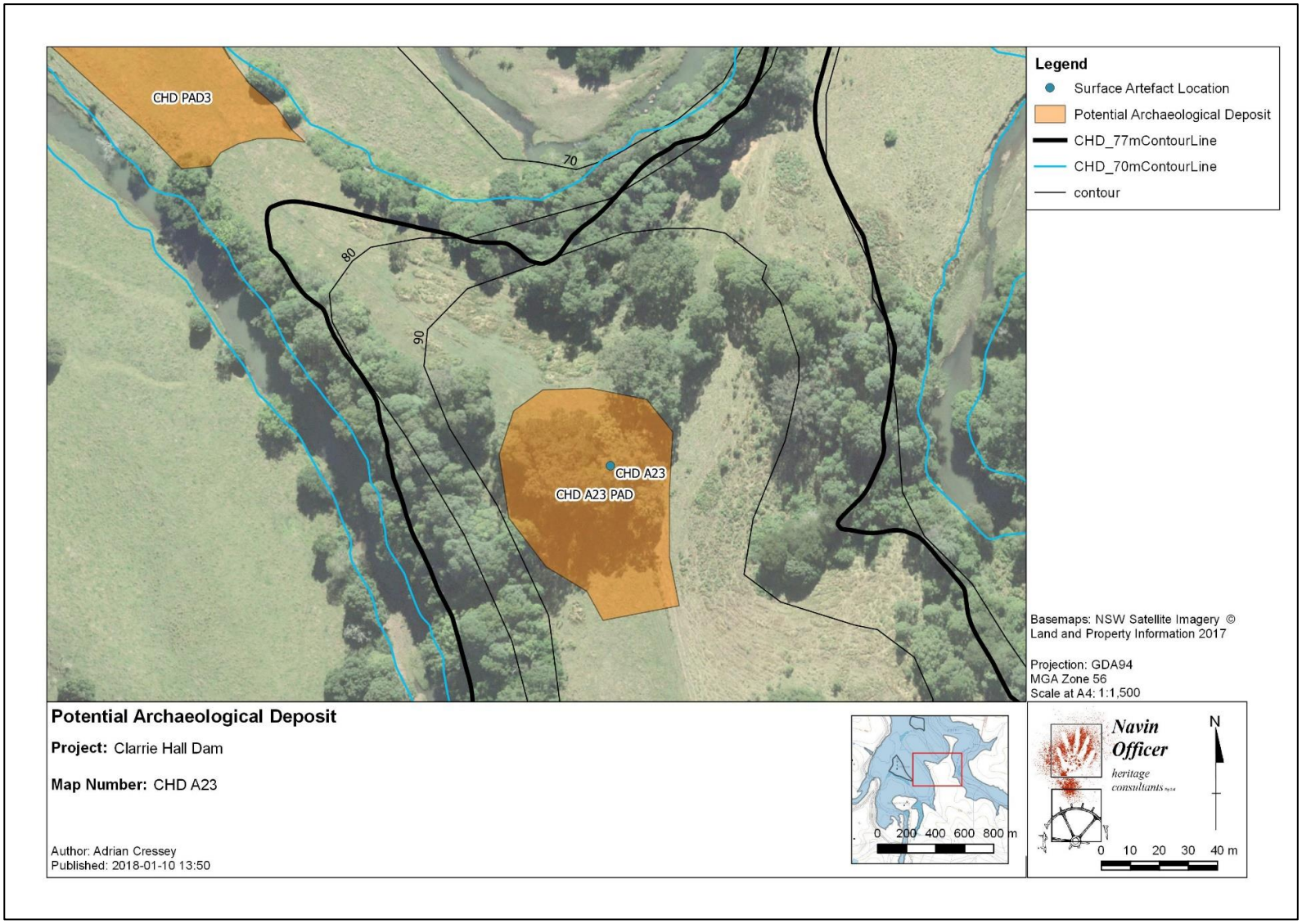


Figure 7.50 Location of site CHD-A23 showing anticipated extent of PAD associated with the site

CHD-A24 – Isolated Find (Cultural Significance)

GDA Zone 56 – 530402.6848008

Aboriginal site CHD-A24 is an isolated find identified as an artefact of cultural significance. The item is a semi-rounded river washed sedimentary rock with some black marking reminiscent of a drawing. The black markings were part of the rock and could not be rubbed off or smudged even when wet. The stone is 270 x 120 x 6 mm and the area covered by black marking is 70 x 50 mm (Figure 7.51).

From an archaeological perspective, the item has no artefactual characteristics, and has not been knapped, pitted, or used for grinding. The black marks seem to be the product of discrete and complex internal layering within the rock. The defined black outline may be the result of a root having had a chemical reaction with the adjacent soil, as the sedimentary rock formed, the outline of this root was then set.

While this item is not an artefact that has been produced, it would have likely been a highly valued object, had it been encountered by past local Aboriginal people, and it is for this reason that the object has cultural significance.

The item was visible in an island of alluvial pebbles and boulders in the middle of the Doon Doon Creek (Figure 7.52). Ground surface exposure incidence in the immediate area of the artefact is 80%, with 95% visibility within this exposure. Existing impacts and disturbances in this area relate to livestock and sheet erosion.

Given the landscape position, and lack of soil, this site is assessed as having **no subsurface archaeological potential**.

Figure 7.51 Artefact at site CHD-A24

Figure 7.52 Location of site CHD-A24 - facing north

CHD-A25 – Isolated Find

GDA Zone 56 – 529583. 6850209

Aboriginal site CHD-A25 is an isolated find visible in an area of disturbance at the base of a power pole.

Artefact:

1. chalcedony flaked piece; 30 x 21 x 6 mm (Figure 7.53).

Topographically the site is situated on a crest of mid-valley context (Figure 7.54). The site is about 40 m east of Doon Doon Creek, however, access to the water's edge is very difficult due to the steepness of terrain.

The site has an open aspect and is covered by mown grass, with dark brown sandy silt the underlying soil substrate. Soil depth is unknown.

Ground surface exposure incidence in the immediate area of the artefact is 70%, with 80% visibility within this exposure.

Existing impacts and disturbances in this area relate to de-vegetation, livestock, excavation for power pole installation, and lawn mowing.

Given the landscape context, difficult access to Doon Doon Creek, and localised disturbance, this site is assessed as having **low potential** for subsurface archaeological deposits.

Figure 7.53 Artefact at site CHD-A25

Figure 7.54 Location of site CHD-A25 - facing northeast

CHD-A26 – Artefact Scatter

GDA Zone 56 – 529653.6849971

Aboriginal site CHD-A26 is a scatter of two stone artefacts (Figure 7.55) visible in an area of sheet erosion adjacent to a vehicle access track. (Figure 7.56).

Artefacts:

1. grey brown chert flake; 20 x 14 x 3 mm
2. grey white chalcedony flake; 20 x 13 x 4 mm

Topographically the site is situated on a crest of mid-valley context. The site is about 40 m east of Doon Doon Creek, however, access to the water's edge is very difficult due to the steepness of terrain.

The site has an open aspect and is located on a rural house block, which is mostly grassed amongst open eucalypts, with brown sandy silt the underlying soil substrate. Soil depth is unknown.

Ground surface exposure incidence in the immediate area of the artefact is 90%, with 40% visibility within this exposure.

Existing impacts and disturbances in this area relate to de-vegetation, benching for building construction, vehicle access, and sheet erosion.

Given the landscape context, difficult access to Doon Doon Creek, and localised disturbance, this site is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure 7.55 Artefacts at site CHD-A26

Figure 7.56 Location of site CHD-A26 - facing north

CHD-A27 – Artefact Scatter & PAD

GDA Zone 56 – 529724.6850649

Aboriginal site CHD-A27 is a scatter of at least twenty artefacts (Figure 7.57) visible on a vehicle access track, and associated PAD (Figure 7.58).

Artefacts (sample):

1. grey silcrete flake; 55 x 51 x 21 mm
2. grey chert core; 31 x 29 x 16 mm
3. grey silcrete flake; 38 x 25 x 10 mm
4. grey chert flaked piece; 20 x15 x 5 mm
5. chalcedony flake; 30 x 28 x 5 mm
6. chalcedony flaked piece; 28 x 11 x 3 mm
7. grey silcrete flake; 31 x 30 x 10 mm
8. grey silcrete core; 60 x 45 x 4 2mm
9. grey silcrete flake; 17 x 10 x 2 mm
10. grey silcrete flake; 51 x 35 x 16 mm

Topographically this site is situated on a broad flat/low gradient terminal spur crest measuring 170 x100 m (Figure 7.59). The site overlooks Doon Doon Creek (15 m), and has easy access down to the current shoreline of the dam.

The area of PAD associated with the surface scatter is about 200 x 100 m (Figure 7.60). The aspect of the site ranges between open to northerly, and is currently used as park land for public access, with grass and open trees the main vegetation cover.

The soil at the site is dark brown sandy silt. Soil depth is estimated to be 30-50 cm.

Ground surface exposure incidence across the landform as a whole is 10%, with 90% visibility within exposures. Ground surface exposure incidence in the immediate area of the artefact scatter (vehicle track) is 90%, with 90% visibility within this exposure.

Existing impacts and disturbances in this area relate to de-vegetation, vehicle access, general grounds keeping, and sheet erosion.

Given the flat/low gradient locally elevated nature of this landform, close proximity to Doon Doon Creek, estimated soil depth, and number of artefacts visible in a small area of exposure (10% across the landform), this site is assessed as having **high potential** for the presence of *in situ* subsurface archaeological deposits.

Figure 7.57 Artefacts at site CHD-A27

Figure 7.58 Location of site CHD-A27 - facing north

Figure 7.59 Location of site CHD-A27 PAD - facing southeast

Figure 7.60 Location of site CHD-A27 showing anticipated extent of PAD associated with the site

CHD-A28 – Isolated Find (Cultural Significance)

GDA Zone 56 – 529965. 6849999

Aboriginal site CHD-A28 is an isolated find identified as an artefact of cultural significance.

The item is a reddish brown stone, 120 x 110 x 50 mm (Figure 7.61); it did not display any artefactual characteristics from a scientific perspective.

Topographically the site is situated on a mid-slope, adjacent to an ephemeral tributary draining into the former alignment of Doon Doon Creek.

The site has a northeasterly aspect and is covered by farming pasture and open woodland, with humic brown sandy silt the underlying soil substrate. Soil depth is fairly shallow, with visible clay in a number of exposures.

Ground surface exposure incidence in the immediate area of the artefact is 0%, with 40% visibility within this exposure. Existing impacts and disturbances in this area relate to de-vegetation, livestock, and sheet erosion.

Given the landform, and ephemeral nature of the creek line, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure 7.61 Possible ochre identified as culturally significant at site CHD-A28

CHD-A29 – Isolated Find (Cultural Significance)

GDA Zone 56 – 530208.6849906

Aboriginal site CHD-A29 is an isolated find identified as an artefact of cultural significance.

The item is a piece of fine-grained sedimentary stone,100 x 90 x 50 mm (Figure 7.62); it did not display any artefactual characteristics from a scientific perspective.

Topographically the site is situated on a localised crest in a drainage line in a lower valley context, adjacent to an ephemeral tributary draining into the former alignment of Doon Doon Creek.

The site has an open aspect and is covered by farming pasture adjacent to areas of closed revegetated forest, with brown sandy silt the underlying soil substrate.

Ground surface exposure incidence in the immediate area of the artefact is 5%, with 25% visibility within this exposure.

Existing impacts and disturbances in this area relate to de-vegetation, livestock, and sheet erosion. Soil depth is unknown, but likely shallow.

Given the landscape context, ephemeral nature of the creek line, and likely shallow soils, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure 7.62 Possible ochre identified as culturally significant at site CHD-A29

CHD-A30 – Artefact Scatter & PAD

GDA Zone 56 – 528571.6852048

Aboriginal site CHD-A30 is a scatter of six stone artefacts (Figure 7.63) visible in a broad erosion scour in a cleared horse paddock, and associated PAD (Figure 7.64).

Artefacts:

1. greyish white chalcedony flake; 16 x 14 x 3 mm
2. white chalcedony flake; 29 x 20 x 4 mm
3. greyish white chalcedony flake; 21 x 10 x 5 mm
4. white chalcedony flake; 16 x 10 x 3 mm
5. white chalcedony core; 17x16 x 10 mm
6. reddish white chalcedony flake; 15 x 9 x 2 mm

Topographically the site is on the moderate gradient slopes of a terminal spur crest, no more than 25 m from the current dam shoreline.

Prior to dam construction, this landform would have been flanked by two ephemeral drainage lines, and would have been at least 100-200 m from any permanent tributaries, with the former alignment of Doon Doon Creek over 500 m away.

The site has a northwesterly aspect and is covered by farming pasture.

The area of PAD associated with this site is about 200 x 70 m (Figure 7.65).

The clearing is surrounded by closed revegetated eucalypt forest, with brown silty sand the underlying soil substrate. Soil depth is unknown, but estimated to be at least 40 cm on the low gradient crest and less than this on the mid-slopes given the amount of surface water wash that has already occurred.

Ground surface exposure incidence in the immediate area of the artefact is 90%, with 50% visibility within this exposure. Existing impacts and disturbances in this area relate to de-vegetation, livestock, vehicle access, and sheet erosion.

Given the number of artefacts, landscape context, and estimated soil depth, this site is assessed as having **moderate to high potential** for the presence of subsurface archaeological deposits.

Figure 7.63 An artefact at site CHD-A30

Figure 7.64 Location of site CHD-A30 - facing south

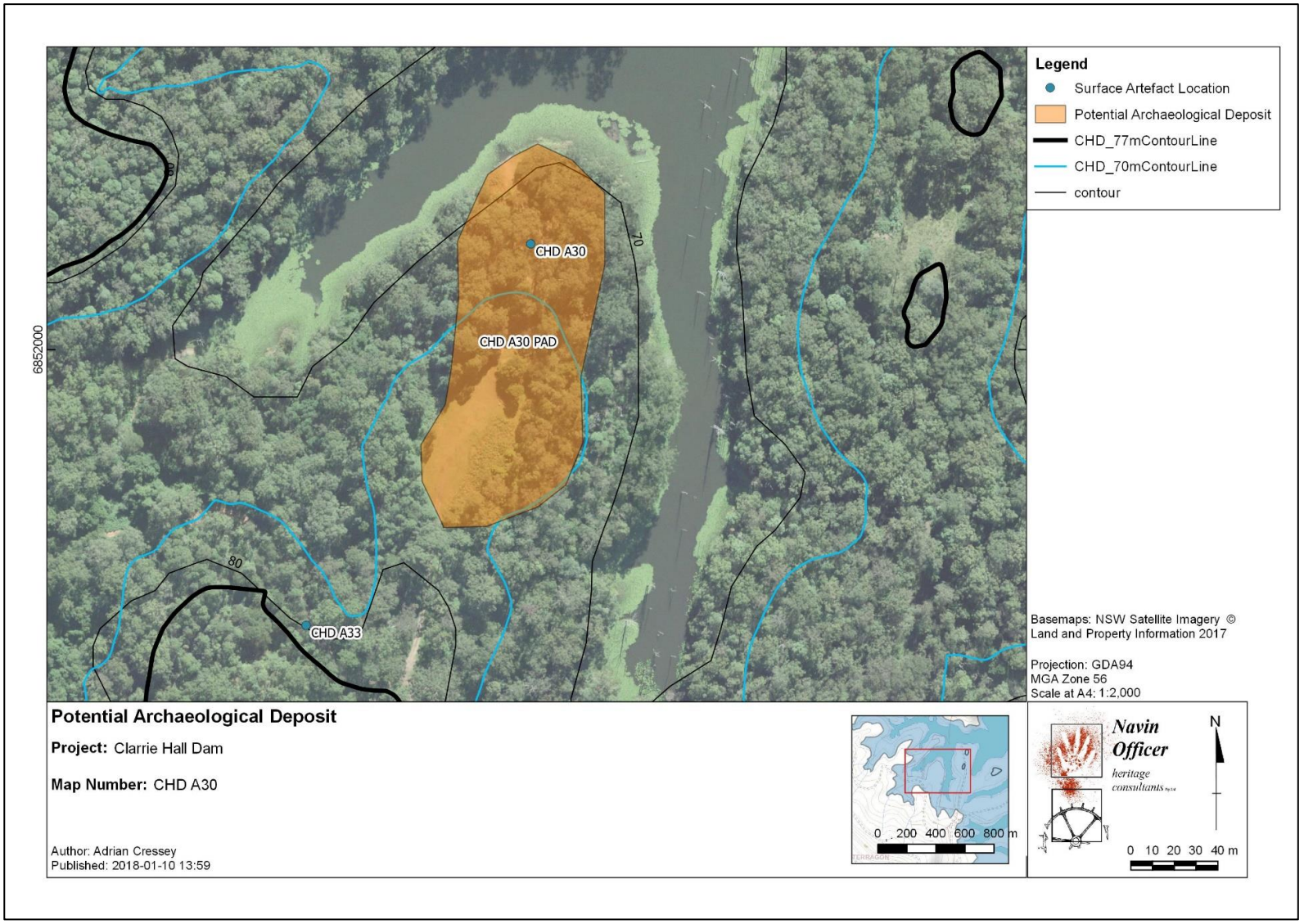


Figure 7.65 Location of site CHD-A30 showing anticipated extent of PAD associated with the site

CHD-A31 – Artefact Scatter

GDA Zone 56 – 528569.6852189

Aboriginal site CHD-A31 is a scatter of three stone artefacts (Figure 7.66) visible in broad erosion scour at the end of a vehicle track (Figure 7.67).

Artefacts:

1. chalcedony flake; 11 x 10 x 2 mm
2. chalcedony manuport; 26 x 15 x 5 mm
3. chalcedony manuport with potlid scars; 16 x 11 x 2 mm

Topographically the site is situated on a flat terminal spur crest at least 35 m from the current dam shoreline. Prior to dam construction, this landform would have been flanked by two ephemeral drainage lines, and would have been at least 100 m from any permanent tributaries, with the former alignment of Doon Doon Creek over 400 m away.

The site has open aspect and is covered by bracken and other understorey plants, but was obviously previously cleared. The clearing was used as a scout camp in the 1970s and 1980s (pers. comm. Ian Fox), with some structures still visible in the trees. The site is surrounded by closed eucalypt forest (revegetated) with grey silty sand the underlying soil substrate. Soil depth is unknown.

Ground surface exposure incidence in the immediate area of the artefact is 80%, with 70% visibility within this exposure. Existing impacts and disturbances in this area relate to de-vegetation, vehicle access, scout camp, and sheet erosion.

Given the landscape context, likely significant distance from permanent water prior to dam construction, and disturbance from heavy use during the areas use as a scout camp/obstacle course, this site is assessed as having **low-moderate potential** for the presence of subsurface archaeological deposits in a disturbed context.

Figure 7.66 Artefacts at site CHD-A31

Figure 7.67 Location of site CHD-A31 - facing east

CHD-A32 – Artefact Scatter

GDA Zone 56 – 528201.6851993

Aboriginal site CHD-A32 is a scatter of at least 15 stone artefacts (Figure 7.68) visible in broad erosion scour used for vehicle parking and camping (Figure 7.69).

Artefacts (sample):

1. chert core; 28 x 25 x 15 mm
2. quartz flake; 18 x 15 x 4mm
3. chert flake with heat shatter; 16 x 14 x 2 mm
4. chalcedony flake; 13 x 6 x 4 mm
5. quartz flake; 13 x 10 x 3 mm
6. silcrete flake; 50 x 45 x 11 mm
7. silcrete flake; 25 x 21 x 3 mm
8. chert flaked piece; 16 x10 x 4 mm
9. silcrete flake; 20 x 16x 5 mm
10. quartz flake; 21 x 17 x 4 mm

Topographically the site is situated on a flat/low gradient crest of a spur in a mid-valley context. The area is outside of the study area, and is approximately 50 m from the 77 m contour for the proposed dam raising. The site is approximately 200 m from the current dam shoreline, and even further from any fresh water location prior to dam construction.

The site has an open aspect, and is mostly ground exposure covered by leaf litter. The ground has been subject to heavy surface water wash and compaction from camping and vehicle parking. The area is surrounded by thick secondary eucalypt forest.

The soil is grey brown sandy silt. Soil depth is unknown but likely shallow and heavily compacted.

Ground surface exposure incidence in the immediate area of the artefact is 95%, with 60% visibility within this exposure. Existing impacts and disturbances in this area relate to vegetation clearance, camping, vehicle access, and sheet erosion.

Given the landform, significant disturbance and compaction, likely shallow soils, and significant surface water wash, this site is assessed as having a **moderate potential** for the presence of shallow subsurface archaeological deposits in a disturbed context.

Figure 7.68 Some artefacts at site CHD-A32

Figure 7.69 Location of site CHD-A32 - facing north

CHD-A33 – Isolated Find

GDA Zone 56 – 528468.6851873

Aboriginal site CHD-A33 is an isolated find visible on a vehicle access track.

1. grey silcrete flake with a longitudinal cone split; 25 x 13 x mm (Figure 7.70**)**.

Topographically the site is situated in an area that would have been a mid-slope, prior to the road cutting where the artefact was found (Figure 7.71). The site is over 100 m from the current dam shoreline, and over 500 m from any pre-dam permanent water sources.

The site is surrounded by thick secondary eucalypt forest with heavy undergrowth, with grey brown silt sand the underlying soil substrate. Soil depth is unknown but it is likely to be shallow.

Ground surface exposure incidence in the immediate area of the artefact is 95%, with 70% visibility within this exposure.

Existing impacts and disturbances in this area relate to vegetation clearance, vehicle access, and sheet erosion.

Given the landform, compaction, likely shallow soils, and significant surface water wash, this site is assessed as having **low potentia**l for the presence of shallow subsurface archaeological deposits in a disturbed context.

Figure 7.70 Artefact at site CHD-A33

Figure 7.71 Location of site CHD-A33 - facing south

CHD-A34 – Artefact Scatter

GDA Zone 56 – 528710.6851683

Aboriginal site CHD-A34 is a scatter of seven stone artefacts (Figure 7.72) visible on a vehicle access track (Figure 7.73).

This site stretches across the 77 metre contour for the proposed dam raising, meaning only some parts of this site will be impacted.

Artefacts:

1. proximal portion of chert flake with 50% cortex; 51 x 40 x 20 mm
2. chalcedony core with at least 5 negative scars; 30 x 25 x 20 mm
3. chert flaked piece; 20 x14 x 5 mm
4. chert flake; 10 x 8 x 2mm
5. silcrete flake; 42 x 30 x 11 mm
6. silcrete flake; 22 x 18 x 3 mm
7. chalcedony core with at least 6 negative scars; 42 x 35 x 27 mm

Topographically this site is situated on the crest and mid-slopes of a spurline in a mid-valley context. The site is about 100 m from the current dam shoreline, and over 500m from any pre-dam permanent water sources.

The site is surrounded by thick secondary eucalypt forest with heavy undergrowth, with compact grey brown silty sand the underlying soil substrate. Soil depth is shallow, evidenced by visible clay in areas of sheet erosion on track.

Ground surface exposure incidence in the immediate area of the artefact is 75%, with 60% visibility within this exposure.

Existing impacts and disturbances in this area relate to vegetation clearance, vehicle access, and sheet erosion.

Given the landform, compaction, shallow eroded soils, and significant surface water wash, this site is assessed as having **low-moderate potential** for the presence of shallow subsurface archaeological deposits in a disturbed context.

Figure 7.72 Artefact at site CHD-A34

Figure 7.73 Location of site CHD A34 - facing south

CHD-A35 – Isolated Find & PAD

GDA Zone 56 – 528951.6851747

Aboriginal site CHD-A35 is an isolated find visible in a small raised area of spoil, and associated PAD.

1. distal portion of a chalcedony flake; 8 x 5 x 2 mm (Figure 7.74).

Topographically the site is situated on the low gradient mid-slopes of a terminal spur crest (Figure 7.75). The most easterly extent of this site would have been within approximately 100 m of Doon Doon Creek prior to dam construction.

The aspect of the site ranges from open to north-easterly, and is covered by grass in cleared areas, and thick secondary eucalypt forest on the moderate to gradient slopes on the side of the spur.

The soil at this site is dark brown silty sand. Areas of localised disturbance suggest soils are at least 40 cm in depth

The broader area has significant subsurface potential given the meandering low to flat gradient of the spur. The area that has been designated as PAD is approximately 500 x 80 m (Figure 7.76).

Ground surface exposure incidence across the landform as a whole is 2%, with 10% visibility within exposures. Ground surface exposure incidence in the immediate area of the artefact is 80%, with 60% visibility within this exposure.

Existing impacts and disturbances in this area relate to vegetation clearance, vehicle access, sheet erosion, and slashing of grass. Some land remediation has also occurred in places, likely with a tractor blade, creating small areas of raised soil.

Given the low and flat gradient of this landform, its proximity to Doon Doon Creek, and its estimated soil depth, this site is assessed as having **moderate to high potential** for the presence of subsurface archaeological deposits.

Figure 7.74 Artefact at site CHD A35

Figure 7.75 Location of site CHD A35 - facing southwest

Figure 7.76 Location of site CHD-A35 showing anticipated extent of PAD associated with site

CHD-A36 – Artefact Scatter & PAD

GDA Zone 56 – 529337.6852037

Aboriginal site CHD-A36 is a scatter of nine stone artefacts visible in an area of sheet erosion caused by a recent flooding event (Figure 7.77**)**, and associated PAD. The site is directly adjacent to the existing dam shoreline.

Artefacts:

1. chalcedony manuport; 55 x 35 x 15 mm
2. rhyolite core with 10% cortex and seven negative scars; 85 x 60 x 55 mm
3. chalcedony flake; 30 x 25 x 15 mm
4. proximal portion of a silcrete flake; 30 x 28 x 5 mm
5. chalcedony flake with a longitudinal cone split; 20 x 10 x 5 mm
6. chert flake; 30 x 10 x 5 mm
7. chert flake with a longitudinal cone split; 21 x 10 x 5 mm
8. blue agate flake; 30 x 16 x 4 mm (Figure 7.78)
9. silcrete core with at least 4 negative scars; 80 x 62 x 28 mm

Topographically this site is situated on a terminal spur crest directly adjacent to the current dam shoreline. This site is approximately 70 m west of the former alignment of Doon Doon Creek.

The broader area (85 x 40 m) (Figure 7.79) has significant subsurface potential given the flat to low gradient and proximity to water.

The aspect of the site ranges from open to easterly, and is covered by a mix of grass, eucalypts, and low scrub.

The soil at this site is yellow brown silty sans. Areas of localised disturbance suggest soils are at least 40 cm in depth.

Ground surface exposure incidence across the landform as a whole is 10%, with 50% visibility within exposures. Ground surface exposure incidence in the immediate area of the artefact is 70%, with 70% visibility within this exposure.

Existing impacts and disturbances in this area relate to vegetation clearance, vehicle access, sheet erosion, and slashing of grass. Some land disturbance has also occurred in places, likely with a tractor blade, creating small areas of raised soil

Given the low and flat gradient of this landform, its proximity to Doon Doon Creek, the number of surface artefacts present, and its estimated soil depth, this site is assessed as having high potential for the presence of subsurface archaeological deposits.

Figure 7.77 Location of site CHD-A36 - facing southwest

Figure 7.78 Artefact at site CHD-A36

Figure 7.79 Location of site CHD-A36 showing anticipated extent of PAD associated with the site

CHD-A37 – Isolated Find & PAD

GDA Zone 56 – 529127.6851364

Aboriginal site CHD-A37 is an isolated find visible in a small exposure adjacent to the current dam shoreline, and an associated PAD.

1. distal portion of a chert flake; 10 x 8 x 2 mm (Figure 7.80)

Topographically the site is situated on the flat portion of a terminal spur crest. The broader area has significant subsurface potential given the gradient. The most easterly extent of this site would have been within 100 m of permanent water.

The aspect of the site ranges from open to easterly, and is covered by a mix of grass and open eucalypts. The site has good views towards the Two Sisters peaks, a culturally important site for the local indigenous community (Figure 7.81).

The soil at this site is brown silty sand. Areas of localised disturbance suggest soils are at least 40 cm in depth.

The area that has been designated as PAD is approximately 100 x 50 m (Figure 7.82).

Ground surface exposure incidence across the landform as a whole is 1%, with 20% visibility within exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, vehicle access, sheet erosion, and slashing of grass. Some land disturbance has also occurred in places, likely with a tractor blade, creating small areas of raised soil.

Given the flat gradient of this landform, its proximity to water, and its estimated soil depth, this site is assessed as having **moderate to high potential** for the presence of subsurface archaeological deposits.

Figure 7.80 Artefact at site CHD-A37

Figure 7.81 Location of site CHD A37 - facing northeast towards Two Sisters peaks

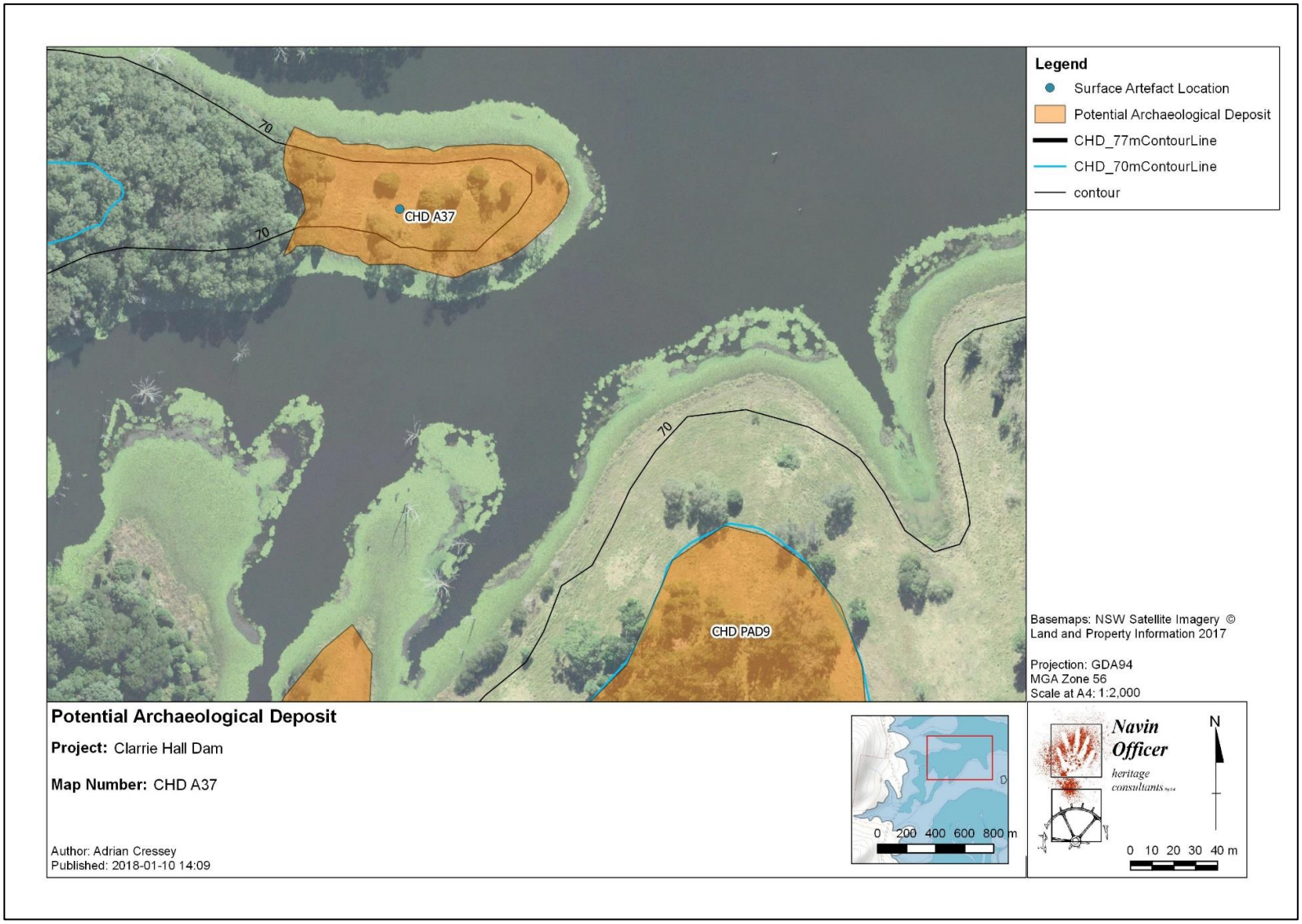


Figure 7.82 Location of site CHD-A37 showing anticipated extent of PAD associated with the site

CHD-A38 – Isolated Find & PAD

GDA Zone 56 – 529469.6851173

Aboriginal site CHD-A38 is an isolated find visible in a small exposure amongst thick grass cover, and associated PAD.

Artefact:

1. silcrete flake with 20% cortex; 55 x 35 x 15 mm (Figure 7.83)

Topographically the site is situated on the crest and shoulder slopes of a broad spurline (Figure 7.84). This site is directly adjacent to the current dam shoreline and approximately 50-100 m from the original alignment of Doon Doon Creek.

The aspect of the site is open, and is heavily grassed with patches of mostly introduced trees (pines).

The soil at this site is humic sandy silt. Soils are estimated to be at least 40 cm in depth on the low gradient areas of the spur crest.

The area that has been designated as PAD is approximately 170 x 150 m (Figure 7.85).

Ground surface exposure incidence across the landform as a whole is 2%, with 50% visibility within exposures. Ground surface exposure incidence in the immediate area of the artefact is 50%, with 50% visibility within this exposure. The low visibility across the landform suggests more artefacts are likely to be present.

Existing impacts and disturbances in this area relate to vegetation clearance, vehicle access, sheet erosion, and slashing of grass.

A portion of this area also corresponds with historic site CHD-H1.

Given the landform, flat/low gradient, its proximity to Doon Doon Creek, and its estimated soil depth, this site is assessed as having **moderate to high** potential for the presence of subsurface archaeological deposits.

Figure 7.83 Artefact at site CHD-A38

Figure 7.84 Location of site CHD-A38 - facing east

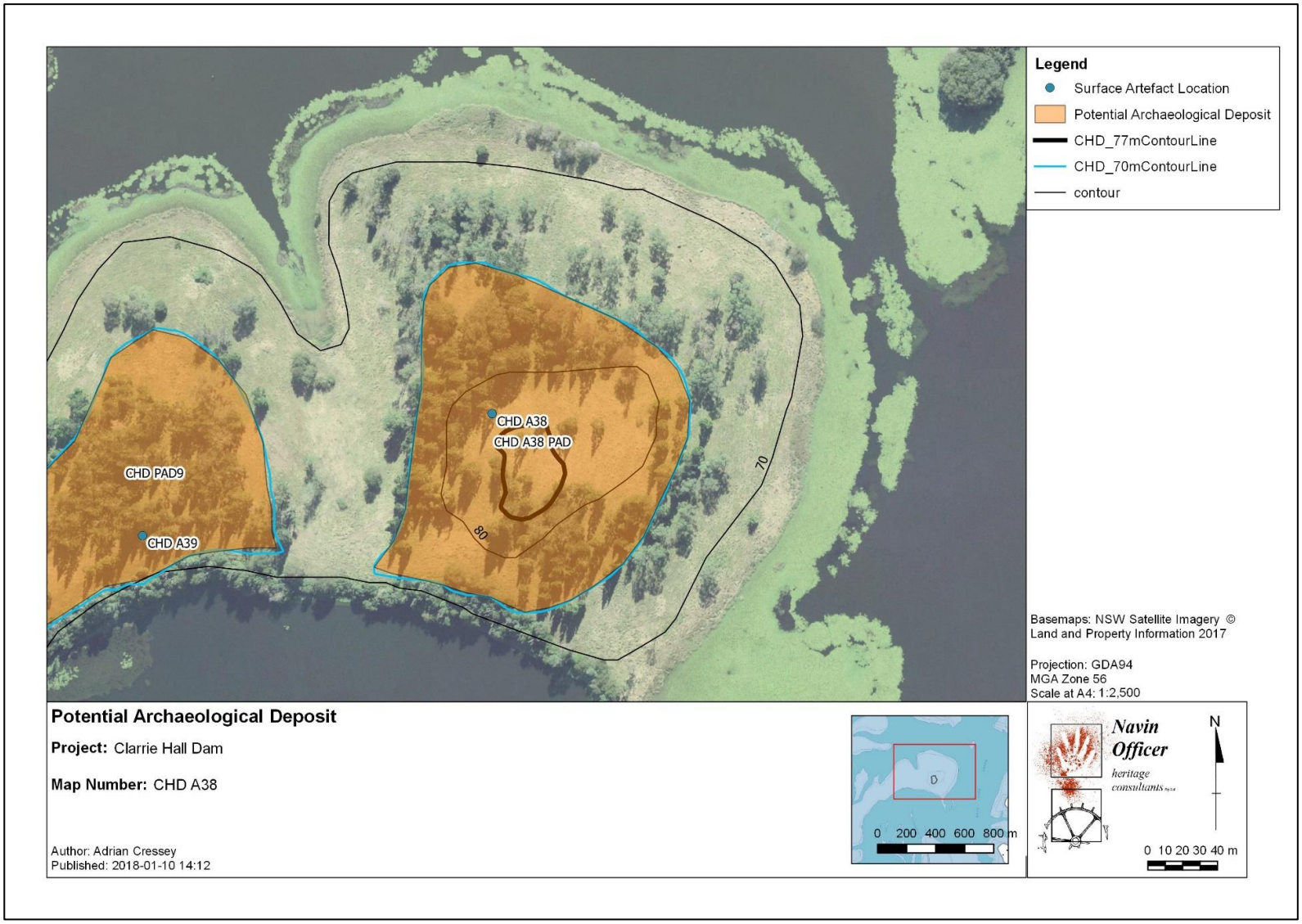


Figure 7.85 Location of site CHD-A38 showing anticipated extent of PAD associated with the site

CHD-A39 – Isolated Find

GDA Zone 56 – 529270.6851100

Aboriginal site CHD-A35 is an isolated find visible in an area of sheet erosion beneath a pine tree.

Artefact:

1. basalt flake; 50 x 35 x 15 mm (Figure 7.86).

Topographically the site is situated on the crest and mid-slopes of a broad spurline that has very good access to Byrill Ridge, which is the dominant range forming the western border of the valley (Figure 7.87**)**. Byrill ridge was an ideal travel route for Aboriginal people in pre-European times, facilitating travel from the valley floor towards Wollumbin and the Two Sisters to the north. The gradient ranges from flat to low gradient on the crest and moderate on the side mid-slopes.

This site is directly adjacent to the current dam shoreline and approximately 50-100 m from the original alignment of Doon Doon Creek. The aspect of the site ranges from open to northeasterly, and is heavily grassed with patches of mostly introduced trees (pines).

The area that has been designated as PAD (separate from this site) (CHD PAD9) is approximately 500 x 100 m.

The soil at this site is dark brown sandy silt. Soils are estimated to be at least 40 cm in depth on the low gradient areas of the spur crest.

Ground surface exposure incidence across the landform as a whole is 2%, with 50% visibility within exposures. In the immediate area of the artefact Ground surface exposure incidence is 5%, with 40% visibility within this exposure.

Existing impacts and disturbances in this area relate to vegetation clearance, vehicle access, sheet erosion, and slashing of grass.

Given the landform, flat/low gradient, its proximity to Doon Doon Creek, and its estimated soil depth, this site is assessed as having **moderate to high potential** for the presence of subsurface archaeological deposits.

Figure 7.86 Artefact at site CHD A39

Figure 7.87 Location of site CHD-A39 - facing west

CHD-A40 – Artefact Scatter

GDA Zone 56 – 529074.6851103

Aboriginal site CHD-A40 is a scatter of two artefacts (Figure 7.88) visible in an area of erosion beneath a tree (Figure 7.89).

Artefacts:

1. basalt flaked piece; 40 x 30 x 5 mm
2. chalcedony manuport (nodule); 40 x 30 x 20 mm

Topographically the site is situated on a low gradient spur crest. This site is about 20 m from the current dam shoreline, and 100 m from the original alignment of Doon Doon Creek.

The aspect of the site ranges from open to north easterly, and is heavily grassed with patches of mostly introduced trees (pines).

The soil at this site is grey brown silty sand. Soils are estimated to be at least 40 cm in depth on the low gradient areas of the spur crest.

The area that has been designated as PAD (separate from this site) (CHD PAD9) is approximately 500 x 100 m.

Ground surface exposure incidence across the landform as a whole is 2%, with 50% visibility within exposures. Ground surface exposure incidence in the immediate area of the artefact is 3%, with 40% visibility within this exposure.

Existing impacts and disturbances in this area relate to vegetation clearance, vehicle access, sheet erosion, and slashing of grass.

Given the landform, low gradient, its proximity to Doon Doon Creek, and its estimated soil depth, this site is assessed as having **moderate to high potential** for the presence of subsurface archaeological deposits.

Figure 7.88 Artefact at site CHD A40

Figure 7.89 Location of site CHD-A40 - facing north

CHD-A41 – Artefact Scatter

GDA Zone 56 – 529006.6850910

Aboriginal site CHD-A41 is a scatter of ten artefacts (Figure 7.90) visible in area of sheet erosion (Figure 7.91).

Artefacts:

1. white chert flake; 30 x 25 x 3 mm
2. proximal portion of crazed white chert flake; 40 x 20 x 10 mm
3. basalt flake; 30 x 20 x 5 mm
4. crazed white chert flake; 20 x 15 x 3 mm
5. basalt hammer stone; 90 x 60 x 50 mm
6. crazed white chert flaked piece; 30 x 20 x 10 mm
7. quartz flake; 6 x 5 x 2mm
8. distal portion of a white chert flake; 5 x 4 x 1 mm
9. grey silcrete flake; 23 x 20 x 3 mm
10. grey silcrete core; 4 x 40 x 35 mm

Topographically the site is situated on a flat portion of spur crest. The site is elevated above the current dam shoreline, and 50-100 m from the original alignment of Doon Doon Creek. The aspect of the site ranges from open to north easterly, and is heavily grassed with patches of introduced and native understorey plants.

The area that has been designated as PAD (separate from this site) (CHD PAD9) is approximately 500 x 100 m.

The soil at this site is dark brown sandy silt. Soils are estimated to be about 40 cm in depth on the low gradient areas of the spur crest.

Ground surface exposure incidence across the landform as a whole is 2%, with 50% visibility within exposures. In the immediate area of the artefact exposure incidence is 50%, with 75% visibility within this exposure.

Existing impacts and disturbances in this area relate to vegetation clearance, vehicle access, sheet erosion, and slashing of grass.

Given the landform, flat gradient, its proximity to Doon Doon Creek, number of surface artefacts present, and its estimated soil depth, this site is assessed as having **high potential** for the presence of subsurface archaeological deposits.

Figure 7.90 Some artefacts at site CHD A41

Figure 7.91 Location of site CHD-A41 - facing south

CHD-A42 – Isolated find

GDA Zone 56 – 528999.6850748

Aboriginal site CHD-A40 is an isolated find visible in an area of sheet erosion above the dam shoreline (Figure 7.92).

Artefacts:

1. proximal portion of a chert flake; 17 x 10 x 2 mm.

A piece of chalcedony likely produced by heat shatter was also observed.

Topographically the site is on the low gradient shoulder of a spur crest. The site is within 20 m of the current dam shoreline, and approximately 50 m from the original alignment of Doon Doon Creek. Direct access to fresh water may have been difficult due to the steep nature of the descending slopes.

The aspect of the site is open and is mostly grassed, with grey brown silty sand the underlying soil substrate. Soil depth is unknown although estimated to be less than 30 cm.

Ground surface exposure incidence across the landform as a whole is 2%, with 50% visibility within exposures. Ground surface exposure incidence in the immediate area of the artefact is 20%, with 60% visibility within this exposure.

Existing impacts and disturbances in this area relate to vegetation clearance, vehicle access, sheet erosion, and slashing of grass.

Given the landform, difficulty in directly accessing Doon Doon Creek, and the likely shallow soil depth, this site is assessed as having a **low-moderate potential** for the presence of subsurface archaeological deposits.

Figure 7.92 Location of site CHD-A42 - facing west

CHD-A43 – Artefact Scatter

GDA Zone 56 – 528715.6850723

Aboriginal site CHD-A40 is a scatter of three artefacts (Figure 7.93) visible on a vehicle track (Figure 7.94).

Artefacts:

1. proximal portion of chert flake with potlid scar; 30 x 20 x 15 mm
2. grey silcrete flake; 40 x 25 x 10 mm
3. chert flake; 15 x 10 x 2mm

Topographically the site is situated on a moderate gradient spur crest in a mid-valley context. The site is about 150 m from the current dam shoreline and at least 300 m from the original alignment of Doon Doon Creek.

The aspect of the site is easterly, and is surrounded by heavily vegetated eucalypt forest.

The soil is light grey brown silt. Soil depth is unknown but likely shallow and very compacted on the track.

Ground surface exposure incidence in the immediate area of the artefacts is 30%, with 50% visibility within this exposure.

Existing impacts and disturbances in this area relate to vegetation clearance, vehicle access, and sheet erosion.

Given the landform, moderate gradient, distance from Doon Doon Creek, and heavily disturbed and compacted state, this site is assessed as having **low to moderate potential** for the presence of subsurface archaeological deposits in a disturbed context.

Figure 7.93 Artefacts at site CH- A43

Figure 7.94 Location of site CHD-A43 - facing north

CHD-A44 – Isolated Find

GDA Zone 56 – 528762.6850920

Aboriginal site CHD-A44 is an isolated find visible on a vehicle track covered heavily with leaf litter (Figure 7.95).

1. chalcedony flaked piece; 32 x 25 x 5 mm

Topographically the site is situated on a low lying flat adjacent to an ephemeral drainage line. The site is within 20 m of the current dam shoreline, but would have been over 250 m from any permanent water sources prior to dam construction.

The aspect of this site is open, covered by heavy leaf litter, and surrounded by closed eucalypt forest that has been revegetated.

Brown sandy silt is the underlying soil substrate. Soil depth is unknown but very compacted on the track.

Ground surface exposure incidence along the track is 2%, with 50% visibility within exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, vehicle access, and sheet erosion.

Given the low lying nature of the area, distance from permanent water, as well as disturbance and compaction due to the vehicle track, this site is assessed as having **low to moderate potential** for the presence of subsurface archaeological deposits in a disturbed context.

Figure 7.95 Location of site CHD-A44 - facing south

CHD-A45 – Isolated Find

GDA Zone 56 – 528790.6850991

Aboriginal site CHD-A45 is an isolated find visible on a vehicle track.

1. red chert flake; 1 5x 10 x 15 mm (Figure 7.96)

Topographically the site is situated on a spur crest with a steep gradient (Figure 7.97). The site is within 30 m of the current dam shoreline, but would have been over 250 m from any permanent water sources prior to dam construction.

The site has a southerly aspect and is surrounded by thick revegetated eucalypt forest.

Grey brown sandy silt is the underlying soil substrate. Soil depth is unknown but likely shallow and very compacted on the track.

Ground surface exposure incidence along the track is 60%, with 80% visibility within exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, vehicle access, and sheet erosion.

Given the steep gradient of the landform, distance from permanent water, as well as disturbance and compaction due to the vehicle track, this site is assessed as having low potential for the presence of subsurface archaeological deposits in a disturbed context.

Figure 7.96 Artefact at site CHD-A45

Figure 7.97 Location of site CHD-A45 - facing north

CHD-A46 – Isolated Find

GDA Zone 56 – 528767.6851036

Aboriginal site CHD-A46 is an isolated find visible on a vehicle track.

1. red and grey chert flake with heat shatter one side; 29 x 27 x 9 mm (Figure 7.98)

Topographically the site is situated on a spur crest with a flat gradient (Figure 7.99). The site is within 7 of the current dam shoreline, but would have been over 250 m from any permanent water sources prior to dam construction.

The site has a southerly aspect and is surrounded by thick revegetated eucalypt forest.

Grey brown sandy silt is the underlying soil substrate. Soil depth is unknown but likely shallow and compacted on the track.

Ground surface exposure incidence along the track is 60%, with 60% visibility within exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, vehicle access, and sheet erosion.

Given the location higher in the catchment (mid valley context), distance from permanent water, as well as disturbance and compaction due to the vehicle track, this site is assessed as having **low potential** for the presence of subsurface archaeological deposits in a disturbed context.

Figure 7.98 Artefact at site CHD-A46

Figure 7.99 Location of site CHD-A46 - facing west

CHD-A47 – Isolated Find

GDA Zone 56 – 528779.6850657

Aboriginal site CHD-A47 is an isolated find visible in an area of sheet erosion.

1. silcrete flake; 52 x 32 x 12 mm (Figure 7.100)

Topographically the site is situated on a steep gradient mid-slope (Figure 7.101). The site is within 80 m of the current dam shoreline, but would have been over 250 m from any permanent water sources prior to dam construction.

The site has a northeasterly aspect and is covered by a mixture of grass and open eucalypts.

Grey brown sandy silt is the underlying soil substrate. Soil depth is unknown but it is likely to be shallow given the mid-slope context.

Ground surface exposure incidence in the immediate area of the artefacts is 40%, with 50% visibility within exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, slashing of lawn, and sheet erosion.

Given the steep gradient of the landform, and distance from permanent water, the site is assessed as having **low potential** for the presence of subsurface archaeological deposits in a disturbed context.

Figure 7.100 Artefact at site CHD-A47

Figure 7.101 Location of site CHD A47 - facing east

CHD A48 – Artefact Scatter & PAD

GDA Zone 56 – 528999.6850748

Aboriginal site CHD-A48 is a scatter of nine artefacts (Figure 7.102) visible in an area of sheet erosion (Figure 7.103), and associated PAD.

Artefacts:

1. chalcedony flake; 20 x 15 x 4 mm
2. rhyolite hammerstone; 94 x 69 x 49 mm
3. chalcedony flake; 32 x 30 x 10 mm
4. proximal portion of silcrete flake; 33 x 30 x 6 mm
5. chert core with at least five negative scars; 27 x 28 x 21 mm
6. chalcedony flake; 43 x 33 x 19 mm
7. silcrete flake; 21 x 21 x 4 mm
8. chalcedony flake; 42 x 31 x 13 mm
9. chalcedony flake; 28 x 17 x 6 mm

Topographically the site is situated on low gradient to flat spur crest. The site is directly adjacent to the current Clarrie Hall Dam shoreline and within 50 m of the original alignment of Doon Doon Creek.

The area of PAD associated with this site is about 200 x 100 m (Figure 7.104).

The aspect of the site is easterly, and is covered by a mixture of grass and open eucalypt woodland. The soil is light brown silty sand. Soil depth is unknown but estimated to be at least 40 cm.

Ground surface exposure incidence in the immediate area of the artefacts is 5%, with 20% visibility within exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, slashing of lawn, and sheet erosion.

Given the landform, flat gradient, its proximity to Doon Doon Creek, number of surface artefacts present, and its estimated soil depth, this site is assessed as having **high potential** for the presence of subsurface archaeological deposits.

Figure 7.102 Artefact at site CHD-A48

Figure 7.103 Location of site CHD-A48 - facing east

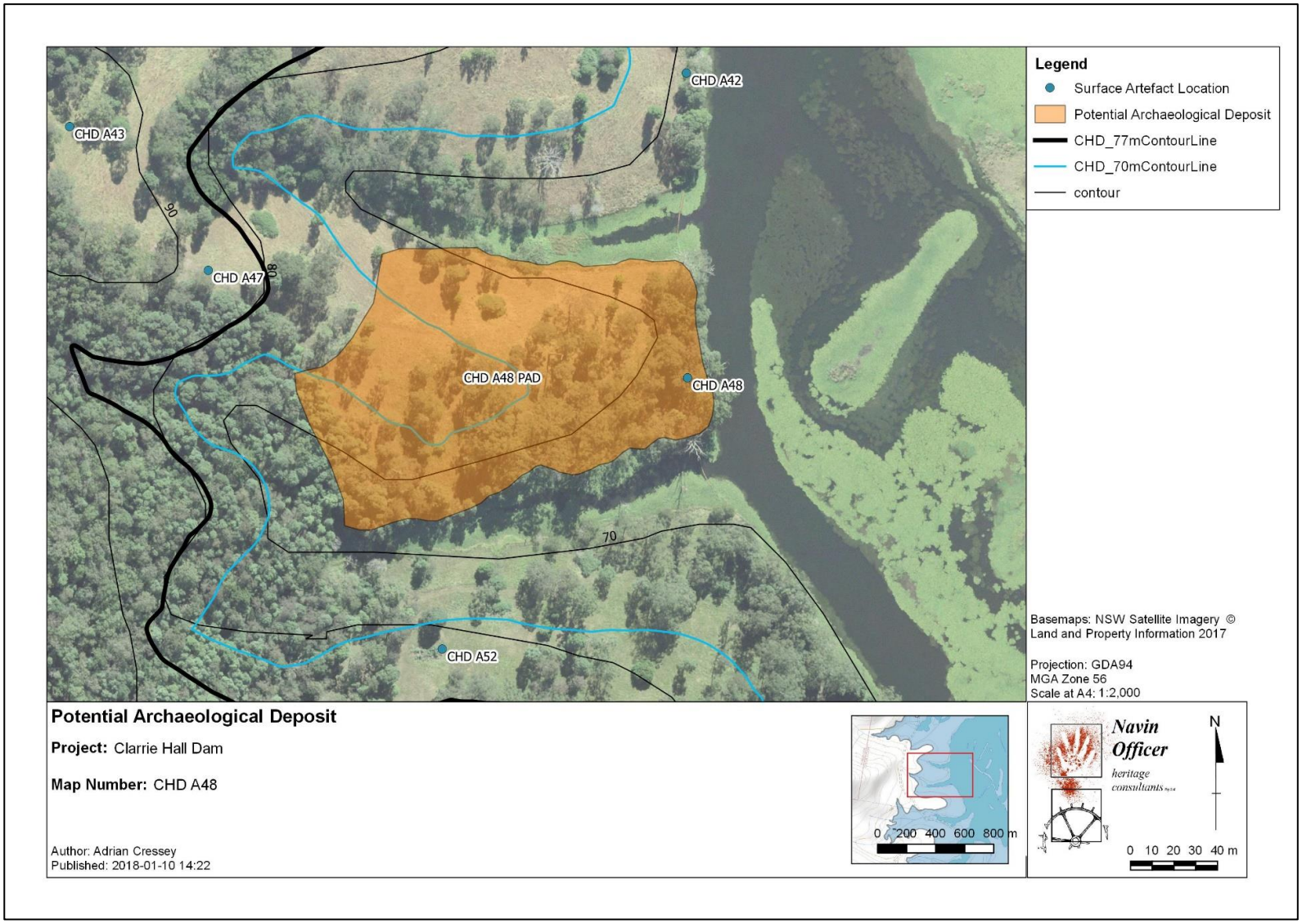


Figure 7.104 Location of site CHD-A48 showing anticipated extent of PAD associated with the site

CHD-A49 – Artefact Scatter

GDA Zone 56 – 528815.6850404

Aboriginal site CHD-A49 is a scatter of eight artefacts (Figure 7.105). Most artefacts were visible along a vehicle access track, with some located in mid-slope contexts within 20 m of the track (Figure 7.106).

Artefacts:

1. grey silcrete flake; 23 x 22 x 3 mm
2. red chert flake with missing margin; 35 x 29 x 13 mm
3. pink grey silcrete flake; 32 x 29 x 13 mm
4. white chalcedony flake; 25 x 22 x 14 mm
5. large volcanic cobble, possible grinding base; 200 x 160 x 50 mm
6. proximal portion of a dark grey silcrete flake; 32 x 24 x 5 mm
7. grey fine grained sedimentary flake; 36 x 24 x 5 mm
8. grey brown agate flake; 45 x 40 x 14 mm

Topographically the site is situated on a low gradient, sometimes flat spur crest. The site is approximately 200 m from the current dam shoreline and a similar distance from the original alignment of Doon Doon Creek.

The aspect of the site is ranges from open to easterly, and is covered by a mixture of grass and closed eucalypt woodland.

The soil is dark brown sandy silt. Soil is very eroded and compacted along the track, and considered to be relatively shallow on the adjacent mid-slopes which are moderate to steep gradients.

Ground surface exposure incidence along the track where most of the artefacts were visible is 80%, with 70% visibility within exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, track construction, vehicle access, slashing of lawn, and sheet erosion.

Given the landform, distance from Doon Doon Creek, ground disturbance along the vehicle track, and predicted shallow soil depth, this site is assessed as having **low to moderate potential** for the presence of subsurface archaeological deposits in a predominantly disturbed context.

Figure 7.105 Artefact at site CHD A49

Figure 7.106 Location of siteCHD-A49 - facing west

CHD-A50 – Artefact Scatter

GDA Zone 56 – 528686.6850493

Aboriginal site CHD-A49 is a scatter of four artefacts (Figure 7.107) visible on a vehicle access track (Figure 7.108).

Artefacts:

1. silcrete flake; 25x21x5mm
2. silcrete core; 27x18x16mm
3. chert flake; 30x14x5mm
4. chert flake; 25x19x5mm

Topographically the site is situated on moderate gradient mid-slopes. The site over 200 m from the original alignment of Doon Doon Creek and in terms of elevation is in a mid-valley context.

The site has a southeasterly aspect and is surrounded by relatively young closed eucalypt forest.

The soil is brown grey sandy silt. The soil is very eroded and compacted along the track, and estimated to be relatively shallow off the track, given the mid-slope context and moderate gradient.

Ground surface exposure incidence along the track is 70%, with 80% visibility within exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, track construction, vehicle access, and sheet erosion.

Given the landform, distance from Doon Doon Creek, ground disturbance along the vehicle track, and predicted shallow soil depth, this site is assessed as having **low potential** for the presence of subsurface archaeological deposits in a predominantly disturbed context.

Figure 7.107 Artefact at site CHD-A50

Figure 7.108 Location of site CHD-A50 - facing northwest

CHD A51 – Isolated Find

GDA Zone 56 – 529048. 6850447

Aboriginal site CHD-A51 is an isolated find visible in an area of mounded soil and logs.

Artefact:

1. white and blue agate core with three negative scars; 39 x 22 x 20 mm (Figure 7.109).

Topographically the site is situated on a moderate gradient mid-slope (Figure 7.110). The site approximately 40 m from the current dam shoreline and a similar distance from the original alignment of Doon Doon Creek.

The aspect of the site is easterly, and is covered by a mix of grass and closed eucalypt woodland.

The soil is dark brown sandy silt. Soil is estimated to be 30-40 cm deep.

Ground surface exposure incidence across the landform is 2%, with 5% visibility within exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, vehicle access, sheet erosion, and slashing of grass. There has also been some disturbance of the landform through grading with a tractor and blade, resulting in some piles of soil.

Given the mid-slope context and surface disturbance in the area this site is assessed as having **low-moderate potential** for the presence of subsurface archaeological deposits in a predominantly disturbed context.

Figure 7.109 Artefact at site CHD-A51

Figure 7.110 Location of site CHD-A51 - facing northeast

CHD-A52 – Isolated Find

GDA Zone 56 – 528887.6850483

Aboriginal site CHD-A52 is an isolated find visible in an area of mounded soil and logs

Artefact:

1. grey silcrete flake; 34 x 20 x 5 mm (Figure 7.111)

Topographically the site is situated on a moderate gradient mid-slope (Figure 7.112). The site approximately 160 m from the current dam shoreline and a similar distance from the original alignment of Doon Doon Creek.

The aspect of the site is northerly, and it is covered by a mix of grass and closed eucalypt woodland. The soil is grey sandy silt. Soil depth is unknown but estimated to be 30 cm deep.

Ground surface exposure incidence in the immediate area of the artefact is 50%, with 90% visibility within exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, vehicle access, sheet erosion, and slashing of grass. There has also been some disturbance of the landform through grading with a tractor and blade, resulting in some piles of soil.

Given the mid-slope context and surface disturbance in the area this site is assessed as having **low-moderate potentia**l for the presence of subsurface archaeological deposits in a predominantly disturbed context.

Figure 7.111 Artefact at site CHD-A52

Figure 7.112 Location of site CHD-A52 - facing south

CHD-A53 – Isolated Find

GDA Zone 56 – 528876.6850364

Aboriginal site CHD-A53 is an isolated find visible on a vehicle access track.

Artefact:

1. white chalcedony core with four negative scars; 41 x 17 x 19 mm (Figure 7.113)

Topographically the site is situated on steep gradient mid-slopes. (Figure 7.114).The site is over 40 m from an ephemeral drainage line and about 250 m from the original alignment of Doon Doon Creek.

The site has a southerly aspect and is surrounded by relatively young closed eucalypt forest.

The soil is predominantly red silty clay with very little topsoil or subsoil present on the track, which has been subject to heavy erosion. The soil is very eroded and compacted along the track, and is almost entirely devoid of subsoil and topsoil.

Ground surface exposure incidence along the track is 30%, with 70% visibility within exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, track construction, vehicle access, and sheet erosion.

Given the landform, distance from Doon Doon Creek, ground disturbance along the vehicle track, and non-existent soil depth, this site is assessed as having **very low potential** for the presence of subsurface archaeological deposits in a disturbed context.

Figure 7.113 Artefact at site CHD A53

Figure 7.114 Location of site CHD-A53 - facing southwest

CHD-A54 – Isolated Find

GDA Zone 56 – 529734.6848091

Aboriginal site CHD-A54 is an isolated find visible in an exposure on the tope of Byrill Ridge (Figure 7.116). This site is about 60 m north of the location of a known AHIMS site (04-1-0131).

Artefact:

1. brown chalcedony flake; 45 x 29 x 12 mm (Figure 7.115).

Topographically the site is situated on the flat crest of Byrill Ridge. The site is well out of the study area and over one kilometre east of Doon Doon Creek.

This ridge was likely a major travel route for the local Aboriginal population, linking the country to the south of the ridge towards Wollumbin.

The site has an open aspect, and is covered by grass and open eucalypt woodland.

Ground surface exposure incidence across the landform is 2%, with 5% visibility within exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, stock, and sheet erosion. Soils depth is unknown but likely to be shallow.

Given the upper valley/ridgeline context, and distance from permanent water, this site is assessed as having **low to moderate potential** for the presence of subsurface archaeological deposits.

Figure 7.115 Artefact at site CHD-A54

Figure 7.116 Location of site CHD-A54 - facing northeast

CHD A55 – Artefact Scatter & PAD

GDA Zone 56 – 529637.6851540

Aboriginal site CHD-A55 is a scatter of three artefacts (Figure 7.117) visible in exposures created by the partial uprooting of a large tree (Figure 7.118).

Artefacts:

1. pink white chalcedony flake; 36 x 30 x 12 mm
2. green and cream rhyolite flake; 43 x 31 x 15 mm
3. medial portion of a grey silcrete flake; 14 x 12 x 5 mm

Topographically the site is situated on low gradient to flat spur crest. The site is currently part of an island, which has formed from the heightened water levels of the existing dam, and would have been approximately 50 m from the original alignment of Doon Doon Creek.

The PAD associated with this surface scatter is 300 x 60 m and also encompasses the low gradient mid-slopes and flat knoll to the northwest of the artefact scatter (Figure 7.119).

The aspect of the site ranges from open to easterly and is covered by open eucalypt woodland.

The soil is grey brown silty sand. Soil depth is estimated to be at least 60 cm.

Ground surface exposure incidence in the immediate area of the artefacts is 50%, with 60% visibility within exposures. Ground surface exposure incidence across the broader landform is 10%, with 40% visibility within exposures.

Existing impacts and disturbances in this area relate to vegetation clearance.

Given the landform, flat gradient, its proximity to Doon Doon Creek, relatively low levels of disturbance, and its estimated soil depth, this site is assessed as having **high potential** for the presence of subsurface archaeological deposits.

Figure 7.117 Sample of artefacts at CHD-A55

Figure 7.118 Example of exposure at CHD-A55

Figure 7.119 Location of site CHD-A55 showing anticipated extent of PAD associated with the site

CHD A56 –Restricted Men's Site

GDA Zone 56 – Restricted

The location and description of this site have been restricted due to the culturally sensitive nature of this site. A full description of this site is provided in Appendix 5 of the non-redacted version of this report.

Des Williams is the holder of the cultural knowledge regarding this site.

Tweed Byron LALC and NOHC have non-redacted copies of this report, which include the details of this site. The site information will be lodged with AHIMS as a restricted site. The site is outside the proposed dam inundation area.

CHD A57 – Grinding Groove

GDA Zone 56 – 529992. 6849201

Aboriginal site CHD A57 is a grinding groove measuring 32cm long, 16 cm wide, and 5 cm deep (**Figure 7.120**). The grinding groove is part of a large outcropping sandstone boulder with an exposed dimension of 3.1 x 1.4 m (**Figure 7.121**).

Topographically the site is situated on the shoulder of a large and steep spur crest linking the upper ridgeline to the valley floor adjacent to Doon Doon Creek (175 m southwest). The site has a westerly aspect and is covered by farming pasture, with grey humic sand the underlying soil substrate.

The sandstone outcrop is the only exposure in the vicinity of this site. Existing impacts and disturbances in this area relate to de-vegetation, livestock, and some sheet erosion downslope. Soil depth is unknown but likely shallow.

Des Williams (TBLALC – Senior Sites Officer) agreed that the grinding groove was used for food preparation and observed that the site is above an area ideal for camping (CHD PAD10). He also agreed that the spur line was an ideal route for accessing the higher ridgeline.

The site has views over the southern portion of the valley. Grinding grooves are more commonly found in valley floor contexts, adjacent to water courses, as water is commonly utilised in the grinding process. The upper valley context of this site adds to its rarity.

Given the gradient, position of this site within the landscape, the significant distance from Doon Doon Creek, and the shallow soil depth, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits.

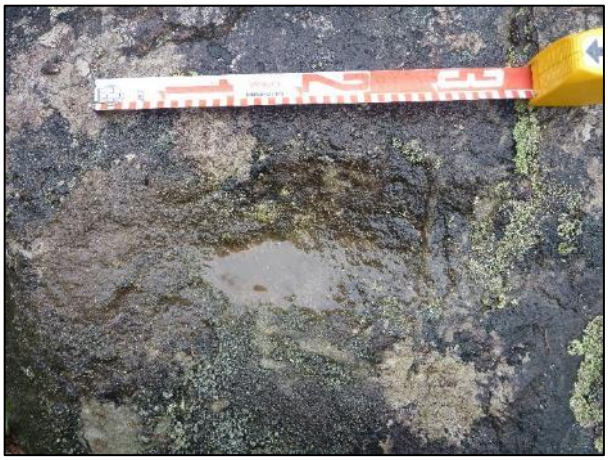


Figure 7.120 Grinding groove at site CHD-A57

Figure 7.121 Location of site CHD-A57 - facing northeast

CHD PAD1 – Potential Archaeological Deposit

GDA Zone 56 – 529193.6850030

CHD-PAD1 is an area of potential archaeological deposit; it is not associated with any surface artefacts (Figure 7.122).

The PAD is approximately 160 x 120 m(Figure 7.123).

Topographically this PAD is situated on the flat and low gradient basal slopes of a terminal spur crest, which terminates directly adjacent to Doon Doon Creek.

The aspect of the PAD ranges from open to northerly, and is heavily grassed with some sparse juvenile eucalypts.

Soil is dark brown sandy loam. Soil depth is unknown but estimated to be at least 60 cm.

Ground surface exposure incidence across the PAD is 1%, with 20% visibility within exposures.

Existing impacts and disturbances in this area relate to vegetation clearance and stock. Heavy grass cover is currently limiting erosion from surface water wash.

Given the low and flat gradient of this landform, its proximity to Doon Doon Creek, relatively low levels of disturbance, and its estimated soil depth, this site is assessed as having **high potential** for the presence of subsurface archaeological deposits.

Figure 7.122 Location of CHD PAD1 - facing north

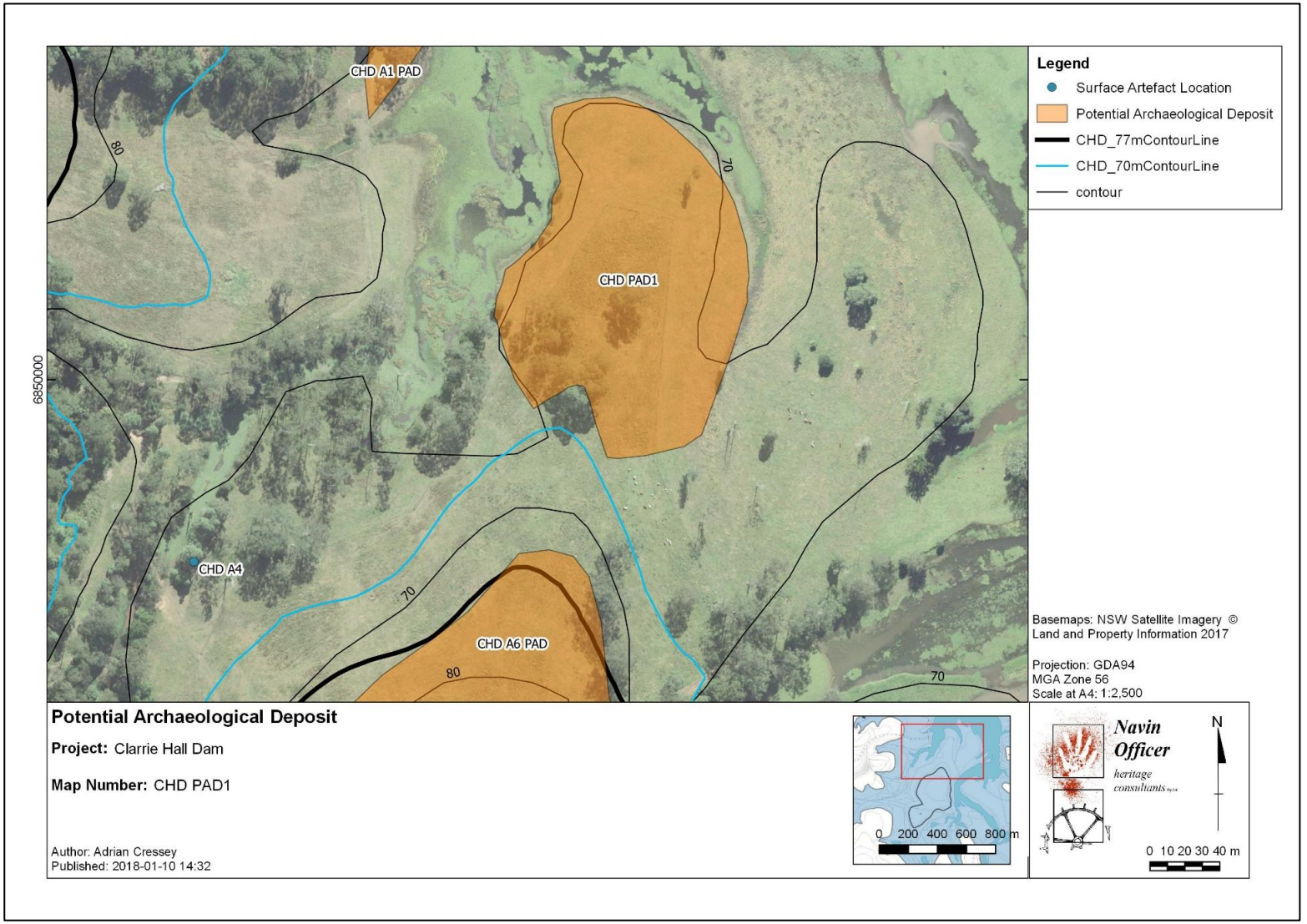


Figure 7.123 Aerial view showing anticipated extent of CHD PAD 1

CHD-PAD2 – Potential Archaeological Deposit

GDA Zone 56 – 529689.6848763

CHD-PAD2 is an area of potential archaeological deposit; it is not associated with any surface artefacts (Figure 7.124) .

The PAD is approximately 100 x 90 m (Figure 7.125).

Topographically this PAD is situated on the flat and low gradient crest and basal of a locally elevated terminal spur crest, which terminates within 30 m of Doon Doon Creek.

The aspect of the PAD ranges from open to southerly, and is heavily grassed.

Soil is dark brown sandy silty loam. Soil depth is unknown but estimated to be at least 60 cm.

Ground surface exposure incidence across the PAD is 0%.

Existing impacts and disturbances in this area relate to vegetation clearance and stock. Heavy grass cover is currently limiting erosion from surface water wash.

Given the locally elevated flat gradient of this landform, its proximity to Doon Doon Creek, relatively low levels of disturbance, and its estimated soil depth, this PAD is assessed as having **high potential** for the presence of subsurface archaeological deposits.

Figure 7.124 Location of CHD PAD2 (foreground) - facing southeast

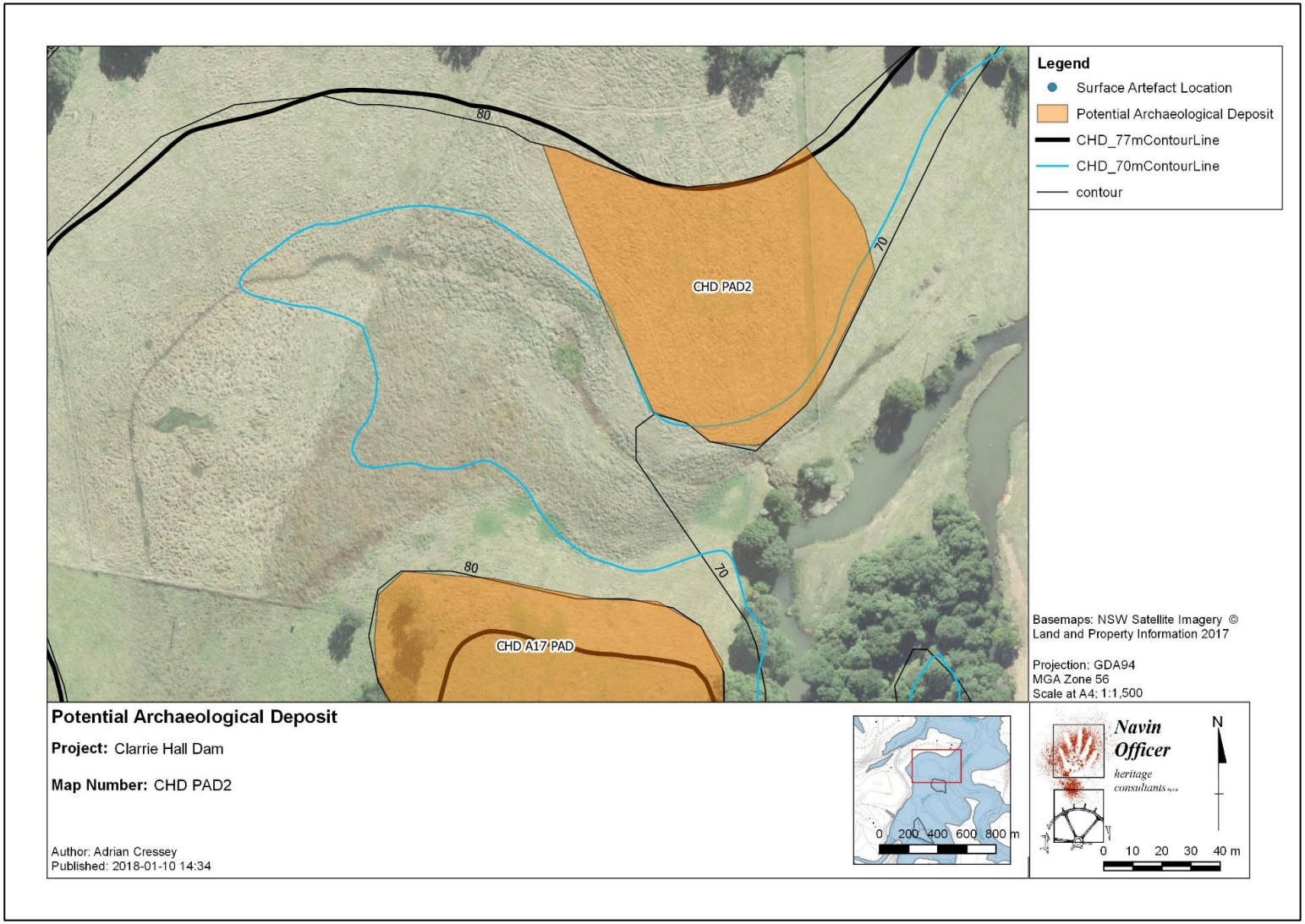


Figure 7.125 Aerial view showing anticipated extent of CHD-PAD2

CHD-PAD3 – Potential Archaeological Deposit

GDA Zone 56 – 529635.6848425

CHD-PAD3 is an area of potential archaeological deposit; it is not associated with any surface artefacts (Figure 7.126).

The PAD is approximately 150 x 70 m (Figure 7.127).

Topographically this PAD is situated on locally elevated alluvial terraces grading into low gradient terminal spur crest. Doon Doon Creek wraps around the entire landform and is within 10 m of the PAD.

The aspect of the PAD ranges from open to northwesterly, and is heavily grassed.

Soils are dark brown silty loam. Soil depth is unknown but estimated to be at least 80 cm, given the difference in height of the elevated terraces compared to the adjacent flats.

Ground surface exposure incidence across the PAD is 0%.

Existing impacts and disturbances in this area relate to vegetation clearance and stock. Heavy grass cover is currently limiting erosion from surface water wash.

Given the locally elevated flat gradient of this landform, its proximity to Doon Doon Creek, relatively low levels of disturbance, and its estimated soil depth, this site is assessed as having a **high potential** for the presence of subsurface archaeological deposits.

Figure 7.126 Location of CHD PAD3 - facing north

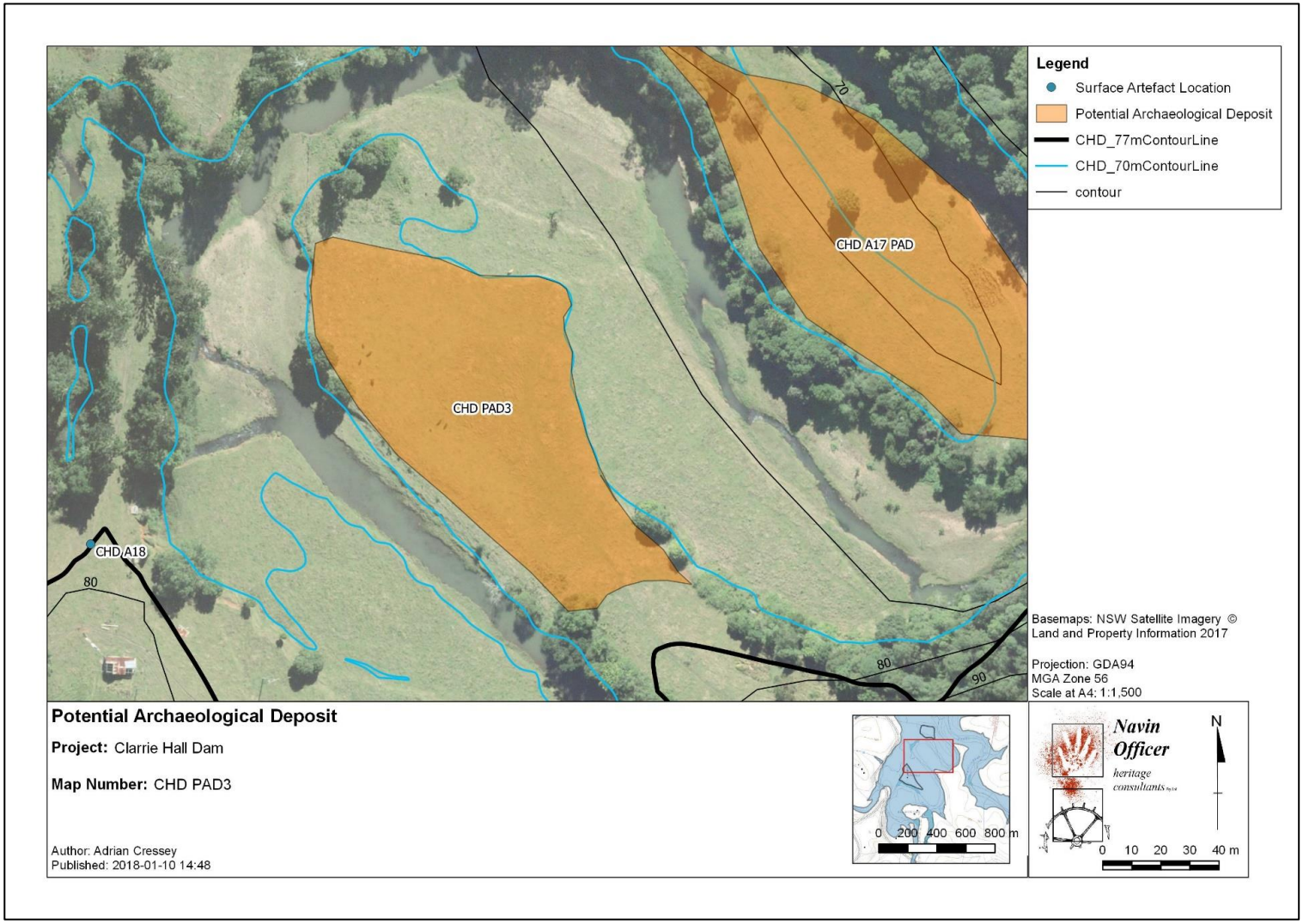


Figure 7.127 Aerial view of showing anticipated extent of CHD-PAD3

CHD-PAD4 – Potential Archaeological Deposit

GDA Zone 56 – 529952.6848500

CHD-PAD4 is an area of potential archaeological deposit; it is not associated with any surface artefacts (Figure 7.128).

The PAD is approximately 110 x 40 m (Figure7.129).

Topographically this PAD is situated on the flat and low gradient crest and basal slopes of a locally elevated terminal spur crest, which terminates within 30 m of Doon Doon Creek.

The aspect of the PAD ranges from open to easterly, and is heavily grassed.

Soil is dark brown silty loam. Soil depth is unknown but estimated to be at least 50 cm.

Ground surface exposure incidence across the PAD is 0%.

Existing impacts and disturbances in this area relate to vegetation clearance and stock. Heavy grass cover is currently limiting erosion from surface water wash.

Given the locally elevated flat gradient of this landform, its proximity to Doon Doon Creek, relatively low levels of disturbance, and estimated soil depth, this PAD is assessed as having **moderate to high potential** for the presence of subsurface archaeological deposits.

Figure 7.128 Location of CHD-PAD4 - facing north

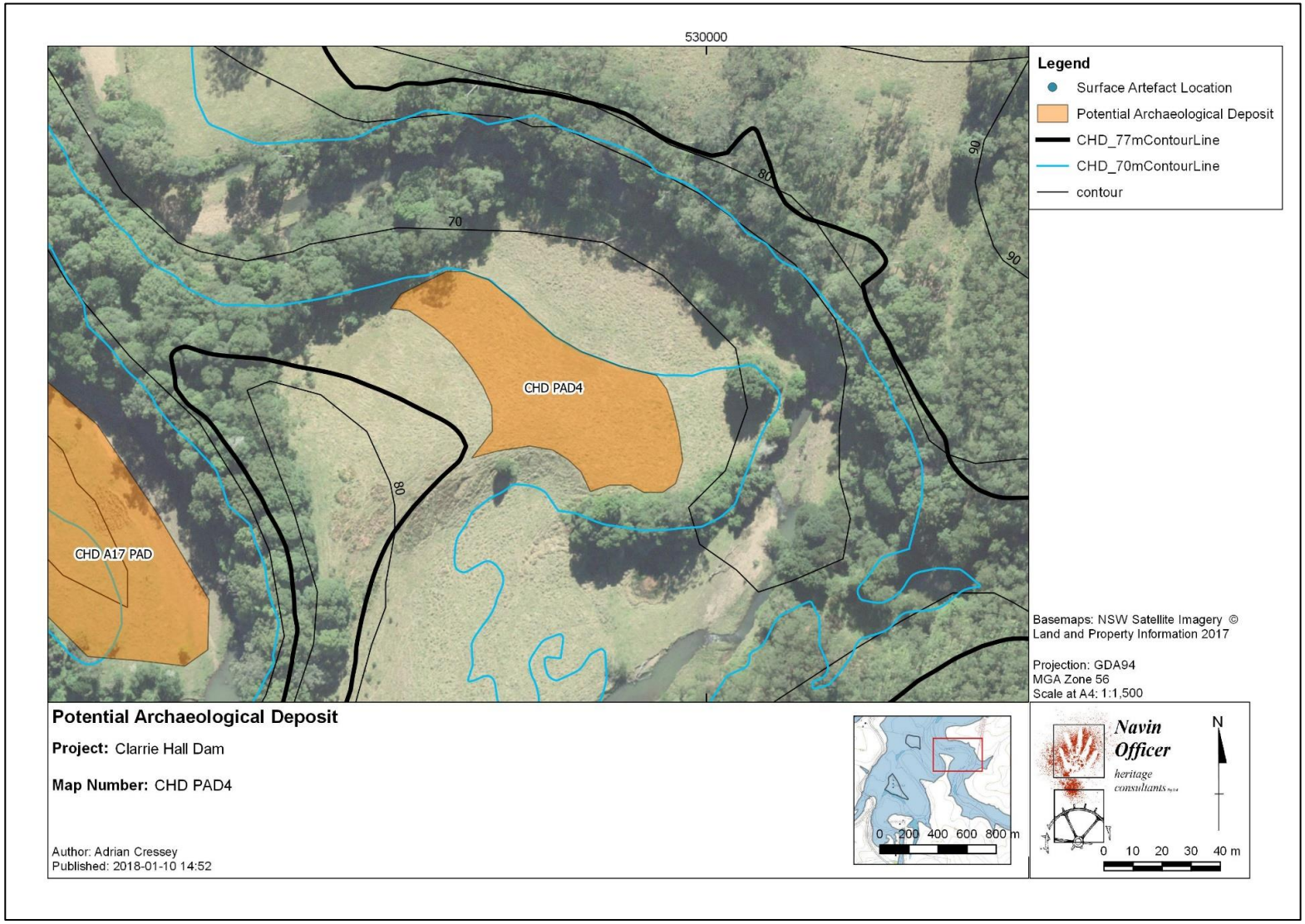


Figure7.129 Aerial view of showing anticipated extent of CHD-PAD4

CHD-PAD5 – Potential Archaeological Deposit

GDA Zone 56 – 529903.6850812

CHD-PAD5 is an area of potential archaeological deposit; it is not associated with any surface artefacts (Figure 7.130).

The PAD is approximately 60 x 45 m (Figure 7.131).

Topographically this PAD is situated on the flat terminal spur crest which descends into the current dam waterline. It is within 50 m of the original alignment of Doon Doon Creek.

The aspect of the PAD is open and covered by grass and sparse trees.

Soil is dark brown silty sand. Soil depth is unknown but estimated to be at least 50 cm.

Ground surface exposure incidence across the PAD is 40%, with 40% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, stock, and sheet erosion.

Given the locally elevated flat gradient of this landform, its proximity to Doon Doon Creek, and estimated soil depth, this PAD is assessed as having **moderate to high potential** for the presence of subsurface archaeological deposits.

Figure 7.130 Location of site CHD-PAD5
- facing west towards submerged grinding grooves

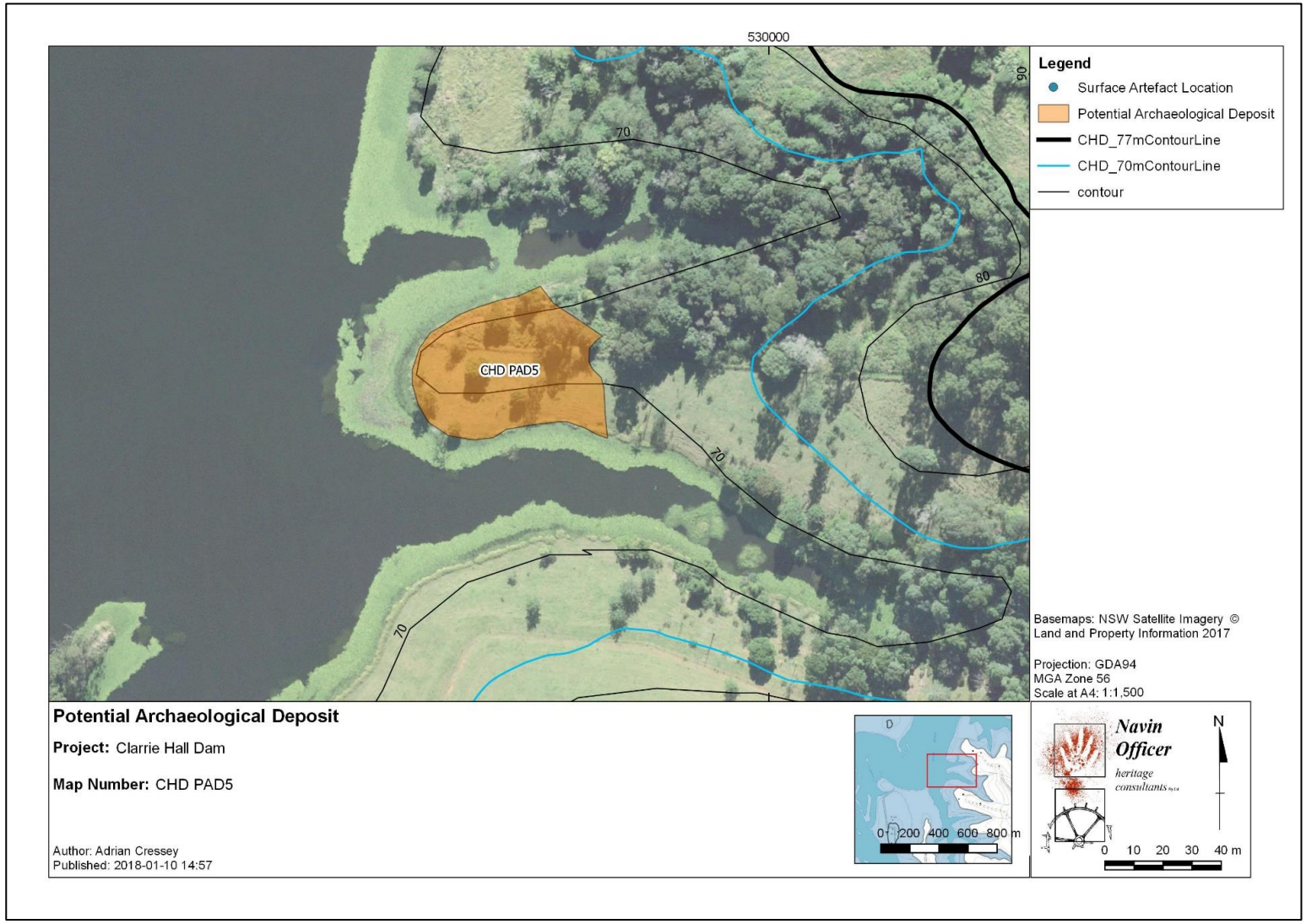


Figure 7.131 Aerial view of showing anticipated extent of CHD-PAD5

CHD-PAD6 – Potential Archaeological Deposit

GDA Zone 56 – 530007.6851148

CHD-PAD6 is an area of potential archaeological deposit; it is not associated with any surface artefacts (Figure 7.132).

The PAD is approximately 60 x 44 m (Figure 7.133).

Topographically this PAD is situated on the flat terminal spur crest which descends into the current dam waterline. It is within 50 m of the confluence of an ephemeral creek and the original alignment of Doon Doon Creek.

The aspect of the PAD ranges from open to north easterly and is covered by closed eucalypt forest, with a small vehicle track covered by a mid of grass and heavy leaf litter.

Soil is brown silty sand. Soil depth is unknown but estimated to be at least 40 cm.

Ground surface exposure incidence across the PAD is 1%, with 10% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, vehicle access, and sheet erosion.

Given the locally elevated flat gradient of this landform, its proximity to Doon Doon Creek, and estimated soil depth, this PAD is assessed as having **moderate to high potential** for the presence of subsurface archaeological deposits.

Figure 7.132 Location of CHD-PAD6 - facing south

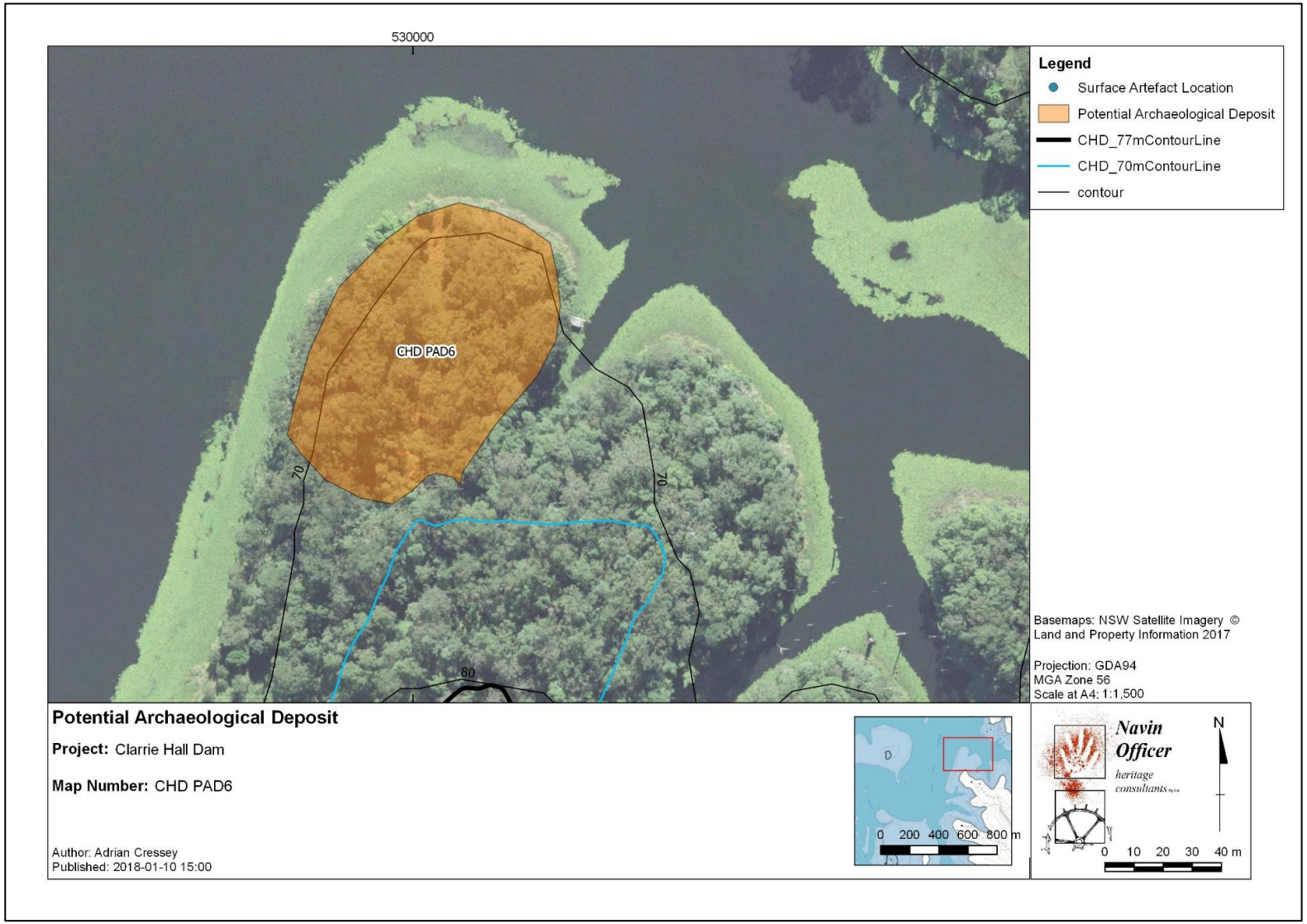


Figure 7.133 Aerial view of showing anticipated extent of CH- PAD6

CHD-PAD7 – Potential Archaeological Deposit

GDA Zone 56 – 530326.6851194

CHD-PAD7 is an area of potential archaeological deposit; it is not associated with any surface artefacts (Figure 7.134).

The PAD is approximately 65 x 45 m (Figure 7.135)

Topographically this PAD is situated on the flat and low gradient crest and basal slopes of a locally elevated terminal spur crest, directly adjacent to the current dam shoreline and what would have been a small tributary to Doon Doon Creek.

The aspect of the PAD ranges from open to southerly, and is heavily forested.

Soil is brown silty sand. Soil depth is unknown but estimated to be at least 40 cm.

Ground surface exposure incidence across the PAD is less than 1%.

Existing impacts and disturbances in this area relate to logging. The PAD is heavily forested resulting in thick leaf litter across area.

Given the locally elevated flat gradient of this landform, its proximity to fresh water, and relatively low levels of disturbance, this PAD is assessed as having **moderate to high potential** for the presence of subsurface archaeological deposits.

Figure 7.134 Location of CHD-PAD7 - facing west

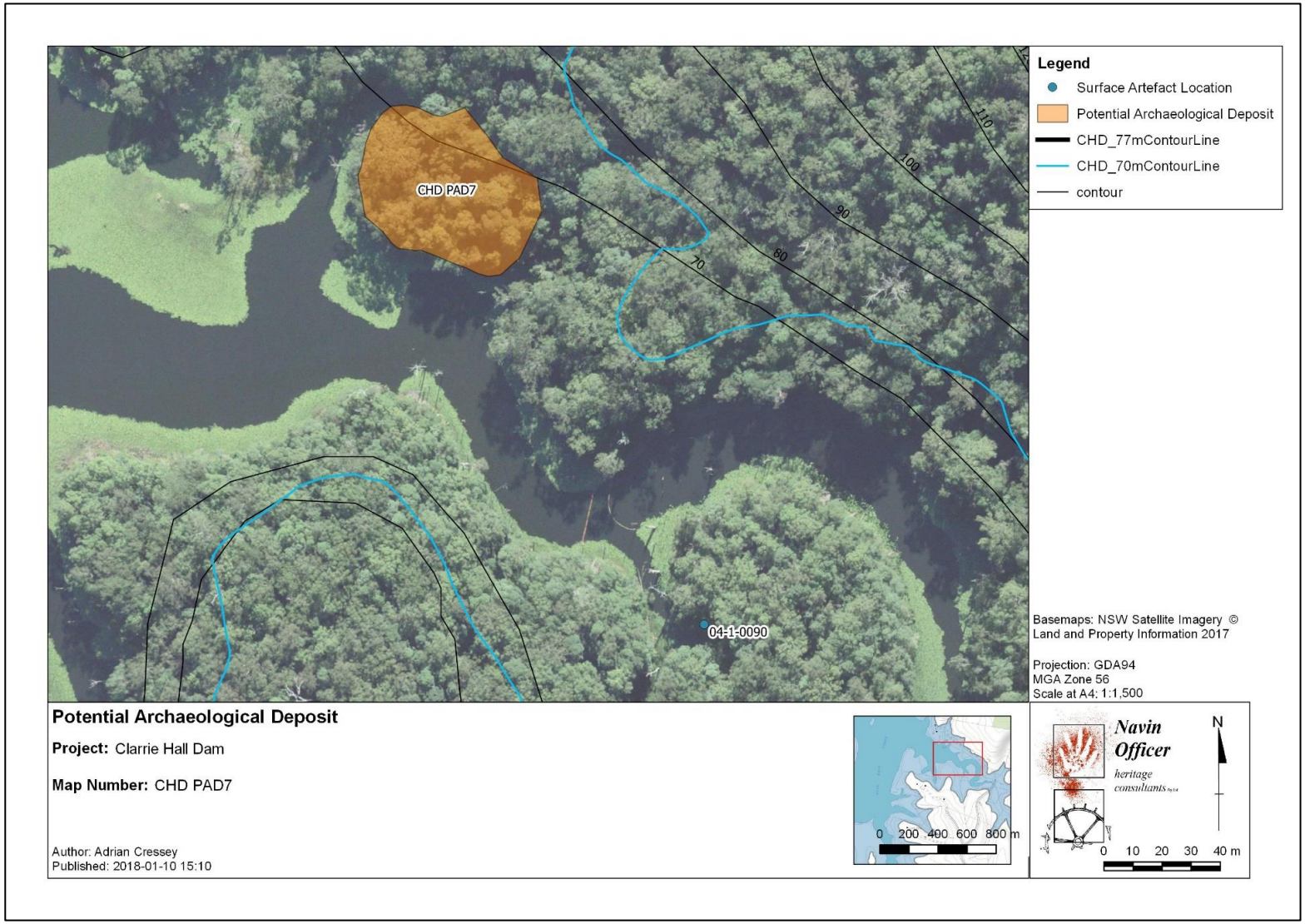


Figure 7.135 Aerial view of anticipated extent of CHD-PAD7

CHD-PAD8 – Potential Archaeological Deposit

GDA Zone 56 – 529339.6852422

CHD PAD8 is an area of potential archaeological deposit; it is not associated with any surface artefacts (Figure 7.136).

The PAD is approximately 100 x 50 m (Figure 7.137).

Topographically this PAD is situated on a flat terminal spur crest, directly adjacent to the current dam shoreline and about 40 m from the original alignment of Doon Doon Creek.

The PAD has an open aspect and is covered heavily of lantana.

Soil is grey brown silty sand. Soil depth is unknown but estimated to be at least 60 cm.

Ground surface exposure incidence across the PAD is 2%, with 30% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance.

Given the flat gradient of this landform, its proximity to Doon Doon Creek, relatively low levels of disturbance, and its estimated soil depth, this PAD is assessed as having **moderate to high potential** for the presence of subsurface archaeological deposits.

Figure 7.136 Location of CHD-PAD8 - facing west

Figure 7.137 Aerial view of anticipated extent of CHD-PAD8

CHD-PAD9 – Potential Archaeological Deposit

GDA Zone 56 – 529149.6851055

CHD-PAD9 is an area of potential archaeological deposit associated with surface sites CHD-A39, CDH-A40 and CHD-A41, and previously recorded sites CH6, AH7 and CH8.

The PAD is approximately 500 x 100 m (Figure 7.139).

Topographically the PAD consists of a large flat/low gradient spur crest and moderate to low gradient shoulder and mid-slopes (Figure 7.138). The PAD is flanked by Doon Doon Creek to the southeast and what would have been a tributary of Doon Doon Creek to the north.

The spurline has very good access to Byrill Ridge, which is the dominant range forming the western border of the valley. Byrill ridge was an ideal travel route for Aboriginal people in pre-European times, facilitating travel from the valley floor towards Wollumbin and the Two Sister to the north.

The aspect of the PAD ranges from open to north easterly, and is heavily grassed with patches of mostly introduced trees (pines) interspersed with native trees.

Soil is dark brown sandy silt. Soils are estimated to be about 40 cm in depth on the low gradient areas of the spur crest.

Ground surface exposure incidence across the landform as a whole is 2%, with 50% visibility within exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, vehicle access, sheet erosion, and slashing of grass.

Given the landform, flat/low gradient, proximity to Doon Doon Creek, surface artefacts, and estimated soil depth, this site is assessed as having **moderate to high potentia**l for the presence of subsurface archaeological deposits.

Figure 7.138 Location of CHD-PAD9 - facing west

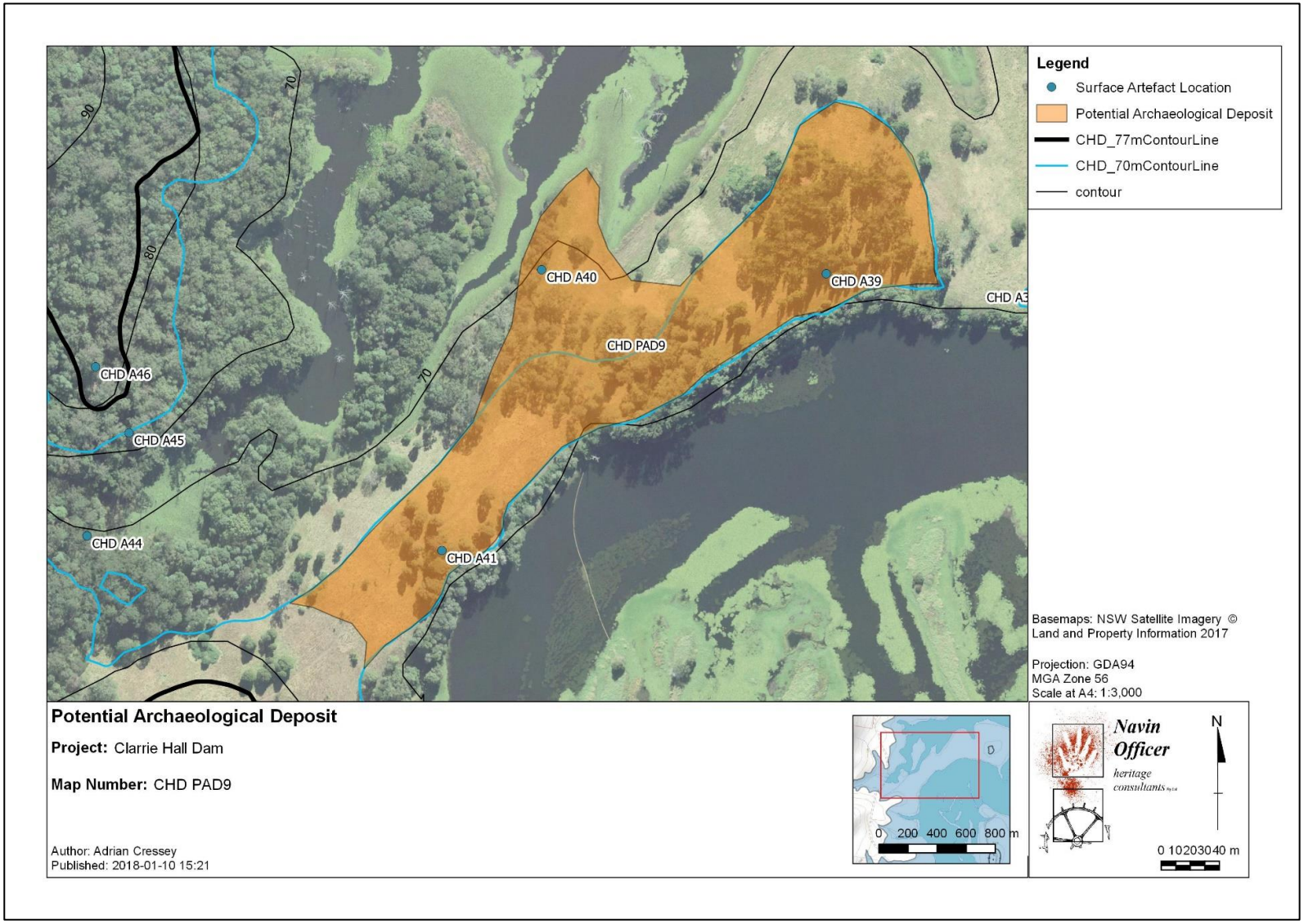


Figure 7.139 Aerial view of anticipated extent of CHD-PAD9

CHD-PAD10 – Potential Archaeological Deposit

CHD-PAD10 is an area of potential archaeological deposit; it is not associated with any surface artefacts.

The PAD is approximately 75 x 30 m (Figure 7.140).

Topographically the site consists of a flat spur crest in a mid-valley context. The spur crest is prominent with good connectivity to both the valley floor (12 m west) and the higher ridgelines on the eastern side of the Doon Doon Creek catchment.

The landform has an open aspect, and is heavily grassed and heavily frequented as a lay down area for grazing cattle.

In field discussions with Des Williams (TBLALC) suggested the site was ideal for camping from an Aboriginal cultural perspective.

Soil depth is unknown but estimated to be at least 30 cm on the flat spur crest.

Ground surface exposure incidence across the landform as a whole is 2%, with 5% visibility within exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, some sheet erosion, cattle grazing.

Given the landform, flat/low gradient, proximity to Doon Doon Creek, and easy access to upper catchment ridgelines and travel routes, this site is assessed as having **moderate potential** for the presence of subsurface archaeological deposits.

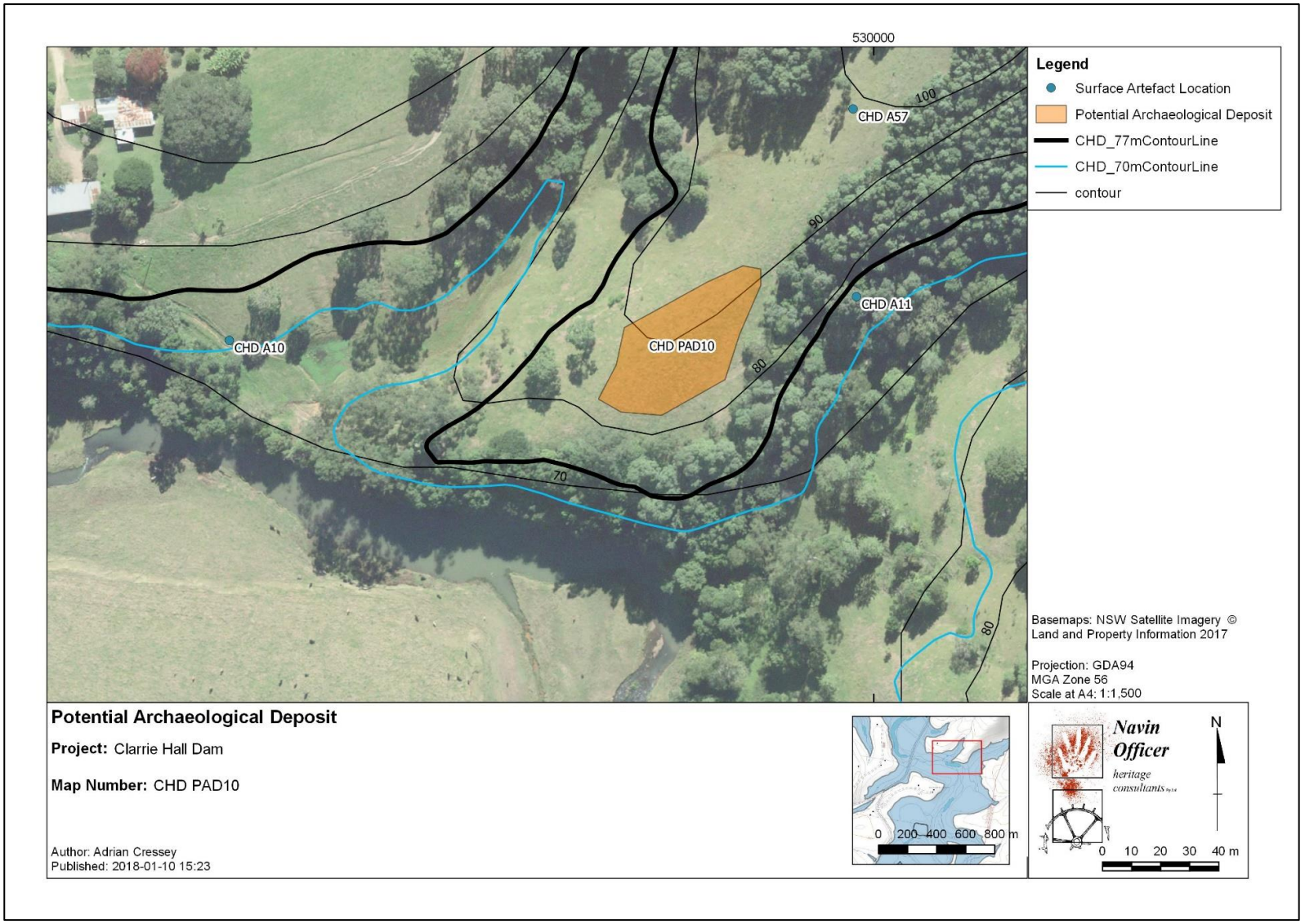


Figure 7.140 Aerial view of anticipated extent of CHD-PAD10

CHD-RS1 – Rock Shelter with PAD

GDA Zone 56 – 530514.6850995

Aboriginal site CHD-RS1 is a small rock shelter (Figure 7.141) that has not been recorded previously. This site is not associated with any surface artefacts.

It is located about 20 m northeast and upslope of AHIMS site #04-1-0014.

The shelter is 5-6 m in length and around 2 m deep. The height of the shelter overhang ranges from 0.5 m at the rear of the shelter to 1.75 m at the front.

Soil deposits within the dripline of the shelter are assessed as PAD. Depth of soil within the shelter is unknown, but estimated to be at least 30 cm. The surface soil within the rock shelter are grey mottled sand.

Topographically the site is situated on a low gradient to flat spur crest. The site is approximately 25 m from the current shoreline of the dam, and adjacent to an area which would have been an ephemeral creek line prior to dam construction. This site is over 500 m from the original alignment of Doon Doon Creek.

The site has a northerly aspect and is surrounded by revegetated eucalypt woodland.

Exposure incidence within the rock shelter is 20%, with 50% visibility within exposures. There are significant amounts of leaf litter throughout the shelter. Disturbances within this site are relatively low given the closed nature of the site, and lack of stock on the property. The main disturbances relate to some erosion along the dripline of the rock shelter.

Given the sheltered nature of this site, low disturbance, and relatively small size of the overhang, this site is assessed as having **moderate potential** for the presence of subsurface archaeological deposits.

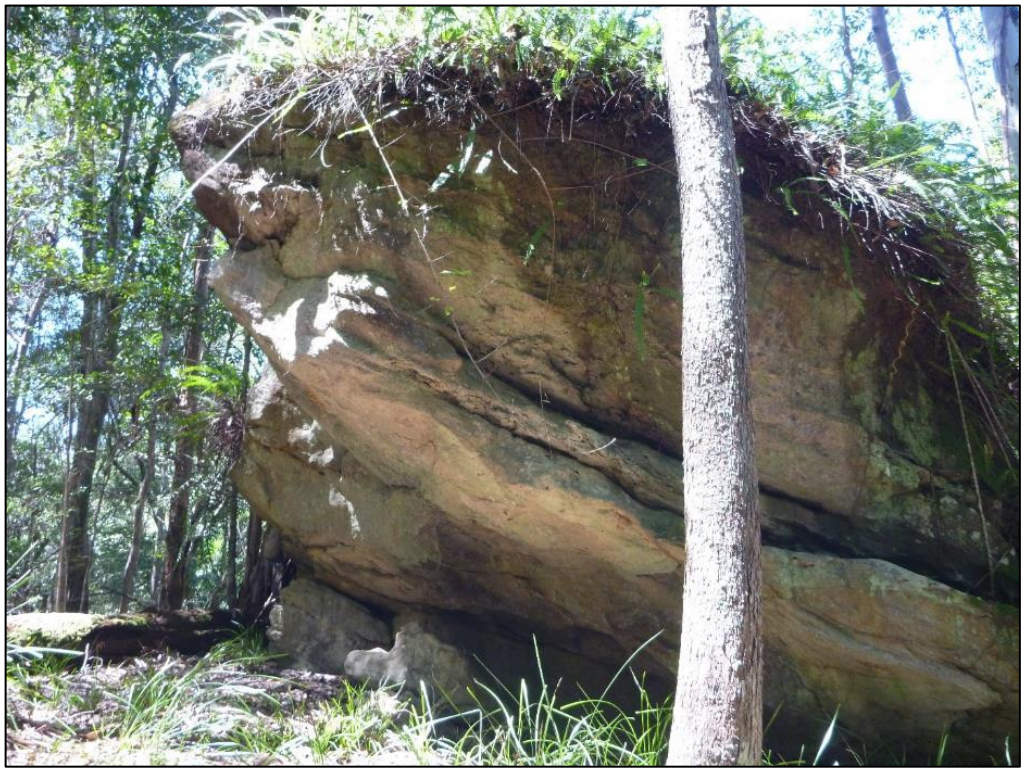


Figure 7.141 Site CHD-RS1 - facing east

CHD-ST1 – Scarred Tree

GDA Zone 56 – 529760.6854393

This site is a tree with a scar located on a moderate gradient mid-slope (Figure 7.142).

The vegetation of the area is characterised by dense eucalypt regrowth no more than 50 years of age.

The scarred tree is considerably larger and older than the surrounding vegetation and is assessed as an old growth specimen of considerable age.

Some damage to heartwood suggests the scar could have occurred through branch fall.

Tree condition:	Good (small amount of borer activity on scar face)
Tree height:	>30 meters (Tree towers over predominant regrowth)
Tree Girth:	4.8m (single trunk)
Tree species:	*Eucalyptus gummifera* (Red Bloodwood)?
Endemic:	Yes
Greater than 150 years of age:	Yes
Scar Aspect:	Southwest
Original scar length:	Excl. regrowth 195cm, incl. regrowth: about 3.45m
Original scar width:	Excl. regrowth 45cm, incl. regrowth: about 100cm
Depth of regrowth:	20cm
Height above ground:	Base of inside scar 1.5m, base of regrowth: 75cm.
Condition of scar:	Good (some borer activity)
Regrowth greater than 100 years:	Possible
Scar extends to ground:	No
Scar edges even and regular:	No, some irregularity on top left of regrowth margin
Scar outline uniform and symmetrical:	Scar is symmetrical but slightly twisted
Human origin:	Possible
Aboriginal origin:	Possible

Figure 7.142 Scarred tree site CH-ST1 - facing northwest

CHD-G1 – Geological Chalcedony Source

Site CHD-G1 is an outcrop of chalcedony. It has been identified as a potential procurement site for chalcedony for knapping purposes (Figure 7.143). There is no visible evidence that materials were flaked in this location, however, the easy access to the resource, and commonality of this stone type within archaeological artefact scatters in the study area, suggests that if this outcrop was exposed during prehistory, it would have been opportunistically utilised by the local Aboriginal population. Consequently, the site has Aboriginal cultural values.

The site is approximately 50 x 20 m and forms a steep eroded mid-slope embankment (Figure 7.144) adjacent to a farm dam. The site is in a valley floor context and is about 120 m west of Doon Doon Creek. Portions of this landform may have been excavated during construction of the adjacent dam. There is significant sheet and rill erosion across the exposed outcrop, which has been exacerbated by cattle accessing the banks of the dam for drinking.

Across the site ground surface exposure incidence is 85%, with 90% visibility within exposures. Existing impacts and disturbances in this area relate to vegetation clearance, dam construction, sheet and rill erosion, cattle tread.

Soil depth is very shallow given the mid-slope context and outcropping stone.

Given the landform, heavy erosion, lack of soil depth, and very good surface visibility onto outcropping stone, this site assessed as having **low potential** for subsurface archaeological deposits

Figure 7.143 Example of outcropping chalcedony

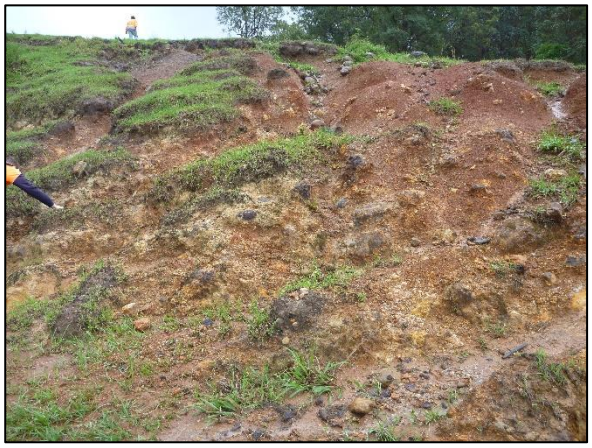


Figure 7.144 View of site CHD-G1 - facing northwest

7.3 Previously Recorded Sites

Rock Shelter AHIMS #04-1-0013 (DD5)

GDA Zone 56 – 528596.6851450

This site (DD5) was originally identified by Sullivan and Dallas (1978) during archaeological survey for the original Clarrie Hall dam (Doon Doon Creek Dam Site). A surface scatter of stone artefacts was also present during this initial recording, with animal diggings in the archaeological deposits at the back of the rock shelter also observed.

Given the site was well out of the 1978 impact area, discussion of the site was very limited.

When located during the latest phase of archaeological survey this site (AHIMS #04-1-0013) is best described as a medium sized rock shelter, located in the upper valley sandstone escarpment of Byrill Ridge.

The site has an easterly aspect and is associated with a significant area of Potential Archaeological Deposit. No *in situ* surface artefacts were observed during this visit to the site, however, it is noted that a number of artefacts (at least 15) have been placed on a rock shelf at the rear of the shelter.

The shelter dimensions are 8 m wide and approximately 4 m deep. The maximum height in the shelter is about 1.65 m in the central front area.

Topographically the site is located at the shoulder of crest, immediately above extremely steep mid-slopes in an upper valley context. The site is over 250 m from the current dam shoreline, and over 500 m from the original alignment of Doon Doon Creek.

Vegetation around the site is native eucalypt woodland that has been revegetated within the last 50 years.

Soil within the rock shelter is grey brown silty sand.

Ground surface exposure incidence within the rock shelter is 90%, with 90% visibility within exposures. There is very little disturbance at this site due to access difficulty and naturally sheltered shape. The only disturbances to this site are very intermittent visitation and animal burrowing.

Given the sheltered nature of this site, previous observance of archaeological material, low disturbance, moderate size of the shelter, and estimated depth of deposits, this site is assessed as having **high potential** for subsurface archaeological deposits.

This site is over 250 m upslope from the 77 m flood contour, and is not at risk of being impacted by proposal. Therefore, this site will not be discussed any further in this report with regard to impact mitigation.

Figure 7.145 View of CHD-RS1 looking south

Figure 7.146 Soil deposit in CHD-RS1

Figure 7.147 Panoramic view of CHD-RS1 looking west

Rock Shelter AHIMS# 04-1-0014 (DD6)

GDA Zone 56 – 530500.6850983

This site (Site DD6) was originally identified by Sullivan and Dallas (1978) during archaeological survey for the original dam proposal (Doon Doon Creek Dam Site).

Several artefacts (flakes) were observed by Sullivan and Dallas, who decided to undertake auguring of the deposits in the cave to ascertain the depth of archaeological deposit. Five auger holes were excavated, with only one yielding a small artefact (3 cm) within subsurface context. The deposits ranged between 15-50 cm in depth, and excavation ceased at bedrock.

The site was assessed as having very limited research potential, with the authors pointing to a discussion with a local landowner suggesting people had collected artefacts from the site on previous occasions.

When located during the latest phase of archaeological survey this site (AHIMS #04-1-0014) is best described as a medium sized rock shelter, present due to outcropping sandstone with two areas of overhang. The west - facing overhang is the largest (7 x 3 m) with shelter height ranging between 1.5-2 m depth, and is associated with archaeological deposit that was identified and augured by

Sullivan and Dallas (1978) (see above). The northern facing overhang does not have the depth or height to be considered of high utility.

Three previously identified artefacts were located at the back of the shelter on a rock shelf:

1. red chert flake; 40 x 14 x 4 mm
2. red chert core with three negative scars; 25 x 25 x 15 mm
3. grey silcrete flake; 20 x 18 x 3 mm

Topographically the site is located in a moderate gradient mid-slope context. The site is approximately 5-10 m from the current dam shoreline, located above an area that would have been an ephemeral creek prior to dam construction. The site is over 500 m to the southwest of the original alignment of Doon Doon Creek.

The aspect of the site is westerly, and is surrounded by revegetated eucalypt woodland.

The surface soil is grey sand.

The main overhang is approximately 5 x 2 m from the rear of the cave to the dripline. Archaeological deposits within the cave are known to be up to 50 cm depth (Sullivan and Dallas 1978). A group of sandstone rocks in a rectangular formation are located just outside the dripline on the southern end of the main overhang. This assemblage is likely to be European in origin.

The second overhang at this site is located on the northern edge of the outcropping sandstone. The overhang is approximately 7 x 0.5 m from the back of the overhang to the drip line. Some deposits are associated with this overhang, however, given that this shelter runs parallel with the break of slope, deposits are much more actively eroded and are therefore unlikely to be as deep as the archaeological deposits of the main overhang.

Ground surface exposure incidence within the rock shelter is 80%, with 80% visibility within exposures.

Disturbance within this site is relatively low given the closed nature of the site, and lack of stock on the property. The main disturbance relate to the previous auguring of Sullivan and Dallas (1978), intermittent site visitation, erosion along the dripline of the rock shelter, and sheet erosion downslope of the dripline.

Given the sheltered nature of this site, known archaeological deposits of moderate depth (50 cm), and relatively low levels of disturbance within the main overhang, this site is assessed as high value research potential.

Figure 7.148 Site CHD-RS2 - facing north

Rock Shelter (AHIMS# 04-1-0090)

GDA Zone 56 – 530400.6851041

This site is a small rock shelter with associated artefacts (noted during previous archaeological surveys - SCU 2008). No artefacts were observed in or around the shelter during this archaeological survey. The site is subject to partial inundation during flood events.

Topographically the site is located on a low gradient mid-slope. The site is approximately 5 m from the current dam shoreline, located above an area that would have been an ephemeral creek prior to dam construction. The site is over 450 m to the southwest of the original alignment of Doon Doon Creek.

The aspect of the site is north-westerly, and is surrounded by revegetated eucalypt woodland.

The surface soil is grey sand. The depth of deposits is unknown.

The shelter is approximately 10 m long, 0.5-1 m wide, 0.5-1.5 m high. The shelter is not larger enough for an average person to comfortably stand up. The area of PAD associated with this site is about 10 m in length by 0.5 m width.

Ground surface exposure incidence within the rock shelter is 70%, with 70% visibility within exposures. There are significant amounts of leaf litter along the outer edge of the shelter.

Disturbance within this site is relatively low given the closed nature of the site, and lack of stock on the property. The main disturbance relates to intermittent site visitation, some erosion along the dripline of the rock shelter, and sheet erosion during periods of heavy wash. During heavy flooding this site is inundated by dam water.

Given the sheltered nature of this site, previous observance of archaeological material, low disturbance, and small size of the overhang, this site is assessed as having **moderate potential** for subsurface archaeological deposits.

Figure 7.149 AHIMS site #04-1-0090 - facing northwest

Table 7.1 Previously recorded sites within study area that were not re-found during the 2017 archaeological survey

Site Number	Feature(s)	Reason
04-1-0025	artefact scatter	already inundated
04-1-0026/0027	scarred tree & artefact scatter	already inundated
CH3	artefact scatter	not re-found
CH5	isolated find	not re-found; CHD A1 PAD identified as underlying deposit with subsurface potential
CH6	artefact scatter	not re-found; other surface artefacts visible in the area; CHD PAD9 identified as underlying deposit with subsurface potential
CH7	artefact scatter	not re-found; other surface artefacts visible in the area; CHD PAD9 identified as underlying deposit with subsurface potential
CH8	artefact scatter	not re-found; other surface artefacts visible in the area. CHD PAD9 identified as underlying deposit with subsurface potential
04-1-0011	isolated find	not re-found
04-1-0010	isolated find	not re-found
04-1-0009	isolated find	not re-found
04-1-0012	artefact scatter	inundated at time of survey
04-1-0015	artefact scatter	inundated at time of survey
04-1-0016	grinding grooves	already inundated
04-1-0130	isolated find	not re-found. GPS point suspected to be erroneous
04-1-0194	isolated find	not re-found

7.4 Historical Sites

CHD-H1 Building platform and associated plantings (Frances Garner Property)

GDA Zone 56 –529436.6851100

Portion 110, Parish of Nullum, County of Rous

This site consists of a possible building mound/platform associated with a number of introduced plantings, including three lemon trees planted at equal spacing (approx. 7 m apart). The site is situated on a crest that grades into mid slope. The site is well-drained, and based on the existing inundation of Clarrie Hall Dam any previous buildings would have been above the Doon Doon Creek flood zone.

As seen in the aerial photograph from 1965 (Figure 7.150) a building is evident in Portion 110. Portion 110 was selected by Francis Garner in 1909. Francis then would reside in the property for 12 years (newspaper reference). Francis Garner continued to own the portion (Parish Maps 1909, 1912 and 1922) until around 1933 when the E. S. & A. Bank Ltd takes ownership of the portion (Parish Map 1933).

According to Francis Garner's Obituary in the *Tweed Daily* Monday November 29, 1943

> *Mr Francis Garner (80) died on Saturday at his home at Cooper's Plains, Brisbane. Born at Nottingham England, and married in Sydney in 1885, to Miss Katherine Fanny Blake, Mr Garner was one of the first selectors in the Doon Doon district and was engaged in dairying there for 12 years. He later moved to Murwillumbah and conducted a garage and service station on the southside for a number of years.*

Figure 7.150 Aerial photograph of Doon Doon Creek showing position of former building

Across the landform as a whole ground surface exposure incidence is 2%, with 10% visibility within exposures. Existing impacts and disturbances in this area are relatively limited and relate to seasonal

slashing of grass. Soils are estimated to be about 40 cm in depth on the low gradient areas of the spur crest associated with the building mound.

Given the low levels of disturbance, this site is assessed as some potential for historical subsurface archaeological deposits associated with the suspected building platform, however it is unlikely that excavation of this site would provide further information that could not already be found in historic resources.

CHD-H2 Crams Farm Complex

Portion 35 and 99, Parish of Nullum, County of Rous

This site complex contains three buildings and a Pecan tree (Figure 7.153) dating to the 1930's or later. The buildings include a farm house (**Figure 7.151**), the bails and dairy (Figure 7.154) (circa 1930) and a pig stye (circa 1960) (Figure 7.155).

The farm house currently standing is one which replaced the older farm house which had burnt down in 1928.

Portion 35 and 99 of 640 acres were initially selected in 1909 by Thomas Wood. In 1918, James Edward Cram bought the land from David Gilmore. On 11 November, 1918, James Edward Cram and his Mary Ann (Polly) and their children moved on the Crams Farm (Tweed Shire Signage).

The Cram family known for their dairying which can be seen with the existing structures, also ran a saw mill, bred pigs, crew crops and had the Telephone Exchange at their house.

The Cram family dairy would become the last running dairy on the Doon Doon Creek. It was sold to the Tweed Shire in 1979.

The buildings that now exist on the site are adaptively reused for the recreational reserve that has been established for the land next to Clarrie Hall Dam.

The Crams Farm House

GDA Zone 56 – 529498.6850306

This house is no longer in active use and has had multiple additions over time. The original section of the house seems to be on its original hand cut stumps, makes up the southern portion of the building, and is constructed of horizontal timber weatherboard cladding.

Additions, of which there were at least two phases, are sympathetic to the original exterior of the building. The original home likely had a veranda on the northern side of the building, which has since been incorporated into an extension, increasing the internal size of the building.

The western side of the building incorporates a laundry, which also seem to be an addition as evidenced by concrete floors. The carport on the western side of the building may also have been constructed during the same phase. The original roof has also been replaced.

The interpretive signs at the site give a good account of the historic context of the inhabitants of the farm:

> *Portions 35 and 99 together consisting of 640 acres were selected in 1909 by Thomas Wood. In 1918, James Edward Cram bought the land from David Gilmore and with his wife Mary Ann (Polly) and their children, moved in on 11th November 1918.*
>
> *The family and their goods travelled from Byrill Creek ona German wagon, with the pigs on a dray and the cattle driven by road via McDonald's property to Gilmore's Dip.*
>
> *Ned and Polly had six children: Charlie, Lillian, Margery (Doll), Roy, Ivy and Oriel (Joe). Roy contracted polio when he was 16. Despite losing the use of one leg, he continued to*

work using a horse while driving his bullock team. In 1938 Charlie spent two years in hospital in Brisbane with polio, which left him confined to a wheel chair for 27 years. A workshop was built for wheel chair access and benches built to suit his needs.

While they primarily ran a dairy farm, the Cram family also ran a saw mill, had a Clydesdale stallion for stud, bred pigs, grew corn and small crops and had the Telephone Exchange in the house. They also planted many fruit trees.

There were many houses on the farm, including the main home (which was replaced after burning down in 1928), houses for the mill workers and homes for some of the married family members.

During W.W.2 while some of the men were serving, families joined forces resulting in over 20 children living there.

The farm was also a sporting centre for the Creek. Serious cricket was played on the flats and the women hosted a Vigoro team, known as the Red devils.

The mill, run by Roy, Charlie and Joe, had four bullock teams bringing in logs twice a day. Cut from the farm and a timber lease, sawn hardwood was supplied to build homes for the selectors. The later generation; Lindsay, Allan and Charlie, cut gum for local case mills, while Ron and Lindsay used chain saws to cut fence posts and Bob Cram drove the truck.

The dairy supplied cream to the Norco Butter Factory at Uki, with cans going three times a week in winter and an extra delivery on Saturdays during summer.

When the factory closed, the family switched to bulk milk and when they sold to the Tweed Shire in 1979 they were the last dairy operating on Doon Doon Creek. There were 19 family members living or working on the farm at that time.

There was no obvious archaeological evidence of any other of the 'many houses' said to be on the farm.

The Bails and Dairy

GDA Zone 56 – 529516.6850379

A number of updates have occurred to these buildings, especially that of the dairy. The supporting posts have been replaced, as outlined by the interpretive signage information below. Paving has been added as part of the buildings adaptive reuse as an undercover picnic area.

The interpretive signs at the site give a good account of the historic context of the structure:

The bails and dairy were built by Ned Cram and his sons in 1930, using techniques he learnt from working with his brothers, who were ship builders on the South Coast. All timber was cut on the property.

Four people could milk eight cows while the rest of the herd waited under cover. Water was originally hauled from the creek but later a well and a pump were used. "

The dairy was adapted over time to meet requirements. The original roof structure has been retained with the uprights replaced by Tweed Shire Council.

The Pig Stye

GDA Zone 56 – 529513.6850455

The fabric of the pig sty has been heavily changed through adaptive reuse as a picnic/barbeque area. The paved floor is an addition, incorporating electric barbeques and a large amount of seating. Much of the structure is likely original given the relatively recent age of the building compared to other structures within the site complex.

The interpretive signs at the site give a good account of the historic context of the structure:

> *The Pig Styes were built in 1960 by Ron and Roy Cram and housed 150 pigs with a central drain and access.*
>
> *On the rise above the styes, were two 16-ton grain stores. Corn was grown on the land now under water. Other grains were bought in and the boys had a hammer mill to grind grain and a mixing machine to prepare the feed.*
>
> *Breeds raised included Large Whites, Land Race, Tamworth and British Blacks*

The Pecan Tree

The following information summarises the historic context of this tree:

> *The Pecan Tree was planted in March 1954 by Charlie's wife Crace Cram nee Jones.*
>
> *She had always wanted one and after the major flood of 1954 she found a battered, silt covered survivor at a nursery near Murwillumbah.*
>
> *It was priced at four shillings and six pence. Her offer of one shilling and six pence was accepted. Under her care, it flourished.*

Figure 7.151 Crams Farm House

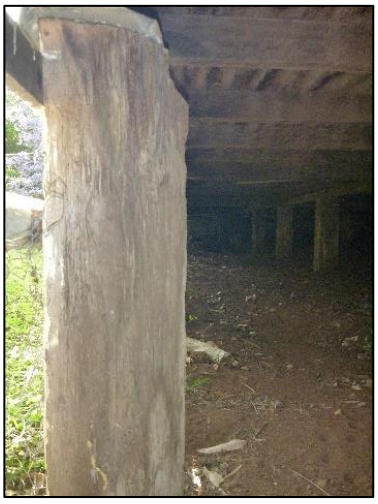


Figure 7.152 Crams Farm House on original stumps

Figure 7.153 The Pecan Tree

Figure 7.154 The Bails and Dairy

Figure 7.155 The Pig Styes

Figure 7.156 Features of site CHD-H2
(Crams Farm site complex)

CHD-H3 Doon Doon Hall

GDA Zone 56 –529547.6850409

This site is a building that is made up of timber given by local saw mills from the Terragon area.

The footprint of the Hall is 13 x 9.5 m.

Doon Doon Hall was previously known as Terragon Hall prior to its movement to the Crams Farm reserve. The Terragon Hall was built in 1921 and was officially opened on 17 September, 1921. The hall was described as a 40 ft x 30 ft hall with a floor space of 30 ft and a stage of 10 ft and was the result of voluntary labour. The hall was originally built on a quarter of an acre of land leased from Mr. J. Reynolds.

In 1929, it was decided the Terragon Hall would be moved from its original site to one considered more suitable. The new site would be Mr. C. Devine's property at Doon Doon. This movement meant that some alterations and re-creations would need to be done to the building to move it.

In 2005, the Terragon Hall was then again moved from Mr. C. Devine's property to its current location at Cram's Farm Reserve. The Terragon Hall then became known as Doon Doon Hall and at the time had renovations done on the kitchen, deck, store room and stage.

The hall was officially reopened on 5 December, 2010.

The Hall is located near to the existing Crams Farm buildings on the reserve

The interpretive signs at the site gives the following account of the historic context of the structure:

> *The Terragon Hall was moved to Mr. C Devine's property at Doon Doon in 1930. An old-time dance was held prior to its removal as a farewell to the building. The Hall had been built with local support and volunteer labour by the residents of Byrrill Creek and Terragon, who subscribed 7 pounds per family, and assisted by Uki business people giving the same amount. The timber was provided by Byrrill Creek residents and hauled by the local teamsters to J.C. Priest's mill, their staff working at reduced rates. Byrrill Creek and Terragon subscribers are life members of the Hall at Doon Doon.*
>
> *In November 2005, the Hall was moved from Mr. C Devine's property to its current location at Cram's Farm. A Steering Committee was formed to re-establish the use of the Hall on 7 September 2008. The Committee was successful in securing a $40,000 grant through the Community Builders Program to build a new kitchen, large undercover deck, store room and stage in the Hall, which was officially re-opened with a ceremony attended by about 80 old time and present residents on 5 December 2010. The inaugural AGM was held in March of 2011.*

The Tweed Daily Tuesday 22nd October 1929

> *The committee of the Terragon Hall was successful, through efforts of Mr. A. E. Budd. M.L.A, in securing permission from the Under Secretary to remove the hall from its present site to one considered more suitable on Mr. C. Devine's property at Doon Doon. Some alterations to the structure on its re-creation have been considered necessary by the Under Secretary, and tenders are to be called for the removal and re-erection of the hall to comply with the regulations.*
>
> *The committee, with a sympathetic feeling towards the people, who in the first place built on the present site, and who, through force of circumstances, changing times, an shifting population, have been forced to arrange for the hall's removal, have decided to hold an old time dance in aid of the hall funds, prior to the removal, as a kind of farewell to the building. Keen interest is being taken in the function and, with fine weather, the dance promises to be a success.*

Figure 7.157 Exterior of Doon Doon Hall

Figure 7.158 Exterior of Doon Doon Hall

7.5 Inventory of Site Locations

Table 7.2 Inventory of Site Locations

Site Number	Feature(s)	Survey Unit	Landform
CHD-A1	isolated find & PAD	134	mid-slope crest basal slopes flats
CHD-A2	isolated find	134	mid-slope
CHD-A3	isolated find (cultural significance)	115	mid-slope
CHD-A4	artefact scatter	128	mid-slope
CHD-A5	isolated find	129	crest
CHD-A6	artefact scatter & PAD	130	crest
CHD-A7	isolated find	125	mid-slope
CHD-A8	artefact scatter	118	mid-slope
CHD-A9	isolated find	114	drainage line mid-slope
CHD-A10	isolated find	59	mid-slope
CHD-A11	isolated find (cultural significance)	63	mid-slope
CHD-A12	isolated find	55	mid-slope
CHD-A13	isolated find	55	mid-slope
CHD-A14	isolated find	97	stream bank/channel

Site Number	Feature(s)	Survey Unit	Landform
	(cultural significance)		
CHD-A15	isolated find	97	stream bank/channel
CHD-A16	artefact scatter & PAD	98	basal slope mid-slope
CHD-A17	artefact scatter & PAD	109	crest
CHD-A18	isolated find	105	crest
CHD-A19	artefact scatter	104	mid-slope
CHD-A20	sandstone pitting/holes (cultural significance)	91	stream bank/ channel
CHD-A21	isolated find	90	drainage line
CHD-A22	artefact scatter	89	mid-slope
CHD-A23	isolated find & PAD	85	crest
CHD-A24	isolated find (cultural significance)	81	basal slopes
CHD-A25	Isolated Find	48	crest
CHD-A26	artefact scatter	186	crest
CHD-A27	artefact scatter & PAD	48	crest
CHD-A28	isolated find (cultural significance)	47	mid-slope
CHD-A29	isolated find (cultural significance)	46	drainage line
CHD-A30	artefact scatter & PAD	170 171	mid-slope crest
CHD-A31	artefact scatter	174	crest
CHD-A32	artefact scatter	174	crest
CHD-A33	isolated find	170	mid-slope
CHD-A34	artefact scatter	162	mid-slope
CHD-A35	isolated find & PAD	163 162 164	crest mid-slope

Site Number	Feature(s)	Survey Unit	Landform
CHD-A36	artefact scatter & PAD	168	crest
CHD-A37	isolated find & PAD	153	crest
CHD-A38	isolated find & PAD	144	crest
		142	mid-slope
CHD-A39	isolated find	143	crest
CHD-A40	artefact scatter	142	mid-slope
CHD-A41	artefact scatter	143	crest
CHD-A42	isolated find	142	mid-slope
CHD-A43	artefact scatter	140	crest
CHD-A44	isolated find	147	drainage line
CHD-A45	isolated find	149	mid-slope
CHD-A46	isolated find	188	crest
CHD-A47	isolated find	140	crest
CHD-A48	artefact scatter & PAD	140	crest
		139	mid-slope
CHD-A49	artefact scatter	187	crest
CHD-A50	artefact scatter	137	mid-slope
CHD-A51	isolated find	137	mid-slope
CHD-A52	isolated find	137	mid-slope
CHD-A53	isolated find	137	mid-slope
CHD-A54	isolated find	N/A	crest
CHD-A55	artefact scatter & PAD	159	crest
CHD-A56	restricted site	Restricted	crest
CHD-A57	grinding groove	64	crest
CHD-PAD1	PAD	131	basal slopes
CHD-PAD2	PAD	111	basal slopes
CHD-PAD3	PAD	87	flats
		88	basal slopes

Site Number	Feature(s)	Survey Unit	Landform
CHD-PAD4	PAD	83	basal slopes
		85	crest
CHD-PAD5	PAD	34	basal slopes
CHD-PAD6	PAD	31	crest
		28	mid-slope
CHD-PAD7	PAD	19	crest
		18	mid-slope
CHD-PAD8	PAD	sampling area	crest
CHD-PAD9	PAD	143	crest
		142	mid-slope
CHD-PAD10	PAD	64	crest
CHD-RS1	PAD	21	crest
CHD-ST1	scarred tree	3	mid-slope
CHD-G1	Geological Source Chalcedony	128	mid-slope
CHD-H1	house mound and associated plantings (Frances Garner)	128	mid-slope
CHD-H2	Crams Farm Site Complex	128	mid-slope
CHD-H3	Doon Doon Hall	128	mid-slope

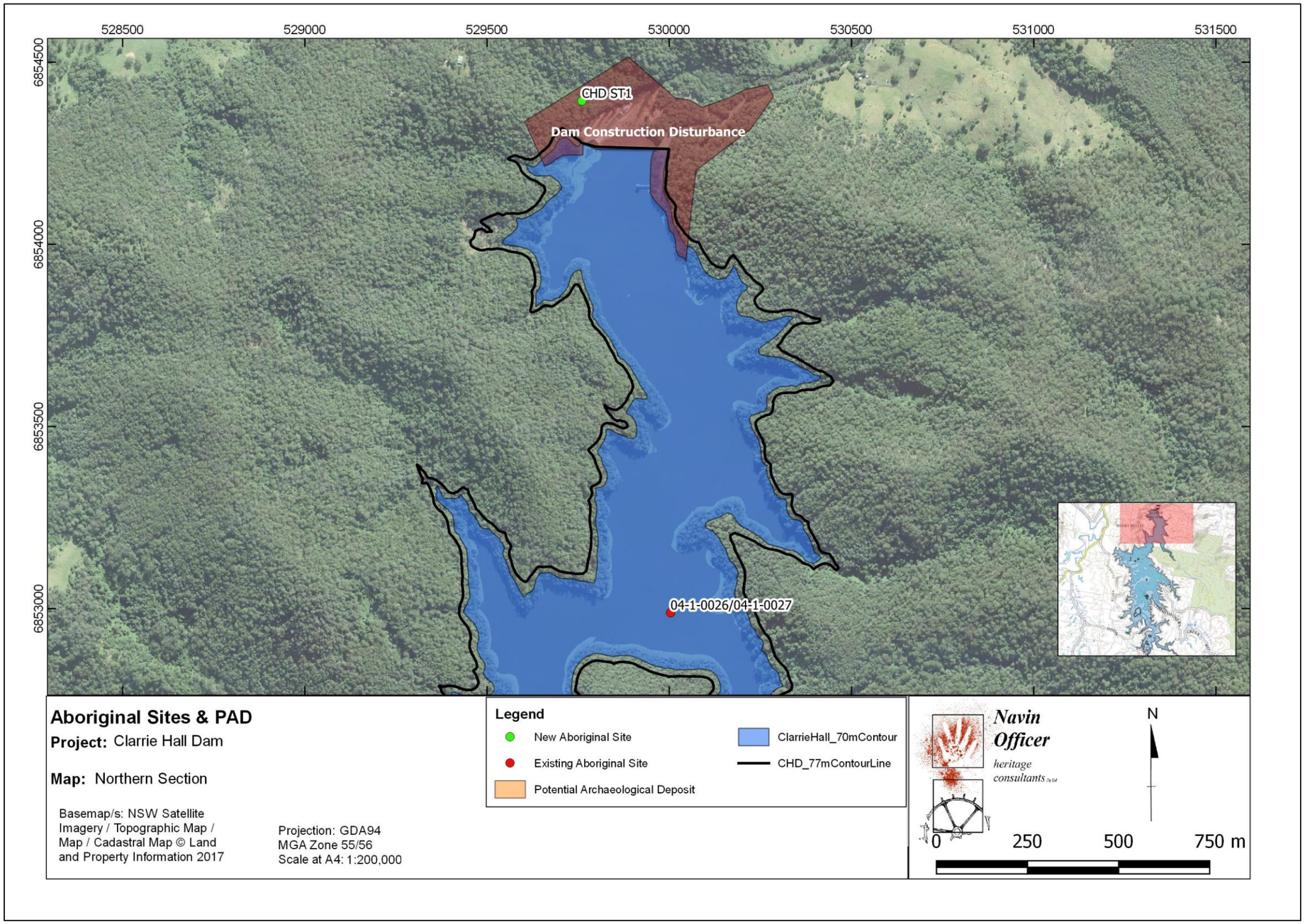


Figure 7.159 Locations of Aboriginal sites and PADs
within or directly adjacent to the northern section of the Clarrie Hall Dam study area

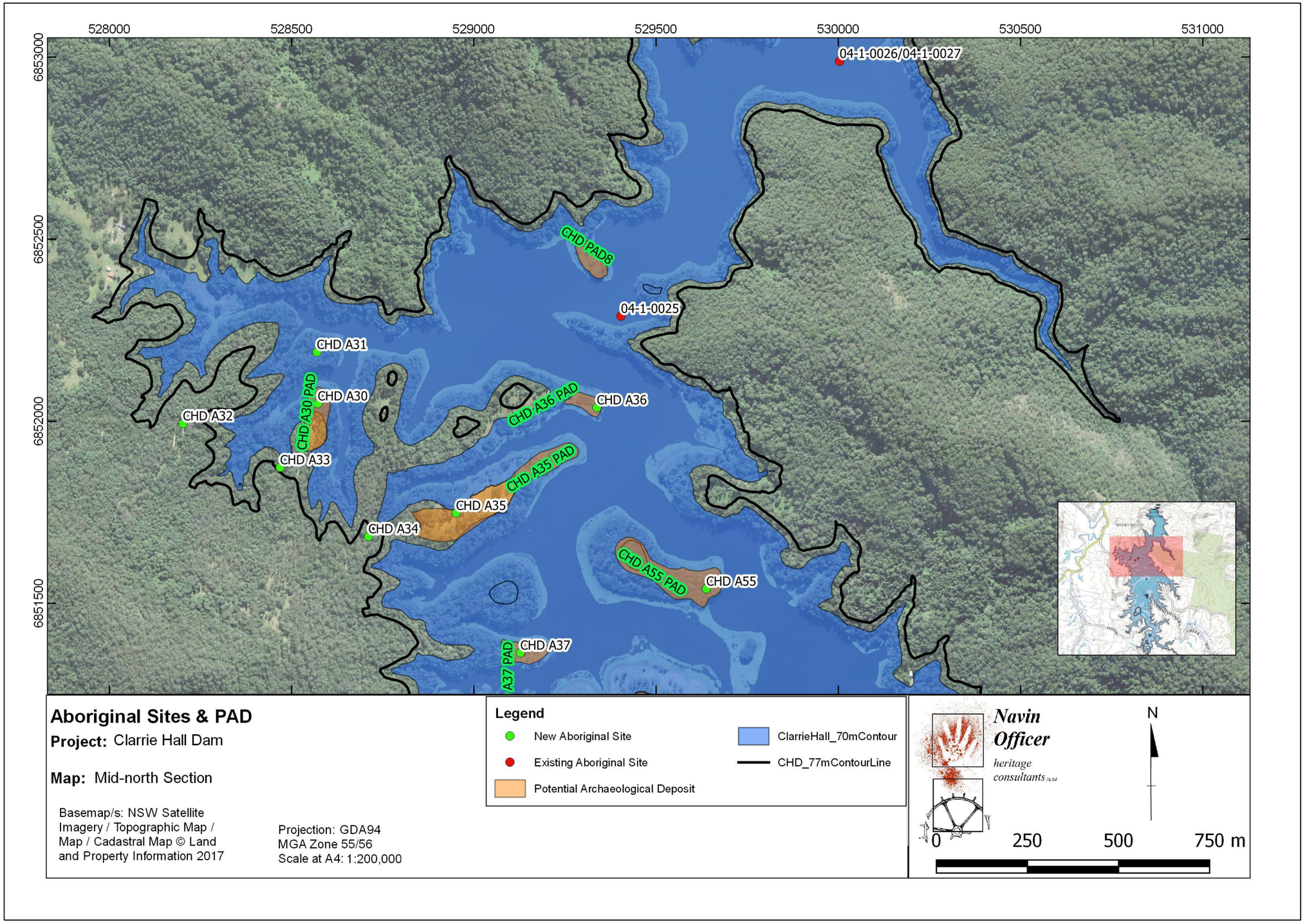


Figure 7.160 Locations of Aboriginal sites and PADs within or directly adjacent to the mid-north section of the study area

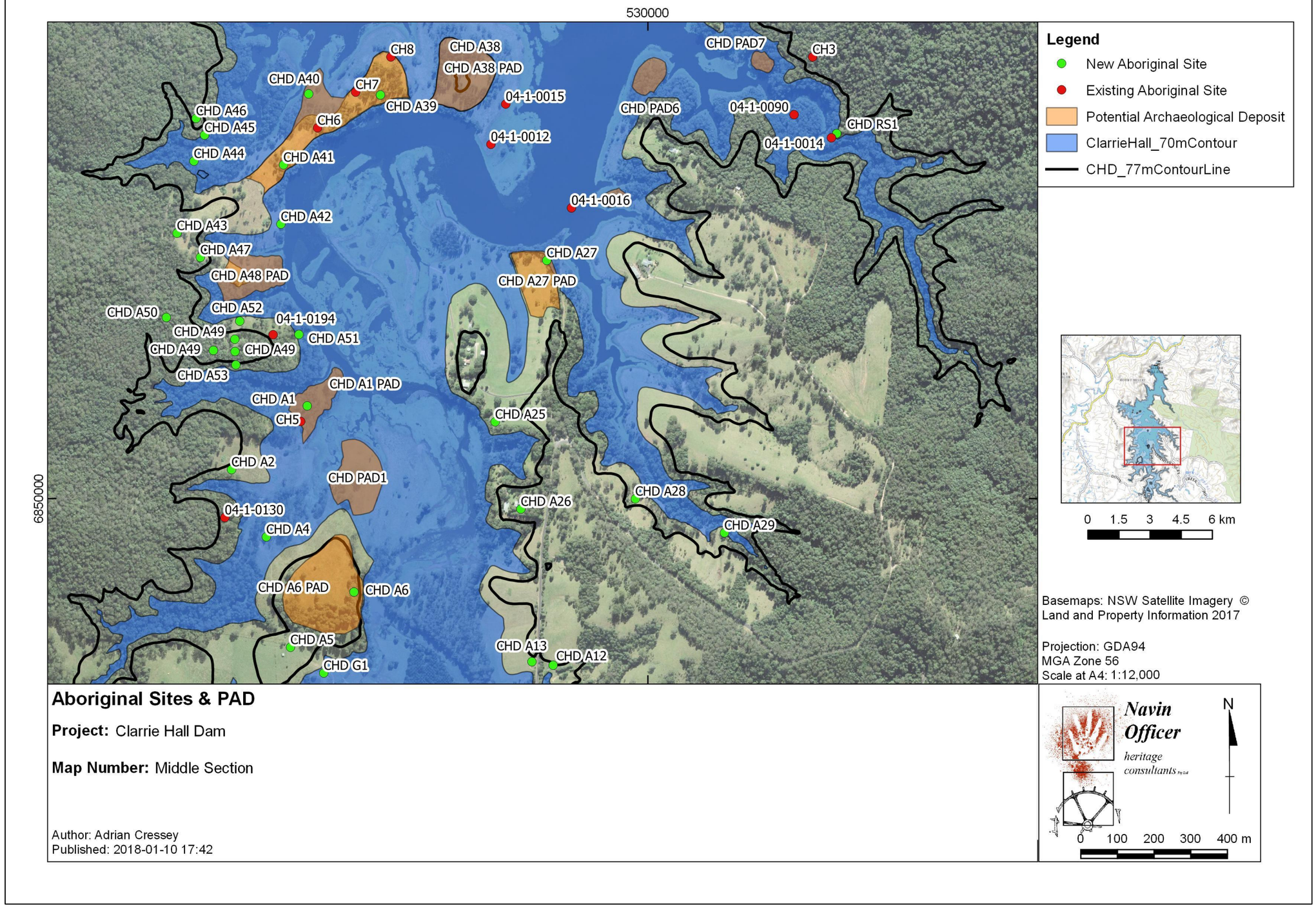


Figure 7.161 Locations of Aboriginal sites and PADs within or directly adjacent to the middle section of the Clarrie Hall Dam study area

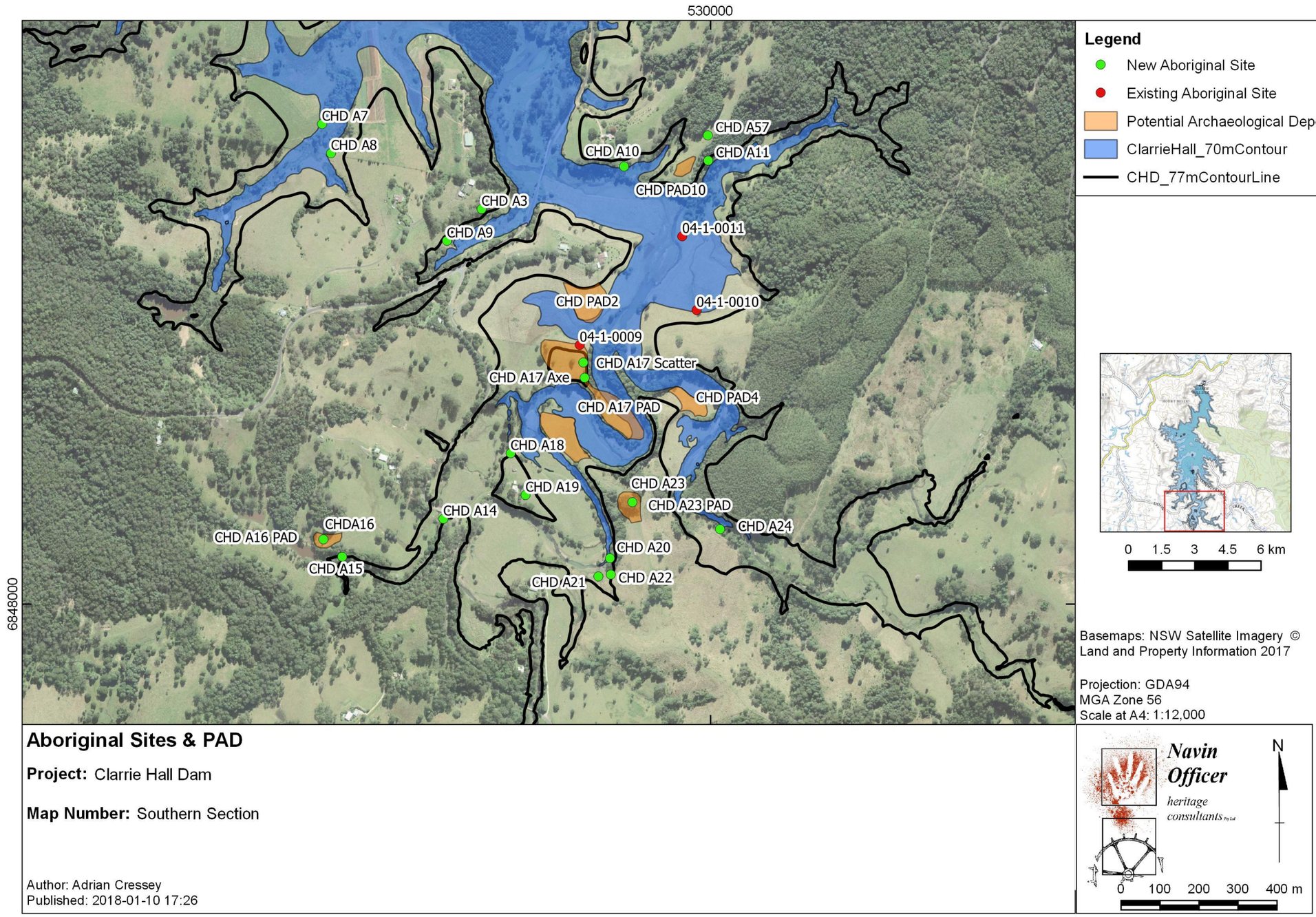


Figure 7.162 Locations of Aboriginal sites and PADs within or directly adjacent to the southern section of the Clarrie Hall Dam study area

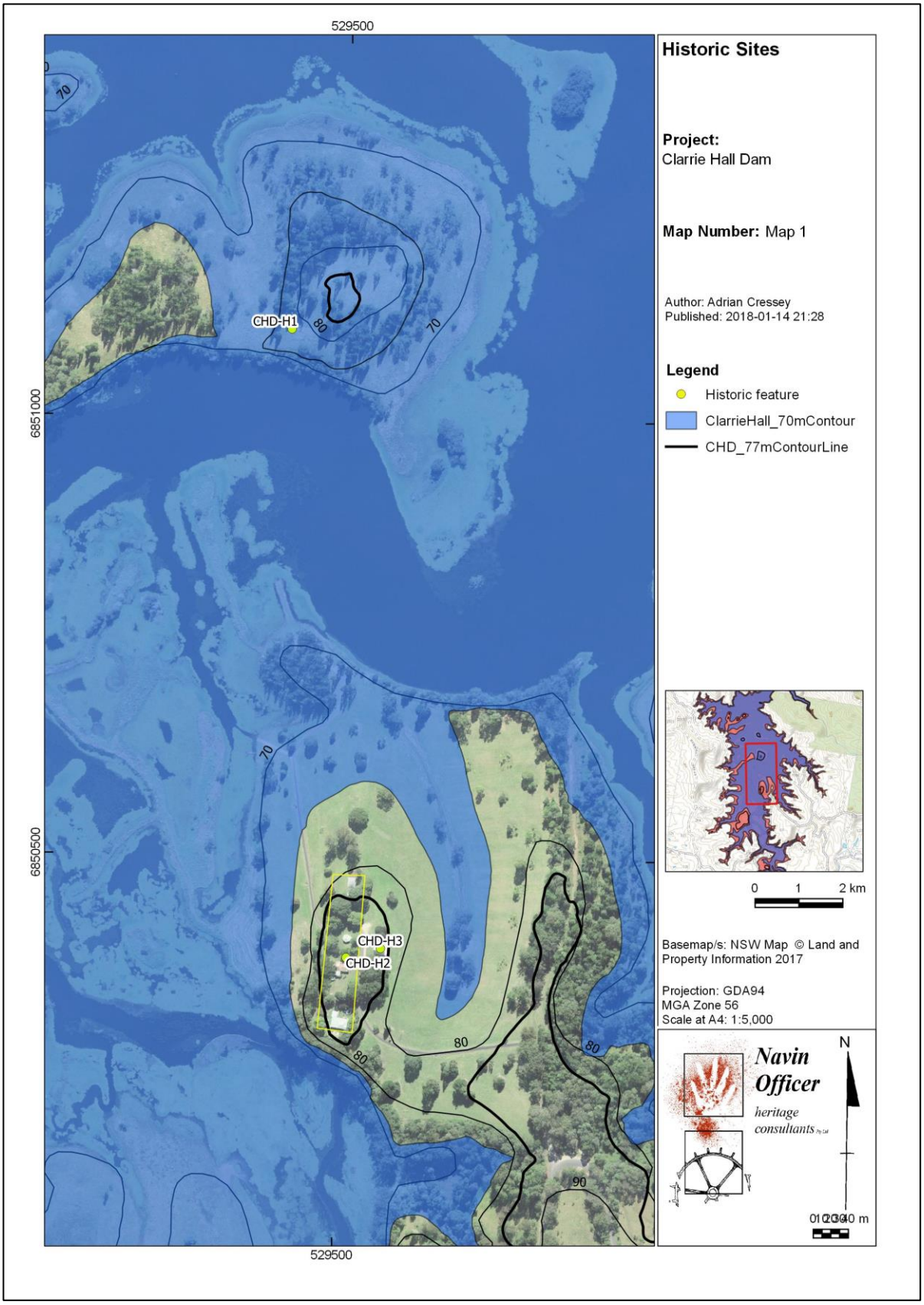


Figure 7.163 Locations of historic sites within or directly adjacent to the Clarrie Hall Dam study area

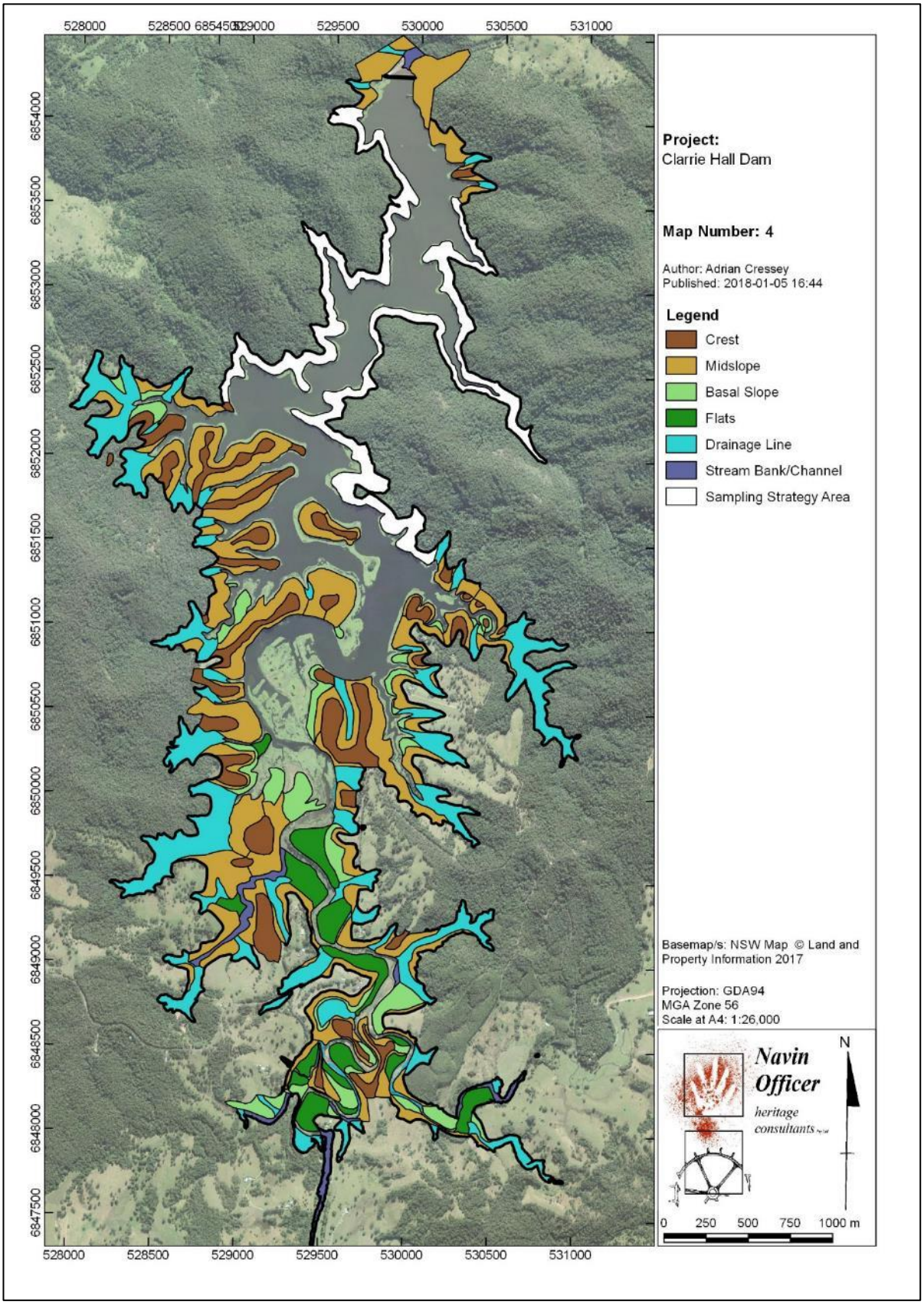


Figure 7.164 Landform mapping for the surveyed area and demarcation of area subject to sampling strategy (white)

7.6 Survey Coverage and Visibility Variables

The effectiveness of archaeological field survey is to a large degree related to the obtrusiveness of the sites being looked for and the incidence and quality of ground surface visibility. Visibility variables were estimated for all areas of comprehensive survey within the study area. These estimates provide a measure with which to gauge the effectiveness of the survey and level of sampling conducted. They can also be used to gauge the number and type of sites that may not have been detected by the survey.

Ground surface visibility is a measure of the bare ground visible to the archaeologist during the survey. There are two main variables used to assess ground surface visibility, the frequency of exposure encountered by the surveyor and the quality of visibility within those exposures. The predominant factors affecting the quality of ground surface visibility within an exposure are the extent of vegetation and ground litter, the depth and origin of exposure, the extent of recent sedimentary deposition, and the level of visual interference from surface gravels. Two variables of ground surface visibility were estimated during the survey:

- A percentage estimate of the total area of ground inspected which contained useable exposures of bare ground; and
- A percentage estimate of the average levels of ground surface visibility within those exposures. This is a net estimate and accounts for all impacting visual and physical variables including the archaeological potential of the sediment or rock exposed.

The obtrusiveness of different site types is also a crucial factor in assessing the impact of visibility levels. Sites based on rock exposures, such as rock shelters, open engravings and grinding grooves are more likely to be encountered than sites with no surface relief located on, or within, sedimentary matrices. Rock platform sites are still subject to visibility constraints in the form of obscuring ground litter, flood debris and sedimentation, however, rock shelters are less likely to go uninspected. The inspection rate of rock shelters is likely to be 100% in a comprehensive survey, however, the extent of leaf litter and recent sediment on a rock shelter floor may be an important factor in a recorder's ability to detect either a site, or simply a potential archaeological deposit.

In another example, artefacts made from locally occurring rock such as quartz may be more difficult to detect under usual field survey conditions than rock types that are foreign to the area. The impact of natural gravels on artefact detection was taken into account in the visibility variables estimates outlined above.

The natural incidence of sandstone platforms suitable for grinding grooves or engraving, together with the incidence of old growth trees, are important considerations in identifying both survey effectiveness and site location patterns outside of environmentally determined factors.

It should be noted that, due to topographic and vegetational access constraints, this archaeological field survey was conducted using a combination of standard archaeological survey methodology. Figure 7.164 shows the area that was covered by the sampling strategy (white). These areas were heavily represented by steep mid-slopes with very low ground visibility. Descriptions of the areas included in the sampling strategy are provided in Appendix 3.

The total area covered by this archaeological assessment is 4,360,688m^2. Of the total area 3,816,775 m^2 (87.5%) was covered by archaeological survey, while the remaining 543,913 m^2 (12.5%) was covered by the sampling strategy.

Table 7.3 summarises estimates for the degree to which separate landforms within the surveyed study area were examined and also indicates the ground surface exposure incidence and average ground visibility present in each case. A total of 3.29% of the surveyed ground area was inspected during the survey, with 19.81 % providing useable archaeological exposures.

Taking into account survey coverage, archaeologically useable exposures, and visibility variables, the effective survey coverage (ESC) was 0.95 % of the total surveyed area. The ESC attempts to provide an estimate of the proportion of the total study area that provided a net 100% level of ground surface visibility to archaeological surveyors.

Table 7.3 Survey Coverage Data

Survey Unit	Landform	Survey unit area (sq. m)	Visibility %	Exposure %	Effective coverage area (sq. m) survey unit area x visibility % x exposure %)	Effective Coverage % (effective coverage area / survey unit area x 100)
1	mid-slope	9765	20	1	19.53	0.2
2	drainage line	4280	30	2	25.68	0.6
3	mid-slope	31455	30	2	188.73	0.6
4	drainage line	4611	30	2	27.67	0.6
5	mid-slope	8407	30	2	50.44	0.6
6	stream bank/channel	8784	40	10	351.36	4
7	mid-slope	96437	30	5	1446.56	1.5
8	drainage line	5507	30	5	82.61	1.5
9	mid-slope	2234	20	2	8.94	0.4
10	crest	5727	20	2	22.91	0.4
11	mid-slope	3614	20	2	14.46	0.4
12	drainage line	3811	20	2	15.24	0.4
13	mid-slope	7332	20	2	29.33	0.4
14	drainage line	7182	30	2	43.09	0.6
15	mid-slope	9030	40	5	180.60	2
16	crest	5183	40	5	103.66	2
17	drainage line	7571	20	5	75.71	1
18	mid-slope	33025	20	2	132.10	0.4
19	crest	1410	20	2	5.64	0.4
20	crest	1215	20	2	4.86	0.4
21	crest	1595	20	2	6.38	0.4

Survey Unit	Landform	Survey unit area (sq. m)	Visibility %	Exposure %	Effective coverage area (sq. m) survey unit area x visibility % x exposure %)	Effective Coverage % (effective coverage area / survey unit area x 100)
22	drainage line	101238	10	2	202.48	0.2
23	mid-slope	12310	10	1	12.31	0.1
24	basal slope	6609	10	1	6.61	0.1
25	crest	1535	10	1	1.54	0.1
26	drainage line	7642	10	1	7.64	0.1
27	basal slope	1183	10	2	2.37	0.2
28	mid-slope	56800	20	5	568.00	1
29	crest	9675	10	2	19.35	0.2
30	basal slope	2754	20	2	11.02	0.4
31	crest	13680	20	2	54.72	0.4
32	drainage line	4260	20	5	42.60	1
33	crest	3783	20	10	75.66	2
34	basal slope	4786	30	20	287.16	6
35	drainage line	14285	20	10	285.70	2
36	mid-slope	1988	20	10	39.76	2
37	mid-slope	17538	20	20	701.52	4
38	basal slope	8891	20	20	355.64	4
39	basal slope	2042	20	20	81.68	4
40	drainage line	11711	20	20	468.44	4
41	basal slope	2795	20	20	111.80	4
42	mid-slope	8060	20	20	322.40	4
43	drainage line	30560	20	20	1222.40	4

Survey Unit	Landform	Survey unit area (sq. m)	Visibility %	Exposure %	Effective coverage area (sq. m) survey unit area x visibility % x exposure %)	Effective Coverage % (effective coverage area / survey unit area x 100)
44	basal slope	6269	20	20	250.76	4
45	mid-slope	18190	20	20	727.60	4
46	drainage line	38713	20	10	774.26	2
47	mid-slope	127035	40	5	2540.70	2
48	crest	80727	90	10	7265.43	9
49	drainage line	17048	40	5	340.96	2
50	crest	7651	70	50	2677.85	35
51	basal slope	21324	40	5	426.48	2
52	drainage line	17454	1	1	1.75	0.01
53	mid-slope	10141	30	5	152.12	1.5
54	drainage line	14435	30	5	216.53	1.5
55	mid-slope	18987	30	5	284.81	1.5
56	basal slope	34641	30	5	519.62	1.5
57	flats	43344	10	1	43.34	0.1
58	drainage line	16591	30	5	248.87	1.5
59	mid-slope	26088	20	2	104.35	0.4
60	flats	34629	10	1	34.63	0.1
61	drainage line	9525	20	5	95.25	1
62	drainage line	5755	10	1	5.76	0.1
63	mid-slope	19071	10	1	19.07	0.1
64	crest	6321	5	1	3.16	0.05
65	drainage line	58019	20	2	232.08	0.4

Survey Unit	Landform	Survey unit area (sq. m)	Visibility %	Exposure %	Effective coverage area (sq. m) survey unit area x visibility % x exposure %)	Effective Coverage % (effective coverage area / survey unit area x 100)
66	mid-slope	14126	20	2	56.50	0.4
67	stream bank/channel	3623	10	1	3.62	0.1
68	basal slope	35981	10	1	35.98	0.1
69	mid-slope	3911	10	2	7.82	0.2
70	mid-slope	4094	10	1	4.09	0.1
71	drainage line	10765	5	1	5.38	0.05
72	mid-slope	9634	5	1	4.82	0.05
73	basal slope	15379	15	2	46.14	0.3
74	stream bank/channel	10938	15	2	32.81	0.3
75	flats	27325	15	2	81.98	0.3
76	drainage line	3075	15	2	9.23	0.3
77	basal slope	4730	15	2	14.19	0.3
78	drainage line	24395	15	2	73.19	0.3
79	mid-slope	29342	20	2	117.37	0.4
80	drainage line	1776	20	2	7.10	0.4
81	basal slope	7384	20	2	29.54	0.4
82	flats	9741	1	1	0.97	0.01
83	basal slope	4102	1	1	0.41	0.01
84	flats	4284	5	1	2.14	0.05
85	crest	23549	20	5	235.49	1
86	mid-slope	19237	2	1	3.85	0.02
87	flats	19112	1	1	1.91	0.01

Survey Unit	Landform	Survey unit area (sq. m)	Visibility %	Exposure %	Effective coverage area (sq. m) survey unit area x visibility % x exposure %)	Effective Coverage % (effective coverage area / survey unit area x 100)
88	basal slope	3180	2	2	1.27	0.04
89	mid-slope	10492	1	1	1.05	0.01
90	drainage line	10096	50	2	100.96	1
91	stream bank/channel	3639	2	2	1.46	0.04
92	basal slope	2479	2	2	0.99	0.04
93	flats	28408	1	1	2.84	0.01
94	stream bank/channel	16819	5	1	8.41	0.05
95	drainage line	12388	1	1	1.24	0.01
96	drainage line	1938	40	2	15.50	0.8
97	stream bank/channel	8017	30	2	48.10	0.6
98	basal slope	16348	40	2	130.78	0.8
99	drainage line	4301	40	2	34.41	0.8
100	basal slope	6868	30	2	41.21	0.6
101	mid-slope	60409	2	2	24.16	0.04
102	flats	18773	10	2	37.55	0.2
103	basal slope	5977	10	2	11.95	0.2
104	mid-slope	13561	10	2	27.12	0.2
105	crest	6694	10	2	13.39	0.2
106	flats	4160	2	1	0.83	0.02
107	basal slope	16128	2	1	3.23	0.02
108	flats	8824	2	1	1.76	0.02
109	crest	14325	2	2	5.73	0.04

Survey Unit	Landform	Survey unit area (sq. m)	Visibility %	Exposure %	Effective coverage area (sq. m) survey unit area x visibility % x exposure %)	Effective Coverage % (effective coverage area / survey unit area x 100)
110	basal slope	5189	2	2	2.08	0.04
111	basal slope	13757	1	1	1.38	0.01
112	drainage line	21589	1	1	2.16	0.01
113	flats	36534	1	1	3.65	0.01
114	drainage line	34306	5	2	34.31	0.1
115	mid-slope	23343	40	2	186.74	0.8
116	flats	41651	2	1	8.33	0.02
117	drainage line	21357	40	2	170.86	0.8
118	mid-slope	27750	30	2	166.50	0.6
119	crest	43942	40	2	351.54	0.8
120	stream bank/channel	36507	5	2	36.51	0.1
121	drainage line	11783	50	2	117.83	1
122	mid-slope	13590	50	2	135.90	1
123	drainage line	31782	30	2	190.69	0.6
124	mid-slope	5250	50	1	26.25	0.5
125	mid-slope	28395	20	2	113.58	0.4
126	flats	11474	20	2	45.90	0.4
127	drainage line	12490	20	2	49.96	0.4
128	mid-slope	149451	20	2	597.80	0.4
129	crest	5570	20	20	222.80	4
130	crest	30182	15	5	226.37	0.75
131	basal slope	57339	20	1	114.68	0.2

Survey Unit	Landform	Survey unit area (sq. m)	Visibility %	Exposure %	Effective coverage area (sq. m) survey unit area x visibility % x exposure %)	Effective Coverage % (effective coverage area / survey unit area x 100)
132	drainage line	142659	2	1	28.53	0.02
133	basal slope	18564	5	1	9.28	0.05
134	mid-slope	24050	5	1	12.03	0.05
135	crest	22625	10	2	45.25	0.2
136	drainage line	44160	2	1	8.83	0.02
137	mid-slope	56614	5	2	56.61	0.1
138	drainage line	6917	1	1	0.69	0.01
139	mid-slope	9555	5	2	9.56	0.1
140	crest	17108	5	2	17.11	0.1
141	drainage line	8109	2	2	3.24	0.04
142	mid-slope	148451	50	2	1484.51	1
143	crest	34043	50	2	340.43	1
144	crest	7447	50	2	74.47	1
145	drainage line	3712	30	2	22.27	0.6
146	basal slope	19457	5	2	19.46	0.1
147	drainage line	38156	2	2	15.26	0.04
148	mid-slope	7269	2	2	2.91	0.04
149	mid-slope	30489	60	2	365.87	1.2
150	basal slope	1090	10	1	1.09	0.1
151	drainage line	4776	2	2	1.91	0.04
152	mid-slope	9089	20	1	18.18	0.2
153	crest	16471	20	1	32.94	0.2

Survey Unit	Landform	Survey unit area (sq. m)	Visibility %	Exposure %	Effective coverage area (sq. m) survey unit area x visibility % x exposure %)	Effective Coverage % (effective coverage area / survey unit area x 100)
154	mid-slope	51590	20	1	103.18	0.2
155	crest	12937	20	1	25.87	0.2
156	drainage line	7246	2	1	1.45	0.02
157	basal slope	2650	30	5	39.75	1.5
158	mid-slope	34098	40	5	681.96	2
159	crest	13915	30	10	417.45	3
160	mid-slope	6996	2	2	2.80	0.04
161	drainage line	6178	2	1	1.24	0.02
162	mid-slope	32943	5	2	32.94	0.1
163	crest	28627	10	2	57.25	0.2
164	mid-slope	24338	5	2	24.34	0.1
165	drainage line	6854	2	1	1.37	0.02
166	crest	35649	30	2	213.89	0.6
167	mid-slope	103528	30	2	621.17	0.6
168	crest	3797	50	10	189.85	5
169	drainage line	15334	2	1	3.07	0.02
170	mid-slope	32529	40	5	650.58	2
171	crest	14209	40	5	284.18	2
172	drainage line	31135	2	2	12.45	0.04
173	mid-slope	5241	2	2	2.10	0.04
174	crest	34089	40	10	1363.56	4
175	drainage line	3054	2	2	1.22	0.04

Survey Unit	Landform	Survey unit area (sq. m)	Visibility %	Exposure %	Effective coverage area (sq. m) survey unit area x visibility % x exposure %)	Effective Coverage % (effective coverage area / survey unit area x 100)
176	basal slope	14616	5	2	14.62	0.1
177	drainage line	92081	5	2	92.08	0.1
178	mid-slope	11341	5	2	11.34	0.1
179	basal slope	4668	5	5	11.67	0.25
180	mid-slope	8591	5	2	8.59	0.1
181	basal slope	4969	5	2	4.97	0.1
182	drainage line	10254	2	2	4.10	0.04
183	mid-slope	17273	2	2	6.91	0.04
184	crest	2450	2	2	0.98	0.04
185	flats	7444	5	2	7.44	0.1
186	crest	8300	30	5	124.50	1.5
187	crest	17648	5	2	17.65	0.1
188	crest	1576	60	2	18.91	1.2
		3,816,775	***19.81***	***3.29***	**36401.76**	**0.95**

Table 7.4 Landform Summary – Surveyed Areas

Landform	Landform area (sq m)	Area effectively surveyed (sq m) (effective coverage area)	% Landform effectively surveyed (area effectively surveyed / landform area x 100)	Number of sites	Number of Artefacts or Features
crest	533,655	14,520.76	2.72	23	89
mid-slope	1,544,077	13,112.44	0.85	23	43
basal slope	352,149	2,587.78	0.73	2	7
flats	295,703	273.28	0.09	0	0
drainage line	1,002,864	5,425.23	0.54	4	4
stream bank/channel	88,327	482.27	0.55	2	2
total	***3,816,775***	***36,401.76***	***0.95***	***54***	***145***

*Note: Only surface artefact sites have been included in the artefact counts.
PADs, grinding grooves, scarred trees, and non-artefactual culturally restricted sites are not included in this table.

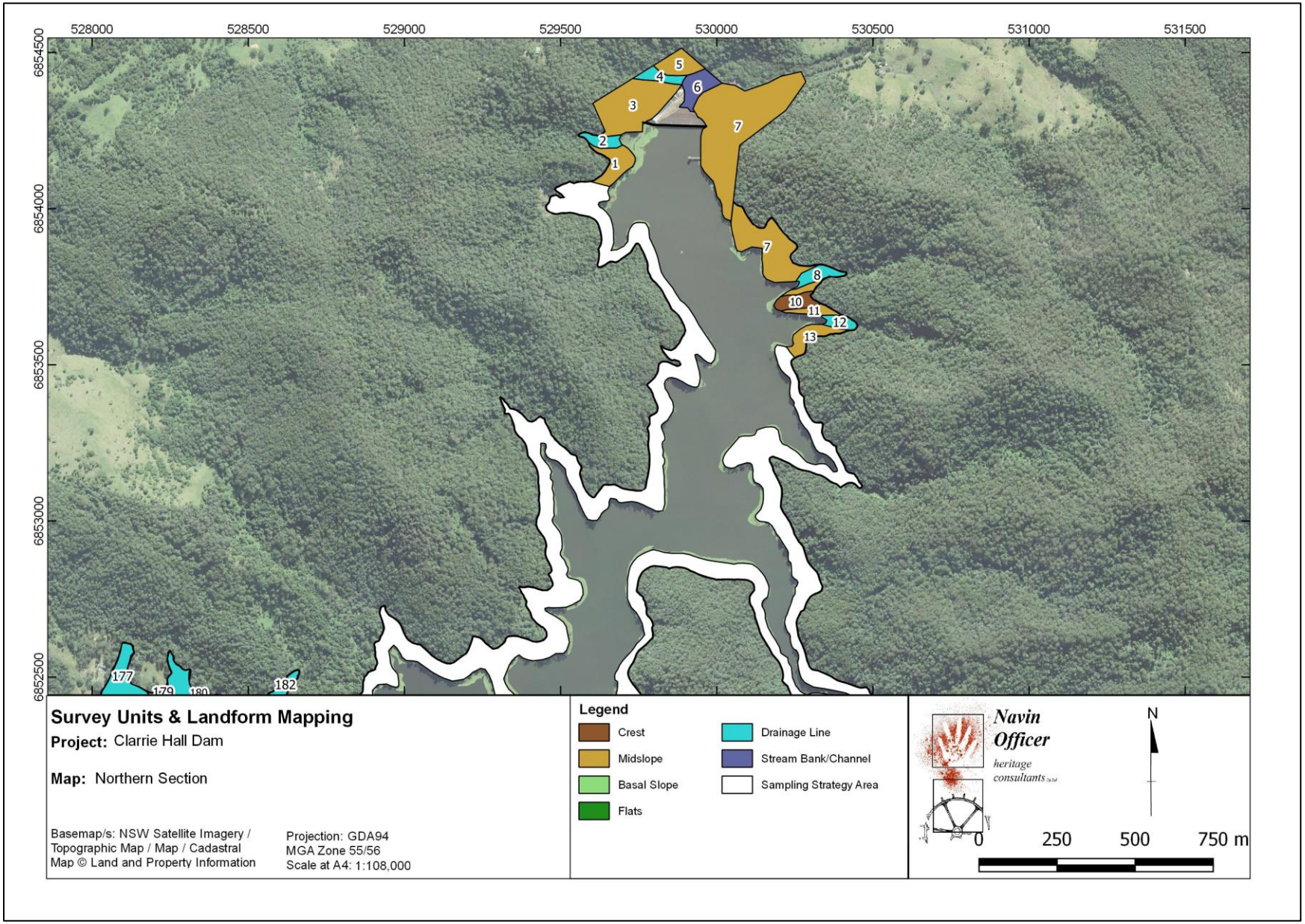


Figure 7.165 Locations of survey units and Landforms

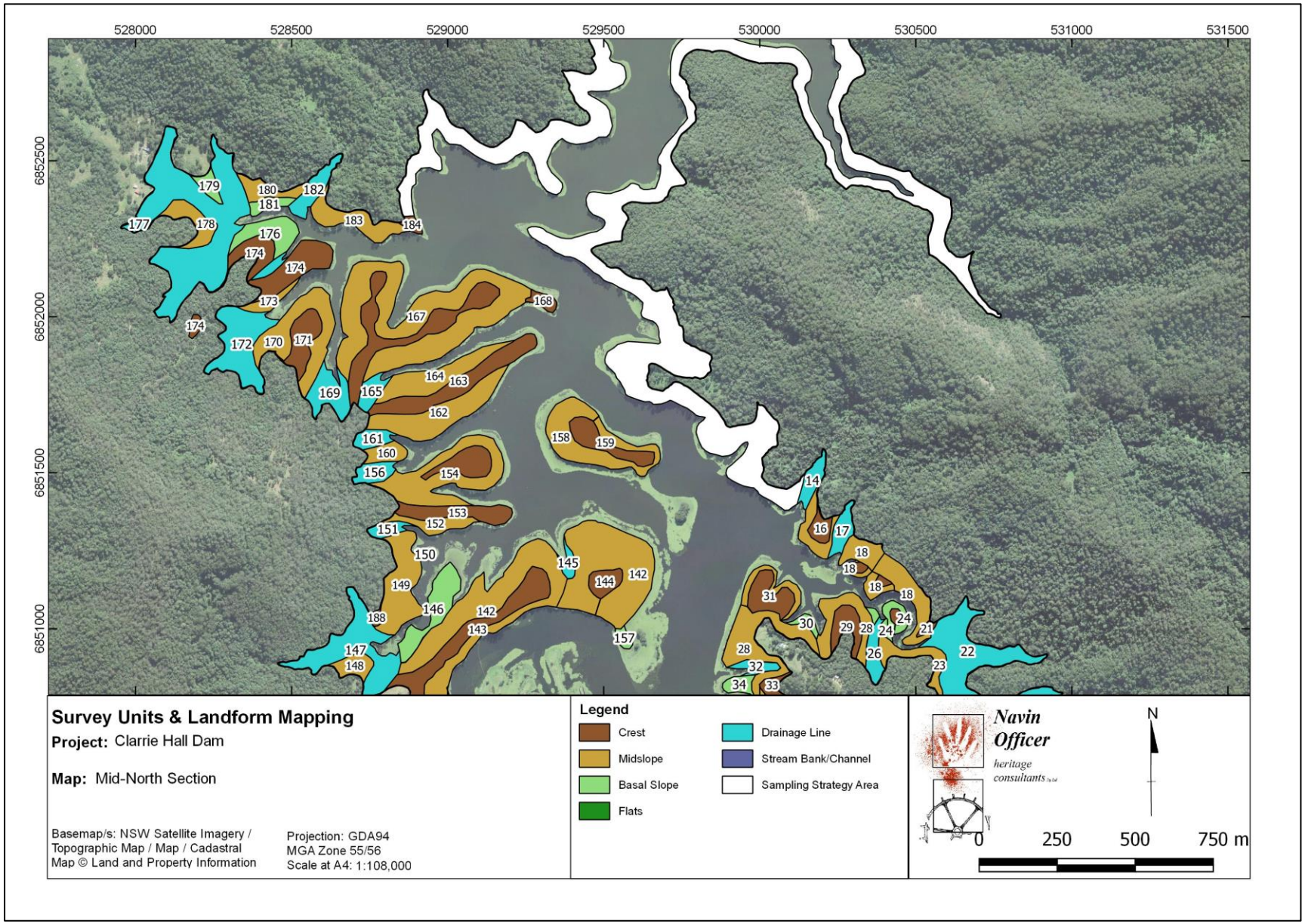


Figure 7.166 Locations of survey units and Landforms

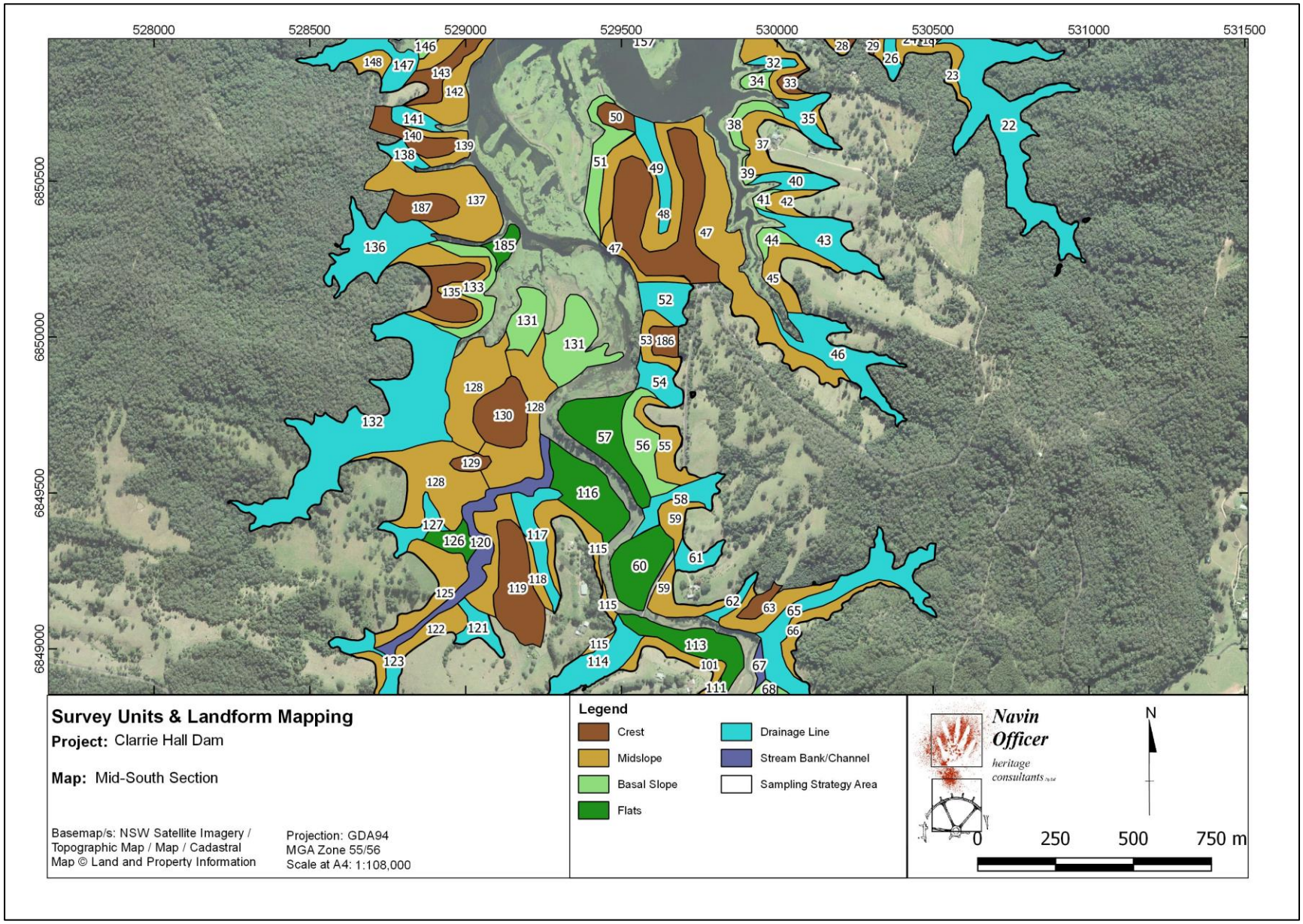


Figure 7.167 Locations of survey units and Landforms

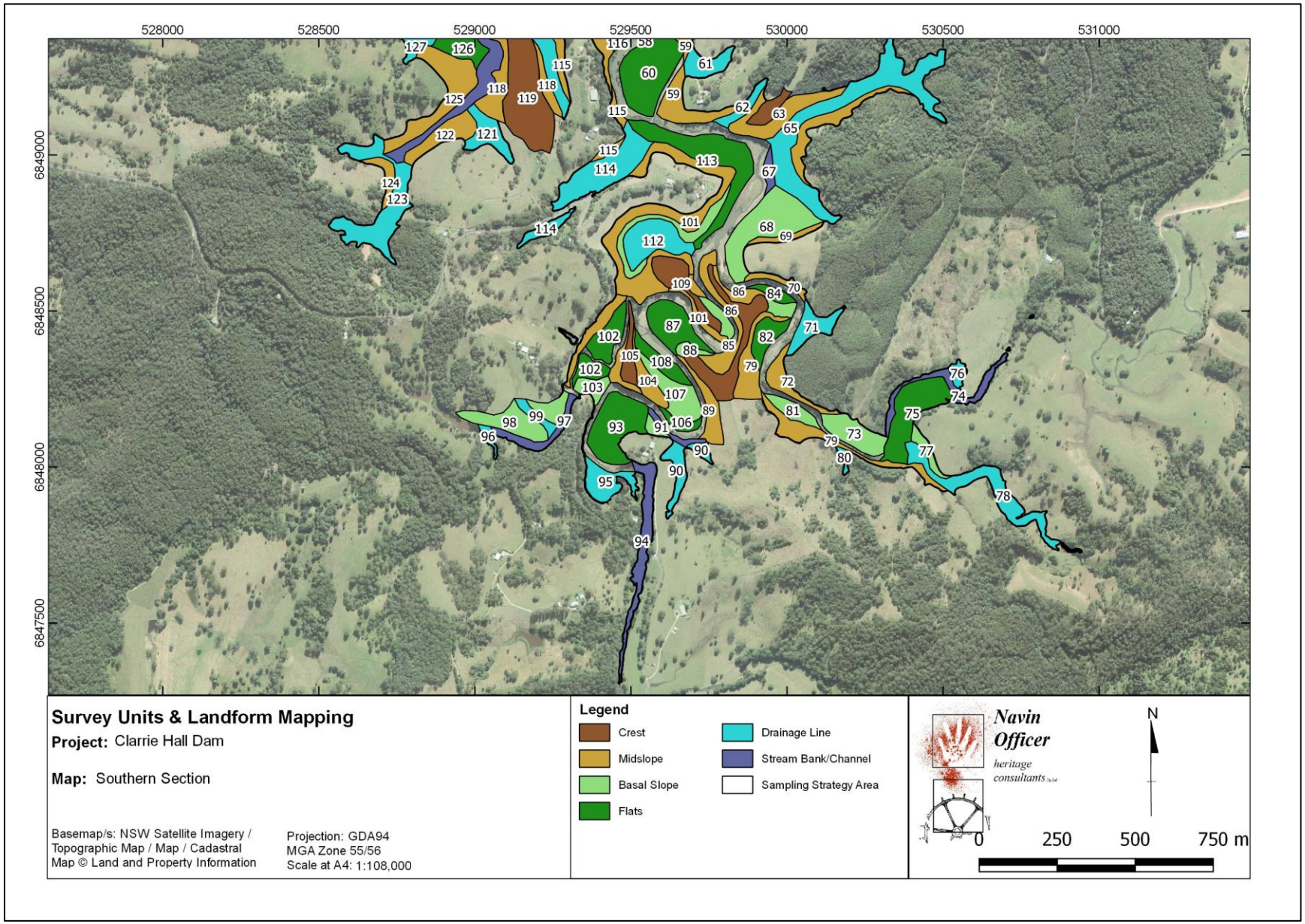


Figure 7.168 Locations of survey units and Landforms

7.7 Analysis and Discussion

7.7.1 Distribution Aboriginal sites

There are a number of site location patterns that have emerged from the archaeological survey of the Clarrie Hall Dam study area. These site distribution patterns can be broken down into spatial distribution (North-South and East-West) and landform distribution.

7.7.1.1 Spatial Distribution

North-South

There is a clear paucity of cultural heritage sites in the northernmost portion of the Clarrie Hall Dam study area (Figure 7.159). This is likely the product of a combination of:

- landform characteristics;
- landscape context in relation to elevation above the now inundated valley floor;
- the mid-valley context of project impacts in this portion of the study area;
- poor visibility; and
- employment of a sampling strategy in some of these northern portions.

In terms of landform, the northern portion of the study area is quite distinct from the central and southern portions of the study area. The northern portion is incised and gorge-like in nature, and is heavily characterised by steep mid-slopes. These landform characteristics are generally predicted to have a very low association with Aboriginal sites.

Due to much of the volume of the existing dam having been gained from the inundation of the incised northern portion of the dam, areas of future inundation that will result from the proposed raising of the dam will be impacting landforms in a mid-valley context. Such contexts are generally predicted to have a low association with Aboriginal sites. Poor visibility due to thick vegetation, heavy ground cover, and access issues, all drove the decision to employ a sampling strategy in the more incised northern section of the study area. Even if a full coverage archaeological survey was employed in these areas the probability of detecting surface artefacts was low.

Moving south to the mid-north portion the study area (Figure 7.160), there is a gradual increase in the number of recorded Aboriginal surface sites. This is the result of the valley becoming less incised and trending towards more moderate gradient mid-slopes, with an increased incidence of distinct spur lines descending towards the valley floor. These spur lines are strongly associated with the occurrence of surface artefact sites in this portion of the study area, particularly in low gradient contexts. This association aligns with the archaeological predictive model for the project in relation to distance from, and views towards water, localised elevation, and low gradient. Some of these sites also have views towards culturally significant places such as '*The Sisters'*. These site distributions also correlate strongly with the Tweed Shire Councils draft ACHMP (2017) predictive model.

Further south, the middle portion of the study area (Figure 7.161) is characterised by long low gradient broad spur lines descending to the valley floor, linking the lower valley to the high ridges, particularly along the east of the study area. Once again there is a strong association between these low gradient spurs and surface sites, as outlined in relation to the archaeological predictive model.

The southern portion of the study area (Figure 7.162) is very different in nature, and is characterised by low gradient basal slopes, terraces, creeks, and valley floor margins. Doon Doon Creek displays an increasingly high convexity meandering nature, with numerous switchbacks, surrounding peninsulas of high predicted archaeological sensitivity in relation to Aboriginal sites.

East-West

In the middle portion of the study area (Figures 7.160 and 7.161) there is a higher proportion of surface sites on the western side of the dam. This correlation is a product of the variation in topography between the eastern and western slopes of the Doon Doon Creek catchment.

As a general trend the eastern side of the valley transitions more suddenly and steeply down to the valley floor when compared to the western, which is characterised by lower slope gradients and longer slope transitions to the valley floor.

The effect of these topographic characteristics is twofold; the central western portions of the study area cover a considerably larger area of land than those on the central eastern side of the dam, and in turn the central western portions cover landforms of higher predicted archaeological utility than those in the east, due to low gradient and local elevation.

7.7.2 Landform Distribution

Eighty five percent of surface artefact sites (46/54) (Table 7.3) were located on, and equally distributed between, crests (23 sites) and mid-slopes (23 sites).

While the survey covered three times as much mid-slope area (1,544,077 m^2) than crests (533,655 m^2), the effective survey coverage area of both landforms was very similar, due to the higher visibility on the crests (2.72%) compared to mid-slopes (0.85%).

Valley flats were not associated with any surface sites, while basal slopes, drainage lines, and stream banks had small numbers of sites with low numbers of artefacts. This is likely a product of ground exposure and visibility.

While site crests and mid-slopes had an equal number of sites, crests were associated with double the average surface artefact density compared to mid-slopes. This aligns with expectations derived from the predictive model of site location in the study area, with flat/ low gradient landforms predicted to be of high utility.

7.7.3 Artefact Materials

In the study area chalcedony (31.7%), chert (23.4%), and silcrete (22%) are the most common materials used for knapping, combining to represent 77.1% of total artefact materials (Figure 7.169 & Table 7.5).

Greywacke is the preferred material for ground edge axes, which is a common material for this tool type regionally (pers comm. Ian Fox & Des Williams).

The complex geology of the local area is mirrored in the wide range of material types (>10) within the artefact assemblage observed during the survey of the Clarrie Hall Dam study area.

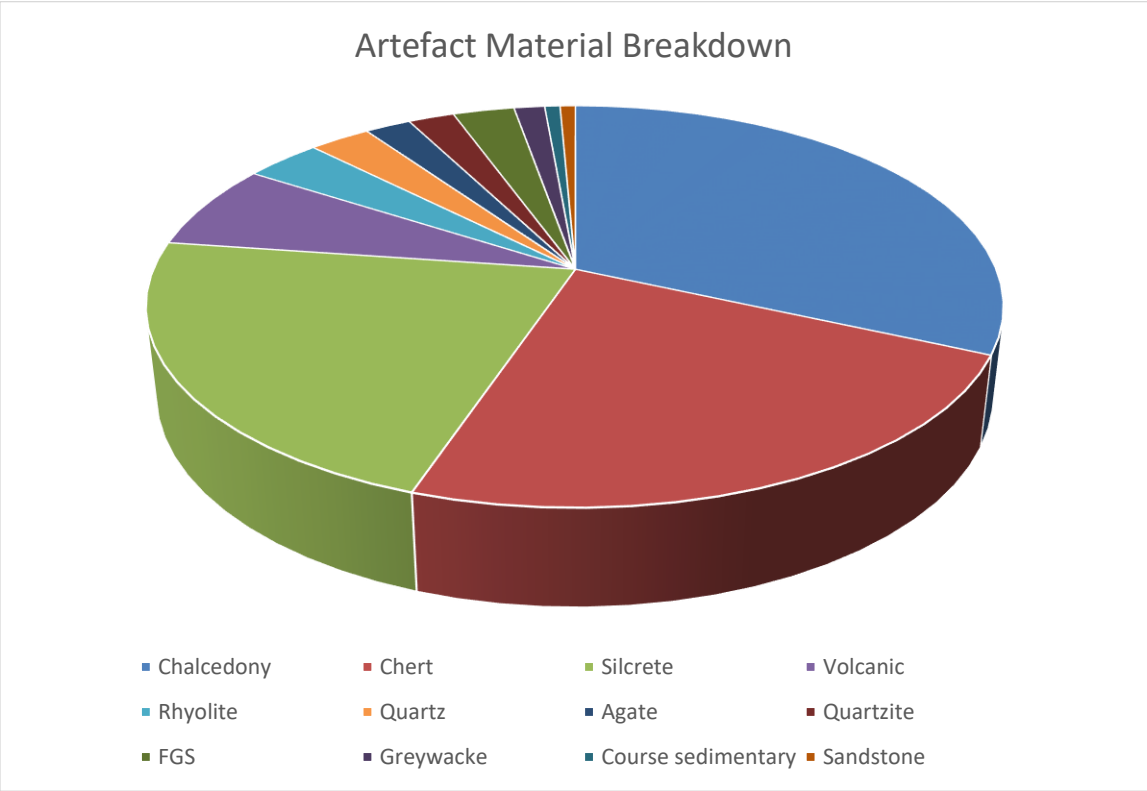


Figure 7.169 Breakdown of artefact material types encountered during survey

Table 7.5 Stone artefact materials in study area

Artefact material	Artefact Count	Assemblage %
Chalcedony	46	31.7
Chert	34	23.4
Silcrete	32	22
Volcanic	8 (2)	6.9
Rhyolite	5	3.5
Quartz	4	2.7
Agate	3	2
Quartzite	3	2
FGS	1 (3)	2.7
Greywacke	2	1.4
Coarse sedimentary	(1)	0.7
Sandstone	(1)	0.7
Total	**145**	**100**

**Note: Bracketed numbers signify objects of cultural significance*

8. CULTURAL HERITAGE VALUES AND STATEMENT OF SIGNIFICANCE

8.1 Assessment Criteria

The Burra Charter of Australia defines cultural significance as 'aesthetic, historical, scientific or social value for past, present and future generations' (Aust. ICOMOS 1987). The assessment of the cultural significance of a place is based on this definition but often varies in the precise criteria used according to the analytical discipline and the nature of the site, object or place.

In general, Aboriginal archaeological sites are assessed using five potential categories of significance:

- significance to contemporary aboriginal people;
- scientific or archaeological significance;
- aesthetic value;
- representativeness; and
- value as an educational and/or recreational resource.

Many sites will be significant according to several categories and the exact criteria used will vary according to the nature and purpose of the evaluation. Cultural significance is a relative value based on variable references within social and scientific practice. The cultural significance of a place is therefore not a fixed assessment and may vary with changes in knowledge and social perceptions.

Cultural significance can be defined as the cultural values of a place held by and manifest within the local and wider contemporary Aboriginal community. Places of significance may be landscape features as well as archaeologically definable traces of past human activity. The significance of a place can be the result of several factors including: continuity of tradition, occupation or action; historical association; custodianship or concern for the protection and maintenance of places; and the value of sites as tangible and meaningful links with the lifestyle and values of community ancestors. Aboriginal cultural significance may or may not parallel the archaeological significance of a site.

Scientific significance can be defined as the present and future research potential of the artefactual material occurring within a place or site. This is also known as archaeological significance.

There are two major criteria used in assessing scientific significance:

1. The potential of a place to provide information which is of value in scientific analysis and the resolution of potential research questions. Sites may fall into this category because they: contain undisturbed artefactual material, occur within a context which enables the testing of certain propositions, are very old or contain significant time depth, contain large artefactual assemblages or material diversity, have unusual characteristics, are of good preservation, or are a constituent of a larger significant structure such as a site complex.

2. The representativeness of a place. Representativeness is a measure of the degree to which a place is characteristic of other places of its type, content, context or location. Under this criteria a place may be significant because it is very rare or because it provides a characteristic example or reference.

The value of an Aboriginal place as an educational resource is dependent on: the potential for interpretation to a general visitor audience, compatible Aboriginal values, a resistant site fabric, and feasible site access and management resources.

The principal aim of cultural resource management is the conservation of a representative sample of site types and variation from differing social and environmental contexts. Sites with inherently unique features, or which are poorly represented elsewhere in similar environment types, are considered to have relatively high cultural significance.

The cultural significance of a place can be usefully classified according to a comparative scale which combines a relative value with a geographic context. In this way a site can be of low, moderate or high significance within a local, regional or national context. This system provides a means of comparison, between and across places. However, it does not necessarily imply that a place with a limited sphere of significance is of lesser value than one of greater reference.

The following assessments are made with full reference to the scientific, aesthetic, representative and educational criteria outlined above. Reference to Aboriginal cultural values has also been made where these values have been communicated to the consultants. It should be noted that Aboriginal cultural significance can only be determined by the Aboriginal community, and that confirmation of this significance component is dependent on written submissions by the appropriate representative organisations.

8.2 Cultural heritage values identified

8.2.1 Aboriginal cultural significance

Aboriginal people alone can determine the Aboriginal cultural significance of a place. The following is the result of the ongoing consultation that has occurred as part of this assessment.

All archaeological objects and sites have cultural value for present-day Aboriginal people, as they were created by ancestral Aboriginal people and provide tangible evidence of past occupation of the landscape.

All sites have cultural significance to present-day Aboriginal groups as manifestations of their ancestors' past occupation of the landscape.

The members local Aboriginal community have reiterated on many occasions that, independent of archaeological sites and objects within the study area, the landscape, flora, and fauna of the Doon Doon Creek Valley are of high cultural significance. The way in which the weather, seasons, landscape, rivers, creeks, flora, and fauna interact and interrelate, are highly valued features and processes of the Doon Doon Creek Valley to the local Aboriginal community, as well as their forebears.

Aboriginal site CHD-A56 (Restricted Site) is a gendered site; it likely has additional social or cultural value, and is connected with at least one known mythological site. This site may also be associated with stories, events of oral history or intangible cultural values.

It should be noted that some objects and places might have cultural value that were not communicated to NOHC. This could be the case for objects or places that are associated with information that is culturally restricted.

8.2.2 Historical value

No information has been provided by Aboriginal stakeholders to suggest the study area is historically important in terms of persons, events, phases or activities in the Aboriginal community. This is not to say that they do not have such significance, simply that no evidence has been forthcoming.

Aboriginal site CHD-A56 (Restricted Site) may be associated with historical value, but further consultation with relevant knowledge holders in the local Aboriginal community is necessary for clarification.

8.2.3 Scientific (archaeological) value

Archaeological sites in the CHD study area have been placed into the following assessment categories.

- Cannot assess the scientific significance prior to excavation.
- Low scientific significance.
- Moderate (local) scientific significance.
- High (local) scientific significance.

Areas of Potential Archaeological Deposit (PAD) that are not associated with surface artefacts cannot be assessed at this stage of investigation

Table 8.1). These PAD's can only be assessed for archaeological significance through subsurface archaeological testing. Any portions of the PAD's that yield artefacts will then be able to be assessed from a scientific perspective, and areas that are not found to yield artefacts during excavation will be assessed as 'not a site'.

Table 8.1 Sites that cannot be assessed prior to excavation

Site Number	Summary Description	Characteristics relevant to significance assessment
CHD-PAD1	PAD	High potential for subsurface archaeological deposits. Not associated with surface artefacts.
CHD-PAD2	PAD	High potential for subsurface archaeological deposits. Not associated with surface artefacts.
CHD-PAD3	PAD	High potential for subsurface archaeological deposits. Not associated with surface artefacts.
CHD-PAD4	PAD	Moderate to high potential for subsurface archaeological deposits. Not associated with surface artefacts.
CHD-PAD5	PAD	Moderate to high potential for subsurface archaeological deposits. Not associated with surface artefacts.
CHD-PAD6	PAD	Moderate to high potential for subsurface archaeological deposits. Not associated with surface artefacts.
CHD-PAD7	PAD	Moderate to high potential for subsurface archaeological deposits. Not associated with surface artefacts.
CHD-PAD8	PAD	Moderate to high potential for subsurface archaeological deposits. Not associated with surface artefacts.
CHD-PAD10	PAD	Moderate potential for subsurface archaeological deposits. Not associated with surface artefacts. Aboriginal representatives of the opinion that it was an ideal camping location.

Low scientific significance has been attributed to all surface sites that have been identified as either highly disturbed (relative to the surrounding landscape) or, have been assessed as having low or low to moderate subsurface archaeological potential (Table 8.2).

These sites have low numbers of artefacts and little potential to provide data that would substantially add to our understanding of Aboriginal occupation and land-use in the local area (Tweed Valley

region and immediate surrounds), beyond the information they have already provided through being discovered and recorded in the course of this study.

Table 8.2 Sites of low scientific significance

Site Number	Summary Description	Characteristics relevant to significance assessment
CHD-A2	Isolated Find	Low potential for subsurface archaeological deposits
CHD-A3	Isolated Find (CS)	Low potential for subsurface archaeological deposits
CHD-A4	Artefact Scatter	Low to moderate potential for subsurface archaeological deposits
CHD-A5	Isolated Find	Low potential for subsurface archaeological deposits
CHD-A7	Isolated Find	Low potential for subsurface archaeological deposits
CHD-A8	Artefact Scatter	Low potential for subsurface archaeological deposits
CHD-A9	Isolated Find	Low potential for subsurface archaeological deposits
CHD-A10	Isolated Find	Low potential for subsurface archaeological deposits
CHD-A11	Isolated Find (CS)	Low potential for subsurface archaeological deposits
CHD-A12	Isolated Find	Low potential for subsurface archaeological deposits
CHD-A13	Isolated Find	Low potential for subsurface archaeological deposits
CHD-A14	Isolated Find (CS)	Low potential for subsurface archaeological deposits
CHD-A15	Isolated Find	Low potential for subsurface archaeological deposits
CHD-A18	Isolated Find	Low potential for subsurface archaeological deposits
CHD-A19	Artefact Scatter	Low potential for subsurface archaeological deposits. Heavily disturbed.
CHD-A20	Sandstone Pitting/Holes (CS)	Archaeologically assessed as highly unlikely to be of human origin
CHD-A21	Isolated Find	Low potential for subsurface archaeological deposits
CHD-A22	Artefact Scatter	Low potential for subsurface archaeological deposits
CHD-A24	Isolated Find (CS)	No subsurface archaeological potential. Found in creek
CHD-A25	Isolated Find	Low potential for subsurface archaeological deposits. Disturbed.
CHD-A26	Artefact Scatter	Low potential for subsurface archaeological deposits. Disturbed.
CHD-A28	Isolated Find (CS)	Low potential for subsurface archaeological deposits
CHD-A29	Isolated Find (CS)	Low potential for subsurface archaeological deposits
CHD-A31	Artefact Scatter	Low to moderate potential for subsurface archaeological deposits
CHD-A32	Artefact Scatter	Low to moderate potential for subsurface archaeological deposits. Disturbed.
CHD-A33	Isolated Find	Low potential for subsurface archaeological deposits. Disturbed
CHD-A34	Artefact Scatter	Low to moderate potential for subsurface archaeological deposits. Disturbed.
CHD-A42	Isolated Find	Low to moderate potential for subsurface archaeological deposits.
CHD-A43	Artefact Scatter	Low to moderate potential for subsurface archaeological deposits. Heavily disturbed.
CHD-A44	Isolated Find	Low to moderate potential for subsurface archaeological deposits. Disturbed.
CHD-A45	Isolated Find	Low potential for subsurface archaeological deposits. Disturbed
CHD-A46	Isolated Find	Low potential for subsurface archaeological deposits. Disturbed
CHD-A47	Isolated Find	Low potential for subsurface archaeological deposits. Disturbed
CHD-A49	Artefact Scatter	Low to moderate potential for subsurface archaeological deposits. Heavily disturbed.

Site Number	Summary Description	Characteristics relevant to significance assessment
CHD-A50	Artefact Scatter	Low potential for subsurface archaeological deposits. Heavily disturbed.
CHD-A51	Isolated Find	Low to moderate potential for subsurface archaeological deposits. Disturbed.
CHD-A52	Isolated Find	Low to moderate potential for subsurface archaeological deposits. Disturbed.
CHD-A53	Isolated Find	Very low potential for subsurface archaeological deposits. Heavily disturbed and eroded down to bedrock.
CHD-A54	Isolated Find	Low to moderate potential for subsurface archaeological deposits.
CHD-G1	Geological Chalcedony Source	Low potential for subsurface archaeological deposits. No artefacts present.
CH3	Artefact Scatter	Not relocated. Low potential for subsurface archaeological deposits
04-1-0011	Isolated Find	Not relocated. Low potential for subsurface archaeological deposits
04-1-0010	Isolated Find	Not relocated. Low potential for subsurface archaeological deposits
04-1-0009	Isolated Find	Not relocated. Low potential for subsurface archaeological deposits
04-1-0130	Isolated Find	Not relocated. Low potential for subsurface archaeological deposits
04-1-0194	Isolated Find	Not relocated. Low potential for subsurface archaeological deposits

* CS denotes cultural significance

Moderate (local) scientific significance has been attributed to all surface sites that are associated with areas of moderate to high or, high potential for subsurface archaeological deposits (Table 8.3). Potential Archaeological Deposits (PADs) that are associated with surface artefact scatters also meet this significance level. The subsurface deposits at these sites are predicted to contain a higher number of artefacts compared the other sites in the study area and, therefore, have potential to provide a large enough sample to enable analyses of assemblage compositions that could be used to derive statements on the technological systems being employed by Aboriginal groups living in this region.

Moderate (local) scientific significance has also been attributed to scarred tree CHD ST1. This is the only tree that has a scar which has been assessed as being of possible Aboriginal origin. This assessment has been based on the estimated age of the tree and the scar regrowth, scar morphology, and the lack of evidence of limb fall and other natural causes such as fire. Aboriginal site CHD-A57 (grinding groove) is also in this category due to its rarity as a site type and its upper valley/ridge landscape context.

Table 8.3 Sites of Moderate (local) scientific significance

Site Number	Summary Description	Characteristics relevant to significance assessment
CHD-A1	Isolated Find & PAD	High potential for subsurface archaeological deposits
CHD-A6	Artefact Scatter & PAD	Moderate to high potential for subsurface archaeological deposits
CHD-A16	Artefact Scatter & PAD	Moderate to high potential for subsurface archaeological deposits
CHD-A17	Artefact Scatter & PAD	High potential for subsurface archaeological deposits.

Site Number	Summary Description	Characteristics relevant to significance assessment
		High number and density of artefacts.
CHD-A23	Isolated Find & PAD	Moderate to high potential for subsurface archaeological deposits
CHD-A27	Artefact Scatter & PAD	High potential for subsurface archaeological deposits
CHD-A30	Artefact Scatter & PAD	Moderate to high potential for subsurface archaeological deposits
CHD-A35	Isolated Find & PAD	Moderate to high potential for subsurface archaeological deposits
CHD-A36	Artefact Scatter & PAD	High potential for subsurface archaeological deposits
CHD-A37	Isolated Find & PAD	Moderate to high potential for subsurface archaeological deposits
CHD-A38	Isolated Find & PAD	Moderate to high potential for subsurface archaeological deposits
CHD-A39	Isolated Find	Moderate to high potential for subsurface archaeological deposits. Associated with CHD PAD9
CHD-A40	Artefact Scatter	Moderate to high potential for subsurface archaeological deposits. Associated with CHD PAD9
CHD-A41	Artefact Scatter	High potential for subsurface archaeological deposits. Associated with CHD PAD9
CHD-A48	Artefact Scatter & PAD	High potential for subsurface archaeological deposits
CHD-A55	Artefact Scatter & PAD	High potential for subsurface archaeological deposits
CHD-A57	Grinding Groove	Upper valley context, significant vistas, site rarity.
CHD PAD9	PAD	Moderate to high potential for subsurface archaeological deposits. Associated with surface sites CHD A39, CHD A40, and CHD A41.
CHD-RS1	Rock Shelter	Moderate potential for subsurface archaeological deposits
CHD-ST1	Scarred Tree	Possible Aboriginal origin of scar. Tree is very large >150 years old
CH5	Isolated Find	Not re-found during survey. Subsurface deposits associated with CHD A1 PAD
CH6	Artefact Scatter	Not re-found during survey. Subsurface deposits associated with CHD PAD9
CH7	Artefact Scatter	Not re-found during survey. Subsurface deposits associated with CHD PAD9
CH8	Artefact Scatter	Not re-found during survey. Subsurface deposits associated with CHD PAD9
04-1-0090	Rock Shelter	Moderate potential for subsurface archaeological deposits

High (local) scientific significance has been attributed to Aboriginal site #04-1-0014 (Table 8.4) due to its rarity as a site type within the valley and the fact that it will be permanently inundated by the proposed raising of the dam. The site has known archaeological deposits of considerable depth (up to 50cm). As a large rock shelter with archaeological deposit, this site type is assessed to have considerable representative and research value at a local level.

Table 8.4 Sites of High (local) scientific significance

Site Number	Summary Description	Characteristics relevant to significance assessment
04-1-0014	rock shelter	Known archaeological deposit at least 50cm in depth. Large rock shelter with good potential for high value research.

5.2.4 Aesthetic value

As noted in the OEH *Guide to investigating, assessing and reporting on Aboriginal cultural heritage* (DECCW 2011), aesthetic value is often closely associated with social values. Certainly views to culturally significant places outside the study area (eg. Wollumbin & The Sisters) are of high aesthetic value to the local Aboriginal community and expectations are that any development in the area would be sympathetic to such vistas.

8.3 Historical Heritage

8.3.1 Assessment criteria

The NSW Heritage Branch has defined a methodology and set of criteria for the assessment of cultural heritage significance for items and places, where these do not include Aboriginal heritage from the pre-contact period (NSW Heritage Office & DUAP 1996, NSW Heritage Office 2000). The assessments provided in this report follow the Heritage Branch methodology.

The following heritage assessment criteria are those set out for Listing on the State Heritage Register. In many cases items will be significant under only one or two criteria. The State Heritage Register was established under Part 3A of the Heritage Act (as amended in 1999) for listing of items of environmental heritage that are of state heritage significance. Environmental heritage means those places, buildings, works, relics, moveable objects, and precincts, of state or local heritage significance (section 4, *Heritage Act 1977*).

An item will be considered to be of State (or local) heritage significance if, in the opinion of the Heritage Council of NSW, it meets one or more of the following criteria:

Criterion (a) an item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area);

Criterion (b) an item has strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area);

Criterion (c) an item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area);

Criterion (d) an item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons;

Criterion (e) an item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area);

Criterion (f) an item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area);

Criterion (g) an item is important in demonstrating the principal characteristics of a class of NSW's:

- cultural or natural places; or
- cultural or natural environments.

(or a class of the local area's:

- cultural or natural places; or
- cultural or natural environments.)

An item is not to be excluded from the Register on the grounds that items with similar characteristics have already been listed on the Register. Only particularly complex items or places will be significant under all criteria.

In using these criteria, it is important to assess the values first, then the local or State context in which they may be significant.

Different components of a place may make a different relative contribution to its heritage value. For example, loss of integrity or condition may diminish significance. In some cases, it is constructive to note the relative contribution of an item or its components. Table xx provides a guide to ascribing relative value.

All significance assessments below may be updated if new information comes to light through further research or archaeological investigation. Criteria that are assessed to be significant relative to a site are in bold typeset.

8.3.2 Significance assessment

CHD-H1 Building platform and associated plantings (Frances Garner Property)

Criterion (a) The site is not important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area). The site is assessed as not significant against this criterion.

Criterion (b) The site has a strong or special association with the life of Frances Garner, who was one of the first landowners in the Doon Doon Creek area. Given that he only lived and worked here for a 12 year period prior to moving to Murwillumbah, where he owned a mechanical repair business, this site is assessed as not having significance against this criterion.

Criterion (c) This site is not important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area), and is therefore not significant against this criterion.

Criterion (d) This site does not have a strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons and therefore is assessed as not having significance against this criterion.

Criterion (e) While the site has some subsurface archaeological potential, it is unlikely to yield information that will further contribute to an understanding of the cultural history of the Doon Doon Creek area. The site is assessed as not having significance against this criterion.

Criterion (f) The site does not possess uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area), and therefore is assessed as not having significance against this criterion.

Criterion (g) This site is not important in demonstrating the principal characteristics of a class of NSW's, and therefore is assessed as not having significance against this criterion.

CHD-H2 Crams Farm Site Complex

Criterion (a) The site is not important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area). The site is assessed as not significant against this criterion.

Criterion (b) ***The site has a strong or special association with the life of the Cram Family, who lived and worked on this farm for a number of generations in the Doon Doon Creek area. The adaptive reuse of the site as a recreational area likely adds to this strong association. This site is therefore assessed as having significance against this criterion at a local level.***

Criterion (c) This site is not important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area), and is therefore not significant against this criterion.

Criterion (d) This site does not have a strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons and therefore is assessed as not having significance against this criterion.

Criterion (e) This site does not have potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area). The site is assessed as not having significance against this criterion.

Criterion (f) The site does not possess uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area), and therefore is assessed as not having significance against this criterion.

Criterion (g) This site is not important in demonstrating the principal characteristics of a class of NSW's, and therefore is assessed as not having significance against this criterion.

CHD-H3 Doon Doon Hall

Criterion (a) The site is not important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area). The site is assessed as not significant against this criterion.

Criterion (b) This site does not have a strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area) and is therefore assessed as not having significance against this criterion.

Criterion (c) This site is not important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area), and is therefore not significant against this criterion.

Criterion (d) ***This site has a strong and special association with the Doon Doon Creek community for social, and cultural reasons. The fact that the building has been moved twice in its lifetime is testament to the value of this building to the local community. This building is assessed as having significance against this criterion at a local level.***

Criterion (e) This site does not have potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area). The site is assessed as not having significance against this criterion.

Criterion (f) The site does not possess uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area), and therefore is assessed as not having significance against this criterion.

Criterion (g) This site is not important in demonstrating the principal characteristics of a class of NSW's, and therefore is assessed as not having significance against this criterion.

Table 8.5 Summary of significance assessments for historic heritage recordings

Site Number	Site Type	Locally significant	Statement of Significance
CHD-H1	Ruin/Building Platform		Does not meet the criteria for local or State listing
CHD-H2	Cram's Farm Complex	☑	Criterion (b): This item has a strong association with the Cram Family.
CHD-H3	Doon Doon Hall	☑	Criterion (d): This item has a strong and special association with the Doon Doon Creek community.

9. THE PROPOSED ACTIVITY

9.1 Historical Overview

All the land in the footprint of the area that will be affected by the proposed raising of Clarrie Hall Dam has been subject to some degree of disturbance by European (post-contact) activities. A discussion of the impacts likely to have occurred to archaeological sites in the study area through historic land use is included in Section 2.3.

The original native vegetation in the study area was mostly cleared in the historic period and is now a mixture of cleared open pastures for grazing (predominantly in the southern portion of the study area), with some secondary eucalypt forest on the mid-slopes and ridges (predominantly in the northern portion of the study area). Clearance of trees can substantially disturb archaeological material on the surface and in subsurface sediments (Wildesen 1982). If trees are uprooted they drag subsurface sediments up to the surface. If tree stumps are left in the ground to rot, or are burned out, their roots create vacuities that are filled by intrusive sediment. This intrusive sediment can carry archaeological material down through the sediment profile.

Clearing of vegetation also intensifies erosion, which can move archaeological material across eroding areas, and can mix material together that was initially separated, as the intervening sediment is stripped away. Erosion can also bury archaeological sites in areas where mobilised sediments settle, such as on floodplains.

9.2 Proposed project & potential harm

The Clarrie Hall Dam proposal seeks to raise FSL of the Clarrie Hall Dam to RL70.0 m, resulting in a storage capacity of about 42,399 ML. The current FSL of the dam is RL61.5 m. The maximum Probable Flood (MPF) level would be RL77.0 m.

The combination of permanent inundation, flood inundation, and construction impacts will cover a total area of approximately 436 ha. This proposal has the potential to impact 81 Aboriginal sites and one historical site (Figures 7.159, 7.160, 7.161 and 7.162).

The anticipated development impacts of the Clarrie Hall Dam raising project can be broadly categorised into two major groups, direct and indirect impacts, and into two sub-groups, construction, and inundation impacts.

- Direct impact relates to physical impact, disturbance, or displacement of the significant fabric of the place or site.

- Indirect impact relates to change in the physical or conceptual context of a places or site, such as the landscape setting or vistas to and from a place.

9.2.1 Dam Wall Construction Area

Within the construction area, the physical impact on Aboriginal archaeological sites and artefacts is likely to range from partial to total in scope and be mostly severe in effect. The high degree of land surface modification involved in most of the activities in these areas will in most cases result in wholescale removal, dispersal or destruction of archaeological material. There will be a consequential substantial loss of heritage significance.

Likely construction impacts include:

- Destruction of surface and subsurface artefacts;

- Displacement, dispersement and loss of archaeological deposits through sediment removal, transport and deposition;

- Permanent loss and exclusion of access, through covering with fill, or construction materials;
- Removal by quarrying;
- Loss of contextual landscape integrity for any remaining archaeological material.

9.2.2 Inundation Area

In the case of the inundation area outside of construction areas, impacts may not necessarily involve the full destruction of sites. The effects of water inundation are likely to be variable in their degree of impact. Likely impacts include:

- Deposition of sediment over artefacts and archaeological deposits during periods of submersion;
- Wave erosion and loss of sedimentary matrix during times of shoreline exposure between the full supply level (FSL) and the shoreline at the time;
- The exclusion of the surviving archaeological resource from further study (in FSL area), research or inspection due to burial under sediment and/or submersion under water.

Similar impacts to those described above, but to a lesser degree, during flood events up to the Maximum Probable Flood (MPF) level. Sites located between the FSL and MPF levels not be subject to permanent exclusion from further study, however some level of direct impacts are highly probable during such flood events.

9.3 Impact on Aboriginal cultural heritage values

Archaeological sites have cultural heritage value for present-day Aboriginal groups, in that they are manifestations of prehistoric Aboriginal groups and their occupation and use of the land. In that sense, the impacts to archaeological sites discussed above carry with them an impact to the cultural heritage value of the study area.

It should be noted that some objects and places might have cultural value that was not communicated to NOHC. This could be the case for objects or places that are associated with information that is culturally restricted.

10. STATUTORY AND POLICY CONTEXT[1]

10.1 Environmental Planning and Assessment Act 1979

The Environmental Planning and Assessment Act 1979 (EP&A Act) and its regulations, schedules and associated guidelines require that environmental impacts are considered in land use planning and decision making. Environmental impacts include cultural heritage assessment. The Act was reformed by the *Environmental Planning and Assessment Amendment (Infrastructure and other Planning Reform) Act 2005*.

State Significant Development/Infrastructure

A specific assessment system has been created in the Environmental Planning and Assessment Act to consider projects classed as State Significant Development (SSD) and State Significant Infrastructure (SSI).

A range of development types such as mines and manufacturing plants as well as warehousing, waste, energy, tourist, education and hospital facilities are considered to be SSD if they are over a certain size or located in a sensitive environmental area.

Major infrastructure proposals, in particular linear infrastructure such as roads, railway lines or pipes which often cross a number of council boundaries, will generally be considered as SSI.

Development which doesn't require consent but which could have a significant environmental impact, such as a port facility or major water supply system, is also likely to be considered as SSI.

The assessment system for State significant development and infrastructure introduced on 1 October 2011 provides for a consolidated assessment of these proposals in one application. The NSW Department of Planning and Infrastructure carries out a single, coordinated assessment of all issues with a proposal, rather than a wide range of State agencies making separate assessments.

Proposals assessed as State significant generally only require approval from the Minister for Planning and Infrastructure (or delegate), following a comprehensive assessment by the Department of Planning and Environment conducted in consultation with other government agencies and councils.

As a result the following authorisations are not required from other government agencies for State Significant Development (SSD) and State Significant Infrastructure (SSI):

- State heritage item impacts under the *Heritage Act 1977*; and
- Aboriginal heritage permits under the *National Parks and Wildlife Act 1974*.

[1] The following information is provided as a guide only.

Readers are advised to seek qualified legal advice relative to legislative matters.

11. AVOIDING AND MINIMISING HARM

11.1 Impact assessment

The current design for the proposed raising of Clarrie Hall Dam may impact, either directly or indirectly, 81 Aboriginal sites and three historic sites via permanent inundation, flood inundation or construction.

The combination of permanent inundation, flood inundation and construction impacts will cover a total area of approximately 436 ha.

Tables 11.1 (Aboriginal Sites) and 11.2 (Historic Sites) summarise these impacts and provide measures to mitigate these impacts.

- **Fifty three Aboriginal sites may be directly impacted by the proposed raising of Clarrie Hall Dam**

  Thirty-four sites have been assessed as low scientific significance.

CHD-A2	CHD-A4	CHD-A7	CHD-A8	CHD-A9
CHD-A10	CHD-A11	CHD-A12	CHD-A13	CHD-A14
CHD-A15	CHD-A18	CHD-A20	CHD-A21	CHD-A22
CHD-A24	CHD-A25	CHD-A28	CHD-A29	CHD-A31
CHD-A33	CHD-A42	CHD-A44	CHD-A45	CHD-A51
CHD-A52	CHD-A53	CHD-G1	CH5	04-1-0011
04-1-0010	04-1-0009	04-1-0130	04-1-0194	

  Eighteen sites have been assessed as moderate scientific significance.

CHD-A1	CHD-A17	CHD-A27	CHD-A30	CHD-A35
CHD-A36	CHD-A37	CHD-A38	CHD-A39	CHD-A40
CHD-A41	CHD-A48	CHD-A55	CHD-RS1	04-1-0090
CH6	CH7	CH8		

  One site has been assessed as high scientific significance

CHD-ST1 (#04-1-0014)	

- **Nine areas of Potential Archaeological Deposit (PAD) may be directly impacted by the proposed raising of Clarrie Hall Dam**

  Nine areas of Potential Archaeological Deposit have not been assessed yet.

CHD-PAD1	CHD-PAD2	CHD-PAD3	CHD-PAD4	CHD-PAD5
CHD-PAD6	CHD-PAD7	CHD-PAD8	CHD-PAD9	

Note: Scarred tree site CHD-ST1 may be directly impacted by construction work, however, the exact construction footprint at the dam wall is not yet available. The tree is assessed to be of moderate scientific significance.

- **Nineteen Aboriginal sites may be <u>indirectly impacted</u> by the proposed raising of Clarrie Hall Dam**

  Fourteen sites have been assessed as low scientific significance.

CHD-A3	CHD-A5	CHD-A19	CHD-A26	CHD-A32
CHD-A34	CHD-A43	CHD-A46	CHD-A47	CHD-A49
CHD-A50	CHD-A54	CH1	CH3	

  Four sites have been assessed as moderate scientific significance

CHD-A6	CHD-A16	CHD-A23	CHD-A57

  One restricted site is yet to be assigned scientific significance.

CHD-ST1 ((#04-1-0014)

- **One historic (CHD-H1) will be <u>directly impacted</u> by the proposed raising of Clarrie Hall Dam.**

- **One historic will be (CHD-H2) will be <u>partially directly impacted</u> by the proposed raising of Clarrie Hall Dam by flood**

- **One historic (CHD-H3) may be subject to indirect impacts by the proposed raising of Clarrie Hall Dam.**

11.2 Mitigation measures

Impact mitigation measures for these sites and PADs include:

- Collection of surface artefacts at all surface sites that will be directly impacted.

CHD-A1	CHD-A2	CHD-A4	CHD-A7	CHD-A8	CHD-A9
CHD-A10	CHD-A11	CHD-A12	CHD-A13	CHD-A14	CHD-A15
CHD-A18	CHD-A21	CHD-A22	CHD-A24	CHD-A27	
CHD-A28	CHD-A29	CHD-A30	CHD-A31	CHD-A33	CHD-A35
CHD-A36	CHD-A37	CHD-A38	CHD-A39	CHD-A40	CHD-A41
CHD-A42	CHD-A44	CHD-A45	CHD-A48	CHD-A51	CHD-A52
CHD-A53	CHD-A55	CH5	CH6	CH7	CH8
04-1-0011	04-1-0010	04-1-0009	04-1-0090	04-1-0130	04-1-0194

- Subsurface testing at all PADs and Aboriginal sites with associated PAD that will be directly impacted.

CHD-A1	CHD-A17	CHD-A27	CHD-A30	CHD-A35	CHD-A36
CHD-A37	CHD-A38	CHD-A48	CHD-A55	CHD-PAD1	CHD-PAD2
CHD-PAD3	CHD-PAD4	CHD-PAD5	CHD-PAD6	CHD-PAD7	CHD-PAD8
CHD-PAD9					

- A program of archaeological salvage may be required if the archaeological deposits associated with these sites or PADs are assessed to be of moderate to high significance (at either a local or state level).

- Subsurface archaeological salvage should occur at rock shelter site 04-1-0014. Previous excavations (hand auguring) at this site confirmed the presence of archaeological material at depth, however, such methods are not currently considered an appropriate methodology for ascertaining a representative sample of subsurface archaeological deposits.

- Further discussion and consultation with all Registered Aboriginal Parties (RAPs) will be necessary to clarify mitigation and management expectations for the following sites:

CHD-RS1	04-1-0090	CHD-A20	CHD-A56

- Marking the locations of Aboriginal surface sites situated directly adjacent to the study area on development maps so as to avoid inadvertent impacts.

CHD-A3	CHD-A5	CHD-A6	CHD-A16	CHD-A19	CHD-A23
CHD-A25	CHD-A26	CHD-A32	CHD-A34	CHD-A43	CHD-A46
CHD-A47	CHD-A49	CHD-A50	CHD-A54	CHD-A57	CH3
CHDPAD10					

- Archival recording of the CHD-H2 (Crams Farm Site Complex) that will be subject to flood inundation impacts (Pig Styes). Tweed Shire Council may already have the requisite information about this site in its records, in which case further recording will be unnecessary.

- The locations of historic sites should be marked on maps so as to avoid inadvertent impacts.

11.3 Description of how ESD (ecological sustainable development) principles have been considered

ESD (defined in s.6 of the *Protection of the Environment Administration Act 1991*) requires the integration of *economic* and *environmental* considerations (including cultural heritage) in the decision-making process. In regard to Aboriginal cultural heritage, ESD can be achieved by applying the principle of intergenerational equity and the precautionary principle.

Intergenerational equity is the principle whereby the present generation should ensure the health, diversity and productivity of the environment for the benefit of future generations.

The precautionary principle states that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

This report considers ESD principles in the following ways:

- *Intergenerational equity*

Intergenerational equity is being considered through the avoidance of impact to archaeological sites where possible, and through the salvaging of archaeological sites where impacts cannot be avoided. Measures taken to avoid impact to sites (including planning the location of work to physically avoid sites, and the use of protective measures such as site fencing) ensures that these sites remain in their current condition, and are available for future generations.

Where impacts are proposed for Aboriginal sites/PADs, salvage of the archaeological material through surface collection and/or excavation would identify, recover and analyse Aboriginal objects

that would potentially be subject to harm. The objects salvaged will be returned to country according to the return to country protocols outlined in the *Code of Practice for Archaeological Investigation of Aboriginal objects in NSW*, to ensure that the objects themselves will be available for future generations to potentially access.

Where impacts are proposed for historic sites of local significance, salvage of moveable heritage, archival recording of immovable heritage, and/or excavation of sites with good subsurface potential will allow us to recover and analyse historic objects that would potentially be subject to harm. Historic archaeological assemblages and objects may then be housed or displayed by local museums or historical societies, ensuring that such items will be available for future generations to potentially access.

- *Precautionary principle*

The proposed salvage of surface artefacts and subsurface deposits (Aboriginal and historic sites), as well as archival recording (historic sites), represents a precautionary measure against the harm to archaeological material at these locations. The recorded finds from these actions will inform on past human behaviour and the subsequent written record created through the reporting process will create new knowledge. The knowledge generated through the reporting process acts as a measure to mitigate harm.

- *Cumulative impacts*

The cumulative impacts of the Clarrie Hall Dam raising project will be significant. While the nature of the permanent inundation and flood inundation are not as physically destructive to artefacts as construction-related impacts, permanent inundation will obscure these sites, and prevent access by future generations.

The landscape features within the Doon Doon Creek valley that have been impacted by inundation by the existing Clarrie Hall Dam are very different from those landforms that will be impacted by the proposed raising of the dam. The existing Clarrie Hall Dam obtained a large proportion of its volume through inundating the deep incised lower valley landforms, which from a predictive landscape archaeological perspective, were of significantly lower significance than the landforms that will be impacted by the current proposal. Due to the steep nature of the landscape in this section of the valley the current dam footprint proportionally covers a relatively small area.

In comparison, the proposed raising of the Clarrie Hall Dam will largely gain volume by inundating the low and moderate gradient mid- and upper valley landforms of the study area. The ratio of volume gain to land area impact is much lower, requiring a greater area of land to be inundated in order to gain the same water volume. The low and moderate gradient valley floor landforms in the mid- and upper valley of the study area are of relatively high predicted archaeological sensitivity, and this is supported by the large number of Aboriginal surface artefact sites recorded during the archaeological survey.

The cumulative impacts of the proposed Clarrie Hall Dam raising will result in direct impacts to and/or total loss of sites on valley floor landforms within the middle reaches of Doon Doon Creek, as well as the partial loss of a significant portion of sites on valley floor landforms in the upper reaches of the catchment. The most effective way to mitigate these impacts is to implement a systematic archaeological subsurface testing program, to gain a detailed understanding of Aboriginal landscape use within the Doon Doon Creek valley prior to inundation impacts.

While other valleys in the region are likely to preserve Aboriginal sites on similar landforms within the landscape, the landscape surrounding the Doon Doon Creek valley (flanked in three directions by National Park), as well as the highly culturally significant landscape context of the valley (relative to Wollimbin and The Sisters peaks etc.), make this an ideal valley for focussed and systematic research.

11.4 Input by Aboriginal Stakeholders

A draft version of this report was sent to all Aboriginal stakeholders for comment. The following table addresses some of the comments submitted by RAPs. Original versions of RAP submissions can be found in Appendix 2.

Table 11.1 Responses to Submissions – Draft ACHA

Date	Type of Contact (email, phone etc)	Group	Comment	Response
30/4/18	Written submission (email)	McDonald Family/Paul Buxton	Joshua Bray and many other European settlers, are often mentioned in these assessments along with their connection to the *"natives, blacks or original inhabitants"* and generic names like that. Never or rarely have I (Jackie McDonald) seen an Aboriginal person's name in archaeological assessments. My great great Grandmother, Kitty is mentioned in the Bray diaries and I was always told she worked for Joshua Bray. To balance the historical account, I believe Aboriginal people's names ought to be used in any report, wherever possible.	Kitty's name has been incorporated into the section mentioning Joshua Bray and his ethno-historic observations of the local Aboriginal people of the Tweed Valley in the 1860s.
30/4/18	Written submission (email)	McDonald Family/Paul Buxton	The ethnohistory section of the assessment speaks of conflict and disease on our people and the view that "up to 90% of the Aboriginal population had perished". It doesn't recognise the families who survived.	Extra paragraph added to section 5.1.1. outlining this point.

30/4/18	Written submission (email)	McDonald Family/Paul Buxton	Recommendations No 4 (i) and 5 (i): The assessment of significance needs to be balanced. The recommendations relate to scientific significance only, and fails to recognise Aboriginal people's right to determine cultural significance as we are the primary determinants of our culture. An additional point must address Aboriginal Cultural significance.	This point was broadly discussed at the most recent workshop meeting. The general consensus from the RAPs was that all sites are significant. Section 8.2.1 has been strengthened and renamed to Aboriginal cultural significance. Recommendation 2 has been added in order to reiterate the community's views on Aboriginal Cultural significance.
30/4/18	Written submission (email)	McDonald Family/Paul Buxton	Recommendations No 4 (ii) and 5 (ii): The word "*may"* in the sentence about the program of archaeological salvage should be replaced with "*will".*	Updated accordingly
30/4/18	Written submission (email)	McDonald Family/Paul Buxton	Recommendations No 4 and 5: I believe an additional point in both 4 and 5 should be included as follows; The archaeological subsurface testing program (or Excavation strategy) will be developed in consultation with the RAPs.	Updated accordingly
30/4/18	Written submission (email)	McDonald Family/Paul Buxton	Recommendations No 6 and 7: An additional point in both 6 and 7 to include registering the scarred tree on the NSW AHIMS	Recommendation 8 has been added, stating that all Aboriginal sites recorded during this assessment will be submitted for listing on the NSW AHIMS.

Written submissions and verbal discussions	All RAPs	Concerned that field survey was not long enough	NOHC consider the field survey to have been as thorough as possible given the nature of the vegetation, local topography, ground visibility, and relatively high number of people involved (5-8 per day). Archaeological field survey is used as a first step in identifying and assessing where sites are in the landscape, as assessing ground exposure/visibility, and ground disturbances. Archaeological survey is *not* considered to be an exhaustive process likely to identify all sites within a study area. NOHC suggest that the comprehensiveness of the survey is highlighted by the recording of sixty previously unidentified Aboriginal sites NOHC has identified significant areas of PAD within the study area, and recommended subsurface testing of these areas. Excavation of areas of PAD will enable testing of the predictive model for Aboriginal site locations in the area, as well as the archaeological/scientific values of landforms that had very low levels of ground exposure during field survey. NOHC is of the opinion that further field survey is unlikely identify a great deal more sites, or a greatly varied spatial pattern of land use from what has already been evidenced across the study area.

	Written submissions and verbal discussions	All RAPs	Disjunct between Aboriginal Cultural Values and Scientific/Archaeological significance	NOHC believe we have reiterated as clearly as possible, and throughout the report, the difference between Aboriginal Cultural Values and Scientific/Archaeological significance. Section 8.2.1 has been strengthened and renamed to Aboriginal cultural significance. Recommendation 2 has been added in order to further reiterate the importance of community's views on Aboriginal Cultural significance.
21/5/18	Written submission (email)	TBLALC	Mitigation plans pertaining to Aboriginal sites that cannot be collected (CHD-A20, CHD-ST1, CHD-G1) are yet to be developed and agreed upon	Recommendations have been updated to reflect the mitigation measures or lack there of for each site. See recommendations 7 and 8 for CHD-ST1 See recommendation 9 for CHD-A20 See recommendation 10 for CHD-G1
21/5/18	Written submission (email)	TBLALC	Recommendations 3 and 4: Once excavation has occurred, RAPS should be consulted for their views prior to the determination of low, moderate, or high scientific significance of sites and PADs subject to excavation	Acknowledged, this is common practice. All RAPs will be consulted with when updating significance assessments pertaining to Aboriginal sites within the study area.

21/5/18	Written submission (email)	TBLALC	The question of what to do with collected artefacts is yet to be determined and agreed upon.	Acknowledged, recommendation 11 has been added outlining the trigger for beginning the development of such a policy. Initial discussion during the most recent workshop meeting suggested a permanent keeping place would be desirable, preferably with the ability for intermittent access for educational purposes.
21/5/18	Written submission (email)	TBLALC	Re Site 04-1-0014 (Rock Shelter) – Please explain what is meant by 'subsurface salvage'	Subsurface savage is the excavation of a known subsurface archaeological site, in order to retrieve a representative portion of the archaeological assemblage, prior to development related impacts. We know that this site has artefacts in subsurface deposits, due to artefacts found during coring done by Sullivan & Dallas (1978). For this reason we cannot call the next phase of excavations testing, as we know we will be digging into archaeological deposits. The excavation method of coring, particularly in sandy cave deposits, is not considered to be best practice by todays standards. As such, NOHC would recommend a different excavation methodology for the 'salvage excavations' at this site, compared to the subsurface testing at surface sites (or PADs) identified to have subsurface potential.

10/5/18	Email	Mleeka Hart (Tweed CoOp)	The GPS markers from this survey to the last and losing objects and sites are of concern. Understandable technology and the world moves and changes but is not a reliable method of recording.	It is acknowledged that some of the older recordings, particularly from the late 1970's and early 1980's were very difficult to relocate. This is a common problem for archaeologists relocating Aboriginal sites in the field. It should also be noted that our ability to relocate sites is not only affected by GPS site coordinates, but also seasonal variability in ground exposures, existing impacts and disturbances, steepness of terrain, and water runoff etc. Artefacts are known to move across the ground surface, as well as below the ground surface, and in many cases, where we find artefacts is unlikely to be where the item was originally deposited. GPS is currently our best method of relocating sites and when used in conjunction with detailed site descriptions, mapping, and photography, can be used with a high degree of confidence.
10/5/18	Email	Mleeka Hart (Tweed CoOp)	Our cultural heritage values include the flora and fauna so a holistic look at what we have to lose should include this.	The association of Aboriginal Cultural Values with the broader landscape as well as flora and fauna has been incorporated into recommendation 2. Once all environmental assessments are completed for the project, an understanding of the environmental impacts of the proposal will be incorporating into the Environmental Impact Statement (EIS). It will be at that point that a more holistic assessment of the impacts of the project can be undertaken.

Table 11.2 Summary of Impacts to Aboriginal Sites

Site Number	Feature(s)	Significance Assessment	Potential Impact	Impact Group	Mitigation
CHD-A1	**isolated find & PAD**	**moderate (local)**	**permanent inundation**	**direct**	**surface artefact collection & subsurface testing**
CHD-A2	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A3	isolated find (cultural significance)	low (local)	not directly impacted - very close to flood inundation	indirect	mark on maps
CHD-A4	**artefact scatter**	**low (local)**	**permanent inundation**	**direct**	**surface artefact collection**
CHD-A5	isolated find	low (local)	not impacted	indirect	mark on maps
CHD-A6	artefact scatter & PAD	moderate (local)	not directly impacted - very close to flood inundation	indirect	mark on maps
CHD-A7	**isolated find**	**low (local)**	**permanent inundation**	**direct**	**surface artefact collection**
CHD-A8	**artefact scatter**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A9	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A10	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A11	**isolated find (cultural significance)**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A12	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A13	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A14	**isolated find (cultural significance)**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A15	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A16	artefact scatter & PAD	moderate (local)	not directly impacted	indirect	mark on maps

Site Number	Feature(s)	Significance Assessment	Potential Impact	Impact Group	Mitigation
CHD-A17	artefact scatter & PAD	moderate (local)	surface scatter – not directly impacted very close to flood inundation. PAD - partial permanent and partial flood inundation	indirect PAD (direct)	subsurface testing
CHD-A18	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A19	artefact scatter	low (local)	not directly impacted	indirect	mark on maps
CHD-A20	**sandstone pitting/holes (cultural significance)**	**low (local)**	**flood inundation**	**direct**	**discuss with aboriginal stakeholders**
CHD-A21	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A22	**artefact scatter**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A23	isolated find & pad	moderate (local)	not directly impacted	indirect	mark on maps
CHD-A24	**isolated find (cultural significance)**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A25	isolated find	low (local)	not directly impacted	indirect	mark on maps
CHD-A26	artefact scatter	low (local)	not directly impacted	indirect	mark on maps
CHD-A27	**artefact scatter & PAD**	**moderate (local)**	**flood inundation**	**direct**	**surface artefact collection & subsurface testing**
CHD-A28	**isolated find (cultural significance)**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A29	**isolated find (cultural significance)**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A30	**artefact scatter & PAD**	**moderate (local)**	**surface scatter - permanent inundation. PAD - combination of partial inundation and flood inundation**	**direct**	**surface artefact collection & subsurface testing**
CHD-A31	**artefact scatter**	**low (local)**	**permanent inundation**	**direct**	**surface artefact collection**

Site Number	Feature(s)	Significance Assessment	Potential Impact	Impact Group	Mitigation
CHD-A32	artefact scatter	low (local)	not directly impacted	indirect	mark on maps
CHD-A33	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A34	artefact scatter	low (local)	not directly impacted	indirect	mark on maps
CHD-A35	**isolated find & PAD**	**moderate (local)**	**surface scatter - flood inundation. PAD - combination of partial inundation and flood inundation**	**direct**	**surface artefact collection & subsurface testing**
CHD-A36	**artefact scatter & PAD**	**moderate (local)**	**permanent inundation**	**direct**	**surface artefact collection & subsurface testing**
CHD-A37	**isolated find & PAD**	**moderate (local)**	**permanent inundation**	**direct**	**Surface Artefact Collection & Subsurface Testing**
CHD-A38	**isolated find & PAD**	**moderate (local)**	**surface scatter - flood inundation. PAD - combination of partial inundation and flood inundation**	**direct**	**surface artefact collection & subsurface testing**
CHD-A39	**isolated find**	**moderate (local)**	**flood inundation**	**direct**	**surface artefact collection. associated CHD PAD9 to be tested.**
CHD-A40	**artefact scatter**	**moderate (local)**	**permanent inundation**	**direct**	**surface artefact collection. associated CHD PAD9 to be tested.**
CHD-A41	**artefact scatter**	**moderate (local)**	**flood inundation**	**direct**	**surface artefact collection. associated CHD PAD9 to be tested.**
CHD-A42	**isolated find**	**low (local)**	**permanent inundation**	**direct**	**surface artefact collection**
CHD-A43	artefact scatter	low (local)	not directly impacted	indirect	mark on maps
CHD-A44	**isolated find**	**low (local)**	**permanent inundation**	**direct**	**surface artefact collection**
CHD-A45	**isolated find**	**low (local)**	**permanent inundation**	**direct**	**surface artefact collection**
CHD-A46	isolated find	low (local)	not directly impacted - very close to flood inundation	indirect	mark on maps
CHD-A47	isolated find	low (local)	not directly impacted - very close to flood inundation	indirect	mark on maps

Site Number	Feature(s)	Significance Assessment	Potential Impact	Impact Group	Mitigation
CHD-A48	**artefact scatter & PAD**	**moderate (local)**	**surface scatter - permanent inundation. PAD - combination of partial inundation and flood inundation**	**direct**	**surface artefact collection & subsurface testing**
CHD-A49	artefact scatter	low (local)	not directly impacted - very close to flood inundation	indirect	mark on maps
CHD-A50	artefact scatter	low (local)	not directly impacted	indirect	mark on maps
CHD-A51	**isolated find**	**low (local)**	**permanent inundation**	**direct**	**surface artefact collection**
CHD-A52	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A53	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
CHD-A54	isolated find	low (local)	not directly impacted - (some distance from study area)	possible indirect	N/A
CHD-A55	**artefact scatter & PAD**	**moderate (local)**	**permanent inundation**	**direct**	**surface artefact collection & subsurface testing**
CHD-A56	Restricted Site	TBA	not directly impacted - 75 m from study area	indirect	Client to liaise with TBLALC re: any works located between CHD A6 and CHDA9
CHD-A57	grinding groove	moderate (local)	not directly impacted	indirect	mark on maps
CHD-PAD1	**PAD**	**cannot be assessed prior to excavation**	**permanent inundation**	**direct**	**subsurface testing**
CHD-PAD2	**PAD**	**cannot be assessed prior to excavation**	**flood inundation**	**direct**	**subsurface testing**
CHD-PAD3	**PAD**	**cannot be assessed prior to excavation**	**flood inundation**	**direct**	**subsurface testing**
CHD-PAD4	**PAD**	**cannot be assessed prior to excavation**	**flood inundation**	**direct**	**subsurface testing**
CHD-PAD5	**PAD**	**cannot be assessed prior to excavation**	**permanent inundation**	**direct**	**subsurface testing**

Site Number	Feature(s)	Significance Assessment	Potential Impact	Impact Group	Mitigation
CHD-PAD6	**PAD**	**cannot be assessed prior to excavation**	**permanent inundation**	**direct**	**subsurface testing**
CHD-PAD7	**PAD**	**cannot be assessed prior to excavation**	**permanent inundation**	**direct**	**subsurface testing**
CHD-PAD8	**PAD**	**cannot be assessed prior to excavation**	**permanent inundation**	**direct**	**subsurface testing**
CHD-PAD9	**PAD**	**moderate (local)**	**partial permanent & partial flood inundation**	**direct**	**subsurface testing**
CHD-PAD10	PAD	cannot be assessed prior to excavation	not directly impacted	indirect	mark on maps
CHD-RS1	**rock shelter**	**moderate (local)**	**flood inundation**	**direct**	**further consultation required**
CHD-ST1	***scarred tree***	***moderate (local)***	***dam construction***	***possible direct***	***mark on maps - protective fencing if necessary. avoid impacts***
CHD-G1	**Chalcedony source**	**low (local)**	**permanent inundation**	**direct**	**Collect reference samples for possibility of future stone sourcing studies**
04-1-0025	artefact scatter	N/A	already inundated	N/A	N/A
04-1-0026/0027	scarred tree & artefact scatter	N/A	already inundated	N/A	N/A
CH3	artefact scatter	low (local)	not directly impacted	indirect	mark on maps
CH5	**isolated find**	**low (local)**	**permanent inundation**	**direct**	**surface artefact collection**
CH6	**artefact scatter**	**moderate (local)**	**flood inundation**	**direct**	**surface artefact collection. associated CHD PAD9 to be tested.**
CH7	**artefact scatter**	**moderate (local)**	**flood inundation**	**direct**	**surface artefact collection. associated CHD PAD9 to be tested.**
CH8	**artefact scatter**	**moderate (local)**	**flood inundation**	**direct**	**surface artefact collection. associated CHD PAD9 to be tested.**
04-1-0011	**isolated find**	**low (local)**	**permanent inundation**	**direct**	**surface artefact collection**

Site Number	Feature(s)	Significance Assessment	Potential Impact	Impact Group	Mitigation
04-1-0010	**isolated find**	**low (local)**	**permanent inundation**	**direct**	**surface artefact collection**
04-1-0009	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
04-1-0012	artefact scatter	N/A	already inundated	N/A	N/A
04-1-0014	**rock shelter**	**high (local)**	**permanent inundation**	**direct**	**subsurface salvage**
04-1-0015	artefact scatter	N/A	already inundated	N/A	N/A
04-1-0016	grinding grooves	N/A	already inundated	N/A	N/A
04-1-0090	**rock shelter**	**moderate (local)**	**permanent inundation**	**direct**	**further consultation required**
04-1-0130	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**
04-1-0194	**isolated find**	**low (local)**	**flood inundation**	**direct**	**surface artefact collection**

*

Table 11.3 Summary of Impacts to Historic Sites

Site Number	Feature(s)	Significance Assessment	Potential Impact	Impact Group	Mitigation
CHD-H1	building ruin/platform	Not significant	permanent inundation	direct	none
CHD-H2	Cram's Farm Building Complex	locally significant (b)	Cram's House - not directly impacted	indirect	mark on maps
			Bails & Dairy - not directly impacted	indirect	mark on maps
			Pig Stye – flood inundation	direct	archival recording (possible)
			Pecan Tree - not directly impacted	indirect	mark on maps
CHD-H3	Doon Doon Hall	locally significant (d)	not directly impacted	indirect	mark on maps

12. RECOMMENDATIONS

It is recommended that:

1. Where possible, cultural heritage sites should be avoided by the proposed Clarrie Hall Dam development. Where this is not feasible the following management and mitigation strategies should be followed

2. All Aboriginal sites within the study area are of cultural significance to the local Aboriginal community. Also, independent of archaeological sites and objects within the study area, the landscape, flora, and fauna of the Doon Doon Creek Valley are of high cultural significance. These cultural values should be taken into consideration when assessing the impacts of the proposal.

3. Surface artefact collection should be conducted at all Aboriginal sites of low local scientific significance in the Clarrie Hall Dam study area prior to development impacts.

4. Surface artefact collection should be conducted at all Aboriginal sites of moderate local scientific significance in the Clarrie Hall Dam study area prior to development impacts.

5. An archaeological subsurface testing program (where applicable) should be conducted, and developed in consultation with the RAPs, at all Aboriginal sites of moderate local scientific significance in the Clarrie Hall Dam study area prior to development impacts. The aim: to ascertain the presence and archaeological significance of associated deposits.

    i. If the archaeological deposits are assessed to be of low scientific significance (at either a local or state level), no further archaeological works will be necessary prior to approval for development-related impacts.

    ii. If the archaeological deposits are assessed to be of moderate to high significance (at either a local or state level), then a program of archaeological salvage will be required in order to retrieve the requisite amount of information from the site prior to approval for development related impacts.

6. An archaeological subsurface testing program (where applicable) should be conducted, and developed in consultation with the RAPs, at all areas identified as Potential Archaeological Deposits (PADs) within the Clarrie Hall Dam study area. The aim: to ascertain the presence and significance of archaeological deposits.

    i. If the archaeological deposits are assessed to be of low scientific significance (at either a local or state level), no further archaeological works will be necessary prior to approval for development related impacts.

    ii. If the archaeological deposits are assessed to be of moderate to high significance (at either a local or state level), then a program of archaeological salvage will need be undertaken in order to retrieve the requisite amount of information from the site prior to approval for development related impacts.

7. If scarred tree site CHD-ST1 can be avoided by construction related impacts it should be fenced and its location clearly marked on development maps and plans.

8. If impacts to scarred tree site CHD-ST1 are unavoidable, then further assessment and consultation with the Aboriginal community will be necessary to decide on appropriate mitigation measures.

9. Consultation with RAPs regarding mitigation measures for impacts to site CHD-A20, CHD-A56, 04-1-0090, and CHD-RS1 are ongoing.

10. Samples of non-artefactual stone material should be taken from site CHD-G1 (chalcedony source) in order to allow stone sourcing studies in the future.

11. A return to country protocol or long term management plan should be developed in consultation with the RAPs for any Aboriginal artefacts that are collected/salvaged during mitigation works associated with this project.

12. All Aboriginal sites recorded during this assessment will be submitted for listing on the NSW AHIMS.

13. Archival recording should be conducted of historic sites within the inundation area assessed as locally significant prior to approval for development related impacts.

14. No harm should come to any of the sites listed in this report, until approvals for impacts have been sought and gained.

15. Information in this report relating to the exact location of Aboriginal sites should not be published or promoted in the public domain;

16. The protocols for the unanticipated discovery of archaeological material and suspected human remains (presented in Appendix 4) should be implemented as necessary during activities involving ground surface disturbance and excavation.

17. A copy of this report should be provided to each of the RAPs for their comment.

18. A copy of this report should be provided to the OEH for its information and records.

~ o0o ~

13. REFERENCES

Australia ICOMOS 1987 *The Australia Icomos Charter for the Conservation of Places of Cultural Significance (The Burra Charter), Guidelines to the Burra Charter: Cultural Significance and Conservation Policy.* Pamphlet, Australia Icomos (Inc).

Beesley, J. 1989 The Scarred Tree. Unpublished report to the Victoria Archaeological Survey, Melbourne.

Boileau, J. & Tweed (N.S.W.) Council. 2006 *Caldera to the sea: a history of the Tweed Valley*. [Murwillumbah, N.S.W.]: Tweed Shire Council

Bray, J. 1901 Tribal Districts and Customs *Science of Man vol 4 No 1*.

Brunker, R.L., R.G Cameron, G. Tweedale and R. Reiser 1972 *Tweed Heads 1:250 000 Geological Sheet SH/56-03*, 1st edition, Geological Survey of New South Wales, Sydney

Buckley, M. n.d. Lions Lookout Walk Murwillumbah, N.S.W: Tweed Shire Council.

Cousins, A. 1933 *The northern rivers of New South Wales*. Sydney: Shakespeare Head Press.

Dallas, M. 2009 Aboriginal Cultural Heritage Assessment & Management Plan. Nightcap Village Kyogle Road. Mary Dallas Consulting Archaeologists.

Ferry, J. 1988 'New South Wales Land Records and Family History', in *International Congress on Family History* (*1st*), Sydney, 115-124.

Fox & Slabb 2016 First People. In DeGood, M. *The Fragile Edge: A Natural History of the Tweed Coast*. Boganger NSW.

Harris, D. 1975 Traditional Patterns of Plant-Food Procurement in the Cape York Penninsula and Torres Strait. Fieldwork Report. Unpublished report prepared for the Australian Institute of Aboriginal Studies.

Jansen, A. 1991 *Conditional Purchase in New South Wales*, Genial Enterprises, Emu Plains, NSW.

Kass, T. 2003 *A Thematic History of the Central West*, NSW Heritage Office, Sydney

Keats, N.C. 1988 Wollumbin, *The Creation and Early Habitation of the Tweed, Brunswick and Richmond Rivers*. Dunamis Press, Woy Woy NSW.

Long, A. 2005 *Aboriginal Scarred Trees in New South Wales: A Field Manual*. Department of Environment and Conservation (NSW).

Longhurst, R. I. 1980 The Gold Coast: Its First Inhabitants in *John Oxley Journal Vol 1 No 2 Feb*.

Norledge M. 1968 Aboriginal Legends from Eastern Australia: The Richmond-Mary River Region. Sydney: Reed Publishing.

NSW Heritage Office 2000 *Assessing Heritage Significance.* Update for NSW Heritage Manual, (Final Approved Text August 2000). NSW Heritage Office, Sydney.

NSW Heritage Office and Department of Urban Affairs and Planning 1996 *NSW Heritage Manual.* NSW Heritage Office and Department of Urban Affairs and Planning, Sydney.

Pedley, H. 1993 *Plant Detoxification in the Rainforest*. Brisbane: The Department of Education.

Piper, A. 1979 An archaeological survey of Aboriginal sites within the proposed Doon Creek dam (re-location) area of inundation.

Robinson, R.E.1989 *The Nearest the White Man Gets: Aboriginal narratives and poems of New South Wales.* Indiana University: Hale & Iremonger.

Rosetto, M., E. J. Ens, T. Honings, P. D. Wilson, J-Y S Yap, O. Costello et al 2017 From Songlines to genomes: Prehistoric assisted migration of a rainforest tree by Australian Aboriginal people. *Public Library of Science (PLoS) ONE 12 (11): e0186663*.

Roth, W. E. 1901 *North Queensland Ethnography*. Brisbane Government Printer.

Simmons, S. 1977 Hume Freeway - Seymour to Avenel Section; Archaeological Survey Report. Victoria Archaeological Survey, Ministry of Conservation, Melbourne.

Southern Cross University 2008 Preliminary Archaeological Overview for Proposed Raising of Clarrie Hall Dam.

Sullivan, K. & M. Dallas 1978 *An archaeological survey of the proposed Doon Creek dam site.*

Thorp, Wendy. 1990 *Regional Study of Heritage Significance: Central Lowlands, Hunter Valley, Electricity Commission Holdings, Volume 2*, Electricity Commission of New South Wales

Tuechler, A., Ferrier,A., & Cosgrove, R. 2014 Transforming the inedible to the edible: An analysis of the nutritional returns for Aboriginal nut processing in Queenslands Wet Tropics. Australian Archaeological Vol. 79.

Tindale, N. 1974 *Aboriginal Tribes of* Australia: Their Terrain, Environmental Controls, Distribution, Limits, and Proper Names. Berkeley University of California Press.

Tweed Shire Council 2017 Draft Aboriginal Cultural Heritage Management Plan.

Uniake, J 1825 Narrative of Mr. Oxleys Expedition to Port Curtis and Moreton Bay' in *Geographical Memoirs of N.S.W.* Baron Field (ed), London.

~ o0o ~

APPENDIX 1

AHIMS AND

OTHER HERITAGE REGISTER SEARCH RESULTS

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Clarrie Hall Dam
Client Service ID : 290254

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
04-1-0194	Byrrill Ridge 4 Tweed ACH Artefacts	GDA	56	528978	6850447	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0188	Rockface Road Tweed ACH Artefact	GDA	56	532368	6849559	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0131	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			
	Contact Searle	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0089	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			
	Contact Searle	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0001	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			
	Contact Mr.Des Williams	**Recorders**	Isabel McBryde,M.J Martyn,Rankin,Mr.Ian Fox					**Permits**		
04-1-0013	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Closed site	Valid			
	Contact	**Recorders**	Mary Dallas Consulting Archaeologists,Mr.Ian Fox					**Permits**	2412,2484	
04-1-0129	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			
	Contact Searle	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0130	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			
	Contact Searle	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0025	Mt Misery Byrrill, BMP-05-0070	AGD	56	529300	6852100	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Mr.Adrian Piper,Mr.Ian Fox					**Permits**		
04-1-0012	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			
	Contact	**Recorders**	Mary Dallas Consulting Archaeologists,Mr.Ian Fox					**Permits**		
04-1-0015	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			
	Contact	**Recorders**	Mr.H Sullivan,Mr.Ian Fox					**Permits**		
04-1-0016	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			
	Contact	**Recorders**	H Sullivan,Mr.Ian Fox					**Permits**		
04-1-0026	Mt Misery Byrrill	AGD	56	529900	6852800	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	**Recorders**	Mr.Adrian Piper					**Permits**		

Report generated by AHIMS Web Service on 11/07/2017 for Lucy Blackam for the following area at Datum :GDA, Zone : 56, Eastings : 527905 - 532642, Northings : 6849467 - 6855065 with a Buffer of 50 meters. Additional Info : Assessment report. Number of Aboriginal sites and Aboriginal objects found is 19

This information is not guaranteed to be free from error omission. Office of Environment and Heritage (NSW) and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

Page 1 of 2

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Clarrie Hall Dam
Client Service ID : 290254

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
04-1-0027	Mt Misery; Byrrill; BMP-05-0072	AGD	56	529900	6852800	Open site	Valid	Modified Tree (Carved or Scarred) : 1, Artefact : -	Open Camp Site	
	Contact	**Recorders**	Mr.Adrian Piper,Mr.Ian Fox					**Permits**		
04-1-0090	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			
	Contact Searle	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0014	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Closed site	Valid			
	Contact	**Recorders**	Mary Dallas Consulting Archaeologists,Mr.Ian Fox					**Permits**		
04-1-0115	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			
	Contact Searle	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0117	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			
	Contact Searle	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0116	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			
	Contact Searle	**Recorders**	Mr.Ian Fox					**Permits**		

Report generated by AHIMS Web Service on 11/07/2017 for Lucy Blackam for the following area at Datum :GDA, Zone : 56, Eastings : 527905 - 532642, Northings : 6849467 - 6855065 with a Buffer of 50 meters. Additional Info : Assessment report. Number of Aboriginal sites and Aboriginal objects found is 19

This information is not guaranteed to be free from error omission. Office of Environment and Heritage (NSW) and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

Australian Government
Department of the Environment and Energy

Heritage
Australian Heritage Database

You are here: Environment home » Heritage » Australian Heritage Database

Search the Australian Heritage Database

Enter at least one search criterion.

Search Hints

Search | Reset form

Place name

Street name

Town or suburb: Doon Doon

State: --All--

Country

Advanced search options

List: Register of the National Estate (Non-statutory archive)

Different lists will provide different status and class options

Local Government Area

Place ID number

Legal status: --All--

Class: --All--

Keyword Search

☑ Description ☑ Statement of Significance ☑ Place history

Latitude/Longitude

N

Latitude 1

Longitude 1 [ ] S Longitude 2

W [ ] E Latitude 2 [ ] E E

[ ] S

S

○ Wholly within region
◉ Wholly or partially within region

Longitude coordinates should be entered as ddd.mm.ss
Latitude coordinates should be entered as dd.mm.ss

Map Ref No

1:100,000 eg 2357
1:250,000 eg SF-50-01

Australian Government
Department of the Environment and Energy

Heritage
Australian Heritage Database

You are here: Environment home » Heritage » Australian Heritage Database

Search Results

new search edit search

1 result found.

Tweed River Valley	Murwillumbah, NSW, Australia	(Indicative Place) Register of the National Estate (Non-statutory archive)

Report Produced: Thu Jan 4 11:56:47 2018

Accessibility | Disclaimer | Privacy | © Commonwealth of Australia (cc) BY

Australian Government
Department of the Environment and Energy

Australian Heritage Database

You are here: Environment home » Heritage » Australian Heritage Database

Place Details

new search edit search

Send Feedback

Tweed River Valley, Murwillumbah, NSW, Australia

Photographs	None
List	Register of the National Estate (Non-statutory archive)
Class	Historic
Legal Status	Indicative Place
Place ID	265
Place File No	1/01/120/0014

Nominator's Statement of Significance
Spectacular panoramas over the Tweed Valley can be obtained. The awe inspiring volcanic peak of Mount Warning dominates the scene. The valley floor supports farming, grazing and sugar cane plantations. The former volcanic complex centred on Mount Warning and rainforest pockets are scientifically important.
Official Values Not Available
Description
The Upper Tweed River Valley is part of a vast volcanic caldera, some 30km in diameter, with Mount Warning as the central core. High mountain ranges with precipitous basalt cliffs rim the valley, the northern limit being the crest of the Tweed Range. Mount Warning (1,157m) rises from the valley floor to dominate the scene. The Tweed River and its tributaries rise in the surrounding ranges, flow north-east through the fertile valley plain to the sea.
History Not Available
Condition and Integrity
The chief danger is unsympathetic development. Camphor laurel encroachment into forest verges requires control.
Location
About 92600 ha, located near Murwillumbah.
Bibliography
'RAINFORESTS' NPWS MAY 1977 'REGIONAL LANDSCAPES OF AUSTRALIA - FORM, FUNCTION AND CHANGE' BY NANCY AND ANDREW LEARMONTH - ANGUS AND ROBERTSON

Report Produced Tue Jan 2 16:19:40 2018

APPENDIX 3

DESCRIPTIONS OF SAMPLE AREAS

Descriptions of Sample Areas

Area 1

GDA Zone 56 – 529354.6852415

Topographically this sample area consists of a flat terminal spur crest, directly adjacent to the current dam shoreline and about 40 m from the original alignment of Doon Doon Creek.

The area has an open aspect and is covered heavily of lantana.

Soils are grey brown silty sand. Soil depth is unknown but estimated to be at least 60 cm in depth.

Across the sampled portion of the landform ground surface exposure incidence is 2%, with 30% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance..

Given the flat gradient of this landform, its proximity to Doon Doon Creek, relatively low levels of disturbance, and its estimated soil depth, this area is assessed as having **moderate to high potential** for subsurface archaeological deposits, and has been identified as CHD-PAD8.

Figure A3.1 View of Sample Area 1

Area 2

GDA Zone 56 – 529459.6852377

Topographically this sample area consists of steep gradient mid-slopes and a portion of moderate gradient spur crest, directly adjacent to the current dam shoreline and about 20 m from the original alignment of Doon Doon Creek.

The area has a westerly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor.

Soils are grey brown sandy silt. Soil depth is very shallow on the steep mid-slopes and estimated to be no more than 20 cm on the crest.

Ground surface exposure incidence across the sampled portion of the landform is 2%, with 10% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance and surface water wash.

Given the gradient of this landform, its steep access to Doon Doon Creek, and its estimated shallow soil depth, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure A3.2 Example of Sample Area 2

Area 3

GDA Zone 56 – 529493.6852621

Topographically this sample area consists of moderate gradient spur crest and associated mid-slopes, directly adjacent to the current dam shoreline and about 80 m from the original alignment of Doon Doon Creek.

The area has an easterly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor.

Soils are grey brown sandy silt. Soil depth is unknown, but estimated to be relatively shallow.

Ground surface exposure incidence across the sampled portion of the landform is 2%, with 5% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance and surface water wash.

Given the gradient of this landform, its steep access to the Doon Doon Creek valley floor, and its estimated shallow soil depth, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure A3.3 Example of Sample Area 3

Area 4

GDA Zone 56 – 529537.6852767

Topographically this sample area consists of moderate gradient spurline and associated mid-slopes, directly adjacent to the current dam shoreline and about 80 m from the original alignment of Doon Doon Creek.

The area has an easterly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor.

Soils are grey brown sandy silt. Soil depth is unknown, but estimated to be relatively shallow.

Ground surface exposure incidence across the sampled portion of the landform is 2%, with 5% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance.

Given the gradient of this landform, its steep access to the Doon Doon Creek valley floor, and its estimated shallow soil depth, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure A3.4 Example of Sample Area 4

Area 5

GDA Zone 56 – 529714.6852550

Topographically this sample area consists of steep gradient mid-slopes directly adjacent to the current dam shoreline and about 50 m from the original alignment of Doon Doon Creek.

The area has a north-westerly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor.

Soils are grey brown sandy silt. Soil depth is unknown but estimated to be very shallow.

Ground surface exposure incidence across the sampled portion of the landform is 2%, with 2% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance and surface water wash.

Given the gradient of this landform, its steep access to Doon Doon Creek valley floor, and its estimated shallow soil depth, this area is assessed as having **very low potential** for the presence of subsurface archaeological deposits.

Figure A3.5 Example of Sample Area 5

Area 6

GDA Zone 56 – 529770.6852879

Topographically this sample area consists of moderate gradient spur crest and associated mid-slopes directly adjacent to the current dam shoreline and about 70 m from the original alignment of Doon Doon Creek.

The area has a northerly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor.

Soils are grey brown sandy silt. Soil depth is unknown but estimated to be shallow.

exposure incidence across the sampled portion of the landform is 2%, with 10% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance and surface water wash.

Given the gradient of this landform, its steep access to Doon Doon Creek valley floor, and its estimated shallow soil depth, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure A3.6 Example of Sample Area 6

Area 7

GDA Zone 56 – 529454.685027

Topographically this sample area consists of moderate to steep gradient mid-slopes directly adjacent to the current dam shoreline and about 150 m from the original alignment of Doon Doon Creek.

The area has an easterly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor.

Soils are grey brown sandy silt. Soil depth is unknown but estimated to be shallow.

exposure incidence across the sampled portion of the landform is 2%, with 5% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance and surface water wash.

Given the gradient of this landform, its steep access to Doon Doon Creek valley floor, and its estimated shallow soil depth, this area is assessed as having **very low potential** for the presence of subsurface archaeological deposits.

Figure A3.7 Example of Sample Area 7

Area 8

GDA Zone 56 – 529603.6853008

Topographically this sample area consists of moderate to steep gradient spurline and associated mid-slopes directly adjacent to the current dam shoreline and about 40 m from the original alignment of Doon Doon Creek.

The area has a southerly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor.

Soils are grey brown sandy silt. Soil depth is unknown but estimated to be shallow.

exposure incidence across the sampled portion of the landform is 2%, with 5% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance and surface water wash.

Given the gradient of this landform, its steep access to Doon Doon Creek valley floor, and its estimated shallow soil depth, this area is assessed as having **very low potential** for the presence of subsurface archaeological deposits.

Figure A3.8 Example of Sample Area 8

Area 9

GDA Zone 56 – 529817.6853067

Topographically this sample area consists of moderate gradient spur crest and associated mid-slopes directly adjacent to the current dam shoreline and about 100 m from the original alignment of Doon Doon Creek.

The area has a south-easterly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor.

Soils are grey brown sandy silt. Soil depth is unknown but estimated to be shallow.

exposure incidence across the sampled portion of the landform is 2%, with 2% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance and surface water wash.

Given the gradient of this landform, and its estimated shallow soil depth, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure A3.9 Example of Sample Area 9

Area 10

GDA Zone 56 – 530147.6852706

Topographically this sample area consists of very steep gradient mid-slopes directly adjacent to the current dam shoreline and about 300 m from the original alignment of Doon Doon Creek.

The area has an easterly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor.

Soils are grey brown sandy silt. Soil depth is unknown but estimated to be shallow.

exposure incidence across the sampled portion of the landform is 2%, with 5% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance and surface water wash.

Given the gradient of this landform, its steep access to Doon Doon Creek valley floor, and its estimated shallow soil depth, this area is assessed as having **very low potential** for the presence of subsurface archaeological deposits.

Figure A3.10 Example of Sample Area 10

Area 11

GDA Zone 56 – 530247.6852726

Topographically this sample area consists of moderate to steep gradient mid-slopes directly adjacent to the current dam shoreline and about 300 m from the original alignment of Doon Doon Creek.

The area has a westerly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor.

Soils are grey brown sandy silt. Soil depth is unknown but estimated to be shallow.

exposure incidence across the sampled portion of the landform is 5%, with 5% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance and surface water wash, and an unused vehicle access track.

Given the gradient of this landform, its steep access to Doon Doon Creek valley floor, and its estimated shallow soil depth, this area is assessed as having **very low potential** for the presence of subsurface archaeological deposits.

Figure A3.11 Example of Sample Area 11

Area 12

GDA Zone 56 – 530147.6853012

Topographically this sample area consists of moderate spur crest and associated mid-slopes directly adjacent to the current dam shoreline and about 100 m from the original alignment of Doon Doon Creek.

The area has a westerly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor.

Soils are grey brown sandy silt. Soil depth is unknown but estimated to be shallow.

exposure incidence across the sampled portion of the landform is 2%, with 2% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance and surface water wash.

Given the gradient of this landform, its steep access to Doon Doon Creek valley floor, and its estimated shallow soil depth, this area is assessed as having **very low potential** for the presence of subsurface archaeological deposits.

Figure A3.12 Example of Sample Area 12

Area 13

GDA Zone 56 – 530073.6853211

Topographically this sample area consists of low to moderate gradient spur crest and associated mid-slopes about 80 m from the original alignment of Doon Doon Creek.

The area has a westerly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor. A cleared vehicle access track runs along the spur crests down to the dam shoreline, and is heavily grassed.

Soils are grey brown sandy silt. Soil depth is unknown but estimated to be about 40 cm on the crest.

exposure incidence across the sampled portion of the landform is 5%, with 20% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance and surface water wash, and vehicle access.

Given the low to moderate gradient of this landform, its estimated moderate soil depth, and disturbance related to the vehicle track, this area is assessed as having **low to moderate potential** for the presence of subsurface archaeological deposits.

Figure A3.13 Example of Sample Area 13

Area 14

GDA Zone 56 – 529847.6853367

Topographically this sample area consists of moderate gradient mid-slopes directly adjacent to the current dam shoreline and about 80 m from the original alignment of Doon Doon Creek.

The area has an easterly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor.

One old growth tree was inspected at this location, however, no Aboriginal scars were evident.

Soils are grey brown sandy silt. Soil depth is unknown but estimated to be shallow.

exposure incidence across the sampled portion of the landform is 2%, with 5% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance and surface water wash.

Given the gradient of this landform, and its estimated shallow soil depth, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure A3.14 Example of Sample Area 14

Area 15

GDA Zone 56 – 529973.6853538

Topographically this sample area consists of a moderate gradient spur crest directly adjacent to the current dam shoreline and about 80 m from the original alignment of Doon Doon Creek.

The area has a south-easterly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor. An unused vehicle access track cuts across the landform towards the water's edge.

Soil is grey brown sandy silt. Soil depth is unknown but estimated to be shallow.

exposure incidence across the sampled portion of the landform is 2%, with 10% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, vehicle access, and surface water wash.

Given the gradient of this landform, vehicle track, and its estimated shallow soil depth, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure A3.15 Example of Sample Area 15

Area 16

GDA Zone 56 – 529931.6853456

Topographically this sample area consists of moderate gradient spur crest and associated mid-slopes directly adjacent to the current dam shoreline and about 100 m from the original alignment of Doon Doon Creek.

The area has a southeasterly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor.

Soils are grey brown sandy silt. Soil depth is unknown but estimated to be shallow.

exposure incidence across the sampled portion of the landform is 2%, with 2% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance and surface water wash.

Given the gradient of this landform, and its estimated shallow soil depth, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure A3.16 Example of Sample Area 16

Area 17

GDA Zone 56 – 530201.6853555

Topographically this sample area consists of a low to moderate gradient spur crest and associated mid-slopes directly adjacent to the current dam shoreline and about 80 m from the original alignment of Doon Doon Creek.

The area has a north-westerly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor.

An old growth eucalypt tree was inspected in this sample area, with no Aboriginal scars evident.

Soils are grey brown sandy silt. Soil depth is unknown but estimated to be shallow.

exposure incidence across the sampled portion of the landform is 2%, with 2% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance and surface water wash.

Given the gradient of this landform, and its estimated shallow soil depth, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure A3.17 Example of Sample Area 17

Area 18

GDA Zone 56 – 529842.6853743

Topographically this sample area consists of very steep gradient mid-slopes directly adjacent to the current dam shoreline and about 80 m from the original alignment of Doon Doon Creek.

The area has a north-easterly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor.

Soils are grey brown sandy silt. Soil depth is unknown but estimated to be very shallow.

exposure incidence across the sampled portion of the landform is 1%, with 1% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance and surface water wash.

Given the steep gradient of this landform, its steep access to Doon Doon Creek valley floor, and its estimated shallow soil depth, this area is assessed as having **very low potential** for the presence of subsurface archaeological deposits.

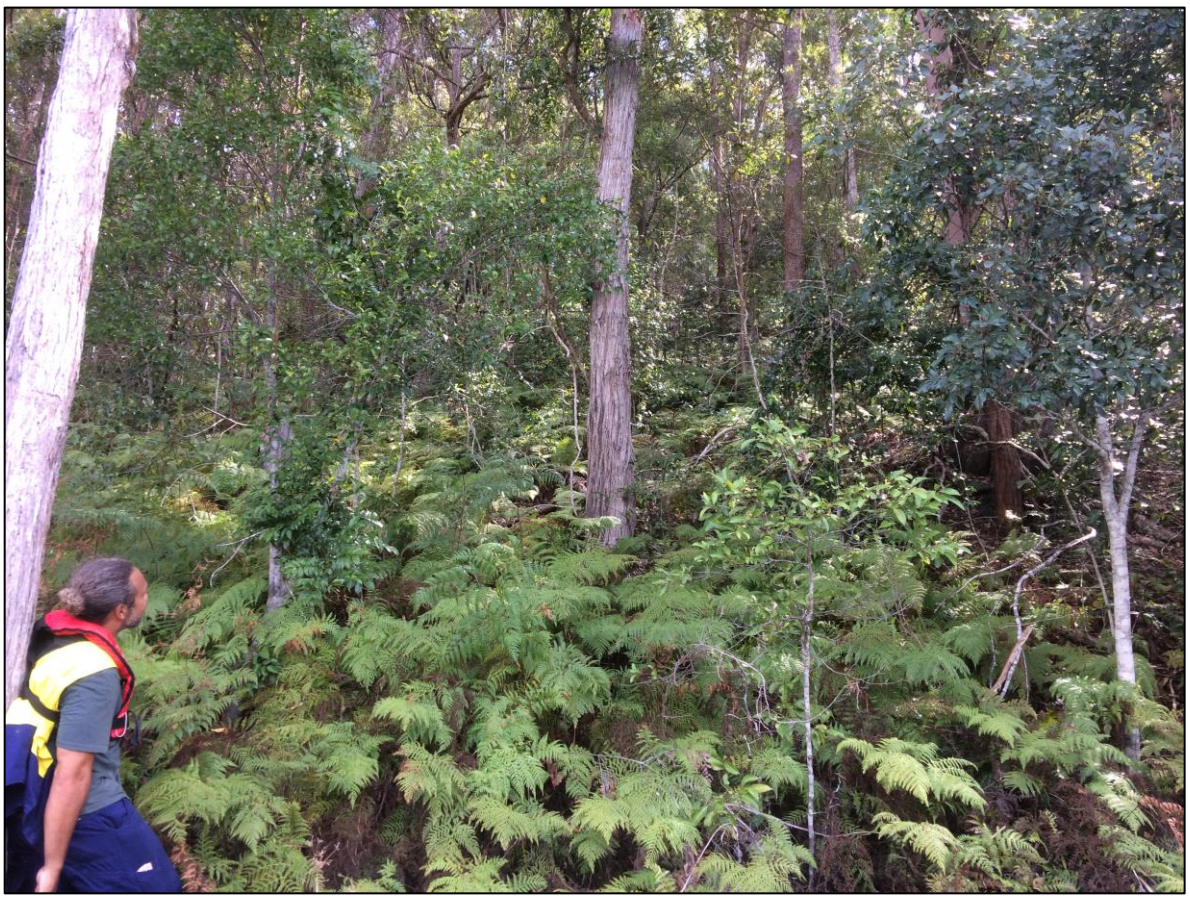


Figure A3.18 Example of Sample Area 18

Area 19

GDA Zone 56 – 529755.6853938

Topographically this sample area consists of steep gradient spur crest and associated mid-slopes directly adjacent to the current dam shoreline and about 60 m from the original alignment of Doon Doon Creek.

The area has a northerly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor. A vehicle access track cut across a portion of this landform.

Soils are grey brown sandy silt. Soil depth is unknown but estimated to be shallow.

Exposure incidence across the sampled portion of the landform is 2%, with 2% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, the vehicle access track and surface water wash.

Given the gradient of this landform, its steep access to Doon Doon Creek valley floor, and its estimated shallow soil depth, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure A3.19 Example of Sample Area 19

Area 20

GDA Zone 56 – 529609.6853992

Topographically this sample area consists of moderate gradient mid-slopes and an associated drainage line directly adjacent to the current dam shoreline and about 150 m from the original alignment of Doon Doon Creek.

The area has an easterly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor.

Soils are grey brown sandy silt. Soil depth is unknown but estimated to be shallow.

exposure incidence across the sampled portion of the landform is 2%, with 2% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance and surface water wash.

Given the gradient of this landform, and its estimated shallow soil depth, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure A3.20 Example of Sample Area 20

Area 21

GDA Zone 56 – 528960.6852492

Topographically this sample area consists of moderate gradient spurline and associated mid-slopes directly adjacent to the current dam shoreline and about 80 m from the original alignment of Doon Doon Creek.

The area has an easterly aspect and is covered by predominantly native bush regrowth, lantana, and heavy leaf litter across the forest floor.

Soils are grey brown sandy silt. Soil depth is unknown but estimated to be around 30 cm.

exposure incidence across the sampled portion of the landform is 2%, with 10% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance and surface water wash.

Given the gradient of this landform, its steep access to Doon Doon Creek valley floor, and its estimated shallow soil depth, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure A3.21 Example of Sample Area 21

Area 22

GDA Zone 56 – 529069.6852547

Topographically this sample area consists of steep gradient mid-slopes directly adjacent to the current dam shoreline and about 100 m from the original alignment of Doon Doon Creek.

The area has a southerly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor.

Soils are grey brown sandy silt. Soil depth is unknown but estimated to be shallow.

exposure incidence across the sampled portion of the landform is 2%, with 2% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance and surface water wash.

Given the gradient of this landform, its steep access to Doon Doon Creek valley floor, and its estimated shallow soil depth, this area is assessed as having **very low potential** for the presence of subsurface archaeological deposits.

Figure A3.22 Example of Sample Area 22

Area 23

GDA Zone 56 – 529350.6852235

Topographically this sample area consists of a flat to low gradient spur line transitioning to a moderate to steep gradient spur crest and associated mid-slopes. At its closest, the landform is about 10-20 m from the original alignment of Doon Doon Creek.

The area has an open to westerly aspect and is covered by a mix of introduced trees and native bush regrowth with heavy leaf litter across the forest floor. A vehicle access track is located along the spur crest.

Soil is grey brown sandy silt. Soil depth is unknown but estimated to be at least 40 cm on the flat spur crest, although this location correlates with the location of the vehicle track.

exposure incidence across the sampled portion of the landform is 2%, with 15% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, vehicle access, soils compaction along the track, and surface water wash.

Given the flat to moderate gradient of this landform, proximity to Doon Doon Creek valley floor, disturbance from the vehicle track, and its estimated soil depth, this area is assessed as having **low to moderate potential** for the presence of subsurface archaeological deposits.

Figure A3.23 Example of Sample Area 23

Area 24

GDA Zone 56 – 529492.6852146

Topographically this sample area consists moderate to steep gradient mid-slopes directly adjacent to the current dam shoreline and about 50 m from the original alignment of Doon Doon Creek.

The area has a south-westerly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor. The landform is associated with a large road cut into the slope.

Soils are grey brown sandy silt. Soil depth is unknown but estimated to be shallow.

exposure incidence across the sampled portion of the landform is 1%, with 5% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, track construction, vehicle access, and surface water wash.

Given the gradient of this landform, its steep access to Doon Doon Creek valley floor, and its estimated shallow soil depth, and the considerable disturbance from the road cut, this area is assessed as having **very low potential** for the presence of subsurface archaeological deposits.

Figure A3.24 Example of Sample Area 24

Area 25

GDA Zone 56 – 529590.6851815

Topographically this sample area consists of low to moderate gradient mid-slopes about 50 m from the original alignment of Doon Doon Creek.

The area has a westerly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor. A flat vehicle access track cuts across the landform.

An old growth eucalypt tree was inspected in this area with no visible Aboriginal scars present.

Soil is grey brown sandy silt. Soil depth is unknown but estimated to be shallow.

exposure incidence across the sampled portion of the landform is 2%, with 2% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, vehicle access, and surface water wash.

Given the gradient of this landform, vehicle track disturbance, and its estimated shallow soil depth, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure A3.25 Example of Sample Area 25

Area 26

GDA Zone 56 – 529801.6851700

Topographically this sample area consists of moderate gradient mid-slopes about 50 m from the original alignment of Doon Doon Creek.

The area has a south-westerly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor. A flat vehicle access track cuts across the landform.

Soils are a grey brown sandy silt. Soil depth is unknown but estimated to be shallow.

exposure incidence across the sampled portion of the landform is 2%, with 2% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, vehicle access, and surface water wash.

Given the gradient of this landform, its steep access to Doon Doon Creek valley floor, and its estimated shallow soil depth, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure A3.26 Example of Sample Area 26

Area 27

GDA Zone 56 – 529882.6851589

Topographically this sample area consists of moderate gradient mid-slopes about 70 m from the original alignment of Doon Doon Creek.

The area has a south-westerly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor.

Soils are grey brown sandy silt. Soil depth is unknown but estimated to be shallow.

exposure incidence across the sampled portion of the landform is 2%, with 2% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance and surface water wash.

Given the gradient of this landform, its steep access to Doon Doon Creek valley floor, and its estimated shallow soil depth, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure A3.27 Example of Sample Area 27

Area 28

GDA Zone 56 – 529941.6851497

Topographically this sample area consists of moderate gradient mid-slopes about 60 m from the original alignment of Doon Doon Creek.

The area has a south-westerly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor. A flat vehicle access track cuts across the landform.

Soil is grey brown sandy silt. Soil depth is unknown but estimated to be shallow.

exposure incidence across the sampled portion of the landform is 20%, with 90% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, vehicle access, and surface water wash.

Given the gradient of this landform, its steep access to Doon Doon Creek valley floor, and its estimated shallow soil depth, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure A3.28 Example of Sample Area 28

Area 29

GDA Zone 56 – 529750.6851368

Topographically this sample area consists of a flat island, which was likely a small knoll prior to dam inundation. It is about 50 m from the original alignment of Doon Doon Creek.

The area has an open aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor. Rubbish has been dumped in this area..

Soils are grey brown sandy silt. Soil depth is unknown.

exposure incidence across the sampled portion of the landform is 5%, with 90% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance and flooding inundation.

Given unknown topographic relationship of this landform to the surrounding landscape it is difficult to assess the archaeological subsurface potential of this area.

Figure A3.29 Example of Sample Area 29

Area 30

GDA Zone 56 – 529622.6850975

Topographically this sample area consists of a flat island, which was a slim spur crest prior to dam inundation. It is about 100 m from the original alignment of Doon Doon Creek.

The area has an open aspect and is covered by introduced and native bush regrowth with heavy leaf litter across the forest floor.

Soil is grey brown sandy silt. Soil depth is unknown.

exposure incidence across the sampled portion of the landform is 5%, with 90% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance and flooding inundation.

Given the small are of this landform and the fact that it is already subject to temporary inundation during flood, this area is assessed as having **low potential** for the presence of subsurface archaeological deposits.

Figure A3.30 Example of Sample Area 30

Area 31

GDA Zone 56 – 530019.6851444

Topographically this sample area consists of steep gradient mid-slopes about 60 m from the original alignment of Doon Doon Creek.

The area has a south-westerly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor.

Soils are grey brown sandy silt. Soil depth is unknown but estimated to be shallow.

exposure incidence across the sampled portion of the landform is 20%, with 90% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, and surface water wash.

Given the gradient of this landform, its steep access to Doon Doon Creek valley floor, and its estimated shallow soil depth, this area is assessed as having **very low potential** for the presence of subsurface archaeological deposits.

Figure A3.31 Example of Sample Area 31

Area 32

GDA Zone 56 – 529910.6852866

Topographically this sample area consists of steep gradient mid-slopes about 70 m from the original alignment of Doon Doon Creek.

The area has a northerly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor.

Soil is grey brown sandy silt. Soil depth is unknown but estimated to be shallow

exposure incidence across the sampled portion of the landform is 5%, with 20% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, and surface water wash.

Given the gradient of this landform, its steep access to Doon Doon Creek valley floor, and its estimated shallow soil depth, this area is assessed as having **very low potential** for the presence of subsurface archaeological deposits.

Figure A3.32 Example of Sample Area 32

Area 33

GDA Zone 56 – 530261.6853371

Topographically this sample area consists of steep gradient mid-slopes about 100 m from the original alignment of Doon Doon Creek.

The area has a westerly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor.

Soil is grey brown sandy silt. Soil depth is unknown but estimated to be shallow

exposure incidence across the sampled portion of the landform is 5%, with 20% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, and surface water wash.

Given the gradient of this landform, its steep access to Doon Doon Creek valley floor, and its estimated shallow soil depth, this area is assessed as having **very low potential** for the presence of subsurface archaeological deposits.

Figure A3.33 Example of Sample Area 33

Area 34

GDA Zone 56 – 530252.6853201

Topographically this sample area consists of steep gradient mid-slopes about 100 m from the original alignment of Doon Doon Creek.

The area has a northerly aspect and is covered by predominantly native bush regrowth with heavy leaf litter across the forest floor.

Soil is grey brown sandy silt. Soil depth is unknown but estimated to be shallow.

Ground surface exposure incidence across the sampled portion of the landform is 5%, with 30% visibility within these exposures.

Existing impacts and disturbances in this area relate to vegetation clearance, and surface water wash.

Given the gradient of this landform, its steep access to Doon Doon Creek valley floor, and its estimated shallow soil depth, this area is assessed as having **very low potential** for the presence of subsurface archaeological deposits.

Figure A3.34 Example of Sample Area 34

APPENDIX 4

UNANTICIPATED DISCOVERY PROTOCOLS

Protocol to follow if Aboriginal object(s) or historical relics (other than human remains) are encountered and no AHIP has been approved

In the event that object(s) which are suspected of being Aboriginal object(s) or relic(s) are encountered during development works, then the following protocol will be followed:

1. Cease any further excavation or ground disturbance, in the area of the find(s);

    a. The discoverer of the find(s) will notify machinery operators in the immediate vicinity of the find(s) so that work can be temporarily halted; and

    b. The site supervisor and the Principal will be informed of the find(s).

2. Do not remove any find(s) or unnecessarily disturb the area of the find(s);

3. Ensure that the area of the find(s) is adequately marked as a no-go area for machinery or further disturbance, and that the potential for accidental impact is avoided;

4. Note the location and nature of the finds, and report the find to:

    a. Relevant project personnel responsible for project and construction direction and management, and

    b. Report the find to the Office of Environment and Heritage (OEH).

5. Where feasible, ensure that any excavation remains open so that the finds can be recorded and verified. An excavation may be backfilled if this is necessary to comply with work safety requirements, and where this action has been approved by the OEH. An excavation that remains open should only be left unattended if it is safe and adequate protective fencing is installed around it.

6. Following consultation with the relevant statutory authority (OEH), and, where advised, any other relevant stakeholder groups, the significance of the finds should be assessed and an appropriate management strategy followed. Depending on project resources and the nature of the find(s), this process may require input from a consulting heritage specialist.

7. Development works in the area of the find(s) may re-commence, if and when outlined by the management strategy, developed in consultation with, and approved by the relevant statutory authority.

8. If human skeletal material is encountered, the protocol for the discovery of human remains should be followed (refer attached).

Protocol to follow in the event of the discovery of suspected human remains

The following protocol will be actioned if suspected human material is revealed during development activities or excavations:

1. All works must halt in the immediate area of the find(s) and any further disturbance to the area of the find(s) prevented.

    a. The discoverer of the find(s) will notify machinery operators in the immediate vicinity of the find(s) so that work can be halted; and

    b. The site supervisor and the Principal/Project manager will be informed of the find(s).

2. If there is substantial doubt regarding a human origin for the remains, then consider if it is possible to gain a qualified opinion within a short period of time. If feasible, gain a qualified opinion (this can circumvent proceeding further along the protocol for remains which are not human). If conducted, this opinion must be gained without further disturbance to the find(s) or the immediate area of the find(s). (Be aware that the site may be considered a crime scene that retains forensic evidence). If a quick opinion cannot be gained, or the identification is positive, then proceed to the next step.

3. Immediately notify the following of the discovery:

    a. The local Police (this is required by law);

    b. A OEH archaeologist or Aboriginal Heritage Officer;

    c. Representative(s) from the Registered Aboriginal Parties (RAPs); and

    d. The project archaeologist (if not already notified).

4. Co-operate and be advised by the Police and/or coroner with regard to further actions and requirements concerning the find area. If required, facilitate the definitive identification of the material by a qualified person (if not already completed).

5. In the event that the Police or coroner instigate an investigation, construction works are not to resume in the designated area until approval in writing is gained from the NSW Police.

6. In the event that the Police and/or Coroner advise that they do not have a continuing or statutory role in the management of the finds then proceed with the following steps:

7. If the finds are not human in origin but are considered to be archaeological material relating to Aboriginal occupation then proceed with Protocol for the discovery of Aboriginal objects (other than human remains).

8. If the finds are **Aboriginal or probably Aboriginal in origin**:

    a. Ascertain the requirements of OEH, the Heritage Branch, the Project Manager, and the views of the AFG, and the project archaeologist.

    b. Based on the above, determine and conduct an appropriate course of action. Possible strategies could include one or more of the following:

        i. Avoiding further disturbance to the find and conserving the remains *in situ*;

        ii. Conducting archaeological salvage of the finds following receipt of any required statutory approvals;

iii. Scientific description (including excavation where necessary), and possibly also analysis of the remains prior to reburial;

iv. Recovering samples for dating and other analyses; and/or

v. Subsequent reburial at another place and in an appropriate manner determined by the AFG.

9. If the finds are **non-Aboriginal in origin**:

a. Ascertain the requirements of the Heritage Branch, Project Manager, and the views of any relevant community stakeholders and the project archaeologist.

b. Based on the above, determine and conduct an appropriate course of action. Possible strategies could include one or more of the following:

i. Avoiding further disturbance to the find and conserving the remains *in situ*;

ii. Conducting archaeological salvage of the finds following receipt of any required statutory approvals;

iii. Scientific description (including excavation where necessary), and possibly also analysis of the remains prior to reburial;

iv. Recovering samples for dating and other analyses; and/or

v. Subsequent reburial at another place and in an appropriate manner determined in consultation with the Heritage Office and other relevant stakeholders.

10. Construction related works in the area of the remains (designated area) may not resume until the proponent receives written approval in writing from the relevant statutory authority: from the Police or Coroner in the event of an investigation, from OEH in the case of Aboriginal remains outside of the jurisdiction of the Police or Coroner, and from the Heritage Branch in the case of non-Aboriginal remains outside of the jurisdiction of the Police or Coroner.

APPENDIX 5

CULTURALLY RESTRICTED

AND SENSITIVE ABORIGINAL SITES

eco logical AUSTRALIA
A TETRA TECH COMPANY

1300 646 131
www.ecoaus.com.au

A.2 ELA (2021)

Clarrie Hall Dam Raising EIS – Aboriginal Cultural Heritage Assessment and Management Plan

Tweed Shire Council

ecological AUSTRALIA
A TETRA TECH COMPANY

1300 646 131
www.ecoaus.com.au

DOCUMENT TRACKING

Project Name	Clarrie Hall Dam Raising EIS – Aboriginal Cultural Heritage Assessment and Management Plan
Project Number	18NEW-11550
Project Manager	Mark Longbottom
Prepared by	Tyler Beebe, Eliza Biggs, and Jennifer Norfolk
Reviewed by	Karyn McLeod, Mark Longbottom, Dr Richard Cresswell
Approved by	Mark Longbottom
Status	Final
Version Number	V3
Last saved on	22 July 2021

This report should be cited as 'Eco Logical Australia. (2021). *Clarrie Hall Dam Raising EIS – Aboriginal Cultural Heritage Assessment and Management Plan*. Prepared for Tweed Shire Council.'

ACKNOWLEDGEMENTS

This document has been prepared by Eco Logical Australia Pty Ltd with support from Tweed Shire Council.

Disclaimer
This document may only be used for the purpose for which it was commissioned and in accordance with the contract between Eco Logical Australia Pty Ltd and Tweed Shire Council. The scope of services was defined in consultation with Tweed Shire Council, by time and budgetary constraints imposed by the client, and the availability of reports and other data on the subject area. Changes to available information, legislation and schedules are made on an ongoing basis and readers should obtain up to date information. Eco Logical Australia Pty Ltd accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report and its supporting material by any third party. Information provided is not intended to be a substitute for site specific assessment or legal advice in relation to any matter. Unauthorised use of this report in any form is prohibited.

Template 2.8.1

Contents

1. Introduction 1

1.1 Proposal Overview 1
1.2 Scope of this Document 3
1.3 Navin Officer Heritage Consultants – Archaeological Assessment 2018 3
1.4 Study Area Location and Spatial Definitions 3
1.5 Potential Impacts 4
1.6 Cumulative Impacts 4
1.7 Aim and Objectives of the ACHAMP 4
1.8 Authorship 5

2. Regulatory Requirements 6

2.1 Secretary's Environmental Assessment Requirements (SEARs) 6
2.2 Legislative Requirements 7
2.2.1 NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) 7
2.2.2 NSW *National Parks and Wildlife Act 1974* (NPW Act) 7

3. Consultation 8

3.1 Aboriginal Stakeholder Consultation 8
3.1.1 Background – Aboriginal Consultation in the Development of the Clarrie Hall ACHA (NOHC 2018) 8
3.1.2 Background – Aboriginal Consultation in the Development of the Clarrie Hall ACHAMP (ELA 2020) 10
3.2 Native Title 13
3.3 Government Agency Consultation 13

4. Aboriginal Heritage Context 14

4.1 Aboriginal Ethnohistory 14

5. Impacts to Aboriginal Sites and Aboriginal Heritage Values 16

6. Post Excavation Lithic Analysis 23

7. Excavated Aboriginal Sites ELA 2020 24

7.1 AHIMS 04-1-0293 (CHD PAD3) 24
7.2 AHIMS 04-1-0294 (CHD PAD 4) 26
7.3 AHIMS 04-1-0254 (CHD A27) 29
7.4 AHIMS 04-1-0235 (CHD A30) 31
7.5 AHIMS 04-1-0292 (CHD PAD 5) 33
7.6 AHIMS 04-1-0291 (CHD PAD 6) 35
7.7 AHIMS 04-1-0280 (CHD A1) 37
7.8 AHIMS 04-1-0240 (CHD A38) 39

© ECO LOGICAL AUSTRALIA PTY LTD

7.9 AHIMS 04-1-0289 (CHD PAD 8) 41
7.10 AHIMS 04-1-0239 (CHD A37) 43
7.11 AHIMS 04-1-0290 (CHD PAD 7) 45
7.12 AHIMS 04-1-0237 (CHD A35) 47
7.13 AHIMS 04-1-0295 (CHD PAD 2) 49
7.14 AHIMS 04-1-0296 (CHD PAD 1) 52
7.15 AHIMS 04-1-0264 (CHD A17) 55
7.16 AHIMS 04-1-0238 (CHD A36) 58
7.17 AHIMS 04-1-0249 (CHD A48) 61
7.18 AHIMS 04-1-0288 (CHD PAD 9) 64
7.19 AHIMS 04-1-0281 (CHD-A55) 68

8. Additional Sites Observed During ELA 2020 Investigation 71

8.1 CHD-AS1 (04-1-0301) 71
8.2 CHD-1 (04-1-0302) 71
8.3 CHD-ST2 (04-1-0303) 72
8.4 CHD-ST1 (04-1-0285) 74

9. Discussion 76

9.1 What is the distribution of evidence of past Aboriginal peoples use and occupation within the study area? 76
9.2 What types of raw materials, artefact types and tool types are present within the assemblage? 77
9.3 What types of stone tool technology are present within the sites? 77
9.4 Have the excavations revealed other site types such as hearths, heating ovens, knapping floors or other foci or activities areas? 77
9.5 Do the results of the test excavation demonstrate any evidence of disturbance within the study area? 78
9.6 What can the artefact assemblage (or lack thereof) indicate about previous land use by Aboriginal people? 78

10. Aboriginal Cultural Heritage Management Strategy 80

10.1 Aboriginal Heritage Management Recommendations 80
10.2 Aboriginal Cultural Heritage Awareness Training 80
10.3 No Further Assessment Warranted 81
10.4 Further Aboriginal Community Consultation 81
10.5 Protocol for Uninspected Finds 81
10.6 Noise and Vibration 81
10.7 Aboriginal Site Impact Recording Forms 81
10.8 Care and Control of Artefactual Material 81
10.9 Recommended Mitigation Measures 82

11. References 86

© ECO LOGICAL AUSTRALIA PTY LTD

Appendix A : Aboriginal stakeholder consultation correspondence 87

A1 ELA Introductory Email 87
A2 Received RAP Response 88
A3 ELA Invitation to Participate in Survey 89
A4 RAP Survey Invitation Response 91
A5 ELA Project Information/Methodolgy sent on 18 May 2020 92
A6 RAP Response to Project Information / Methodology Sent 18 May 2020 98
A7 Archaeological Test Excavation Invitation Sent 02 June 2020 98
A8 RAP Response to Test Excavation Invitation 99
A9 Draft ACHAMP Version 1 Sent 04 February 2021 101
A10 Tweed Byron LALC Response – 01 March 2021 102
A11 RAP Invite for Further Works Survey 106
A12 Meeting Minutes – RAP ACHAMP Workshop 22 April 2021 107
A13 Meeting Minutes – RAP ACHAMP Workshop 3 June 2021 112
A14 Draft ACHAMP Version 2 sent 21 May 2021 - comment period closed 25 June 2021 115
A15 Objection Letter from Jackie McDonald 25th June 2021 116

Appendix B : Test Square Data 117

Appendix C : Lithic Catalogue 122

Appendix D : Previously unidentified sites recorded during ELA 2020 fieldwork 152

D1 04-1-0301 (CHD-AS1) 152
D2 04-1-0302 (CHD-1) 156
D3 04-1-0303 (CHD-ST2) 160

Appendix E : Navin Officer Heritage Consultants 2018 ACHA 164

List of Figures

Figure 1: The Proposal's Development Site 2
Figure 2: Registered AHIMS sites northern section of Clarrie Hall Dam 20
Figure 3: Registered AHIMS sites central section of Clarrie Hall Dam 21
Figure 4: Registered AHIMS sites southern section of Clarrie Hall Dam 22
Figure 5: Excavation on top of the alluvial terrace 24
Figure 6: Extent of the depth of the alluvial deposit 24
Figure 7: PAD 3 location and transects 25
Figure 8: Looking upslope along Transect A 26
Figure 9: Looking downslope along Transect A 26
Figure 10: Site CHD-AS1 27

© ECO LOGICAL AUSTRALIA PTY LTD

Figure 11: CHD-AS1 location 27
Figure 12: CHD PAD4 location showing Transects A-C, and registered site CHD-AS1 28
Figure 13: Test square location with CHD A27 29
Figure 14: Example of the clay base of a typical test square within CHD A27 29
Figure 15: CHD A27 excavation area 30
Figure 16: Test square location within CHD A30 31
Figure 17: Example of a typical test square within CHD A30 31
Figure 18: CHD A30 location and transect locations 32
Figure 19: Test square location within CHD PAD 5 33
Figure 20: Aboriginal stone hand axe recovered from the excavation 33
Figure 21: CHD PAD 5 location with transects 34
Figure 22: PAD 6 looking toward the water 35
Figure 23: Typical excavation square within CHD PAD 6 35
Figure 24: CHD PAD6 location and transects 36
Figure 25: PAD area 04-1-0280 37
Figure 26: Aboriginal stone hand axe, CHD-1 37
Figure 27: CHD A1 location and transects 38
Figure 28: CHD A38 looking toward water 39
Figure 29: Silcrete flake fragment 39
Figure 30: CHD A38 location and transects 40
Figure 31: CHD PAD 8 41
Figure 32: Typical soil profile 41
Figure 33:CHD PAD 8 location and transects 42
Figure 34: Western extent of site area 43
Figure 35: Eastern extent of site area 43
Figure 36: CHD A37 location and transects 44
Figure 37: CHD PAD7 45
Figure 38: Typical test excavation square 45
Figure 39: CHD PAD 7 location and transects 46
Figure 40: Transect A test excavation square on lower slope/flats of CHS A35 47
Figure 41: Sieving for artefacts at CHD A35 47
Figure 42: CHD A35 location and transects 48
Figure 43: CHD PAD 2 looking north 50
Figure 44: CHD PAD 2 looking south towards creek 50
Figure 45: Typical excavation unit from CHD PAD 2 50
Figure 46: Chert core recovered from excavation square D1 50
Figure 47: CHD PAD 2 showing location, transects and proposed salvage excavation area 51
Figure 48: CHD PAD 1 looking north 53
Figure 49: CHD PAD 1 53
Figure 50: Expanded excavation unit B9 53
Figure 51: Chert core recovered from excavation square B9 53
Figure 52: CHD PAD1 location. transects, and proposed salvage area 54
Figure 53: CHD A17 looking across hillcrest 56
Figure 54: Excavation unit B1 w/ non cultural burnt clay 56
Figure 55: Location Aboriginal stone hand axe 04-1-0264 56

Figure 56: Chalcedony flake tool 56
Figure 57: CHD A17 location, transects, and proposed salvage area 57
Figure 58: CHD A38 looking west across the site 59
Figure 59: Excavation unit A1 (foreground) 59
Figure 60: Unidentified FGS core recovered from C2 59
Figure 61: Close up of flake scars 59
Figure 62: CHD A38 location, transects, and proposed salvage area 60
Figure 63: CHD A48, looking upslope across the site 62
Figure 64: Excavation unit C1 62
Figure 65: Possible stone axe fragment 62
Figure 66: Unusual green chert flake fragment 62
Figure 67: CHD A48 location, transects, and proposed salvage area 63
Figure 68: PAD 9 area 66
Figure 69: Excavation unit A5, possible hearth feature 66
Figure 70: Chalcedony flake 66
Figure 71: Chalcedony core 66
Figure 72: PAD 9 location, transects, and proposed salvage area 67
Figure 73: Excavation square CHD A55 69
Figure 74: Excavation square, wheelbarrow providing shade for recording 69
Figure 75: Chalcedony core 69
Figure 76: Unusual green chert flake 69
Figure 77: CHD A55 location, transects and proposed salvage area 70
Figure 78: CHD-AS1 71
Figure 79: CHD-AS1 location 71
Figure 80: CHD-1 71
Figure 81: CHD-1 location 71
Figure 82: CHD ST2 72
Figure 83: Measuring the regrowth 72
Figure 84: Location of 04-1-0303 (CHD ST2 – Scarred tree) 73
Figure 85: CHD ST1 74
Figure 86: CHD ST1 74
Figure 87: Scarred tree location based on GPS coordinates and canopy size 75
Figure 88: 1971 aerial showing the original course of Doon Doon Creek in relation to the excavated sites 79

List of Tables

Table 1: Relevant Key Issue SEARs for Aboriginal Heritage 6
Table 2: RAP comments on methodology 11
Table 3: ACHAMP comments 12
Table 4: Aboriginal sites subject to excavation ELA 2020 16
Table 5: Additional sites registered by ELA during excavation 2020 17

Table 6: Identified impacted sites by NOHC 2018 18
Table 7: Artefact/Excavation Square CHD PAD 2 49
Table 8: Artefactual material/reduction types 49
Table 9: Artefacts/excavation square CHD PAD 1 52
Table 10: Artefactual material/reduction types 52
Table 11: Artefacts/excavation square CHD A17 55
Table 12: Artefactual material/reduction types 56
Table 13: Artefacts/transect excavation squares 58
Table 14: Artefactual material/reduction types 58
Table 15: Artefacts/transect excavation squares 61
Table 16: Artefactual material/reduction type 62
Table 17: Artefacts/transect 64
Table 18: Artefactual material/reduction type 65
Table 19: Raw material types 77
Table 20: Lithic reduction type 77
Table 21: Aboriginal sites subject to excavation ELA 2020 82
Table 22: Additional sites registered ELA 2020 83
Table 23: Identified impacted sites by NOHC 2018 83
Table 24: Consultation Log 87

1. Introduction

Eco Logical Australia Pty Ltd (ELA) was engaged by Tweed Shire Council (Council) to prepare an Environmental Impact Statement (EIS) for the raising of the Clarrie Hall Dam wall (the Proposal). This Aboriginal Cultural Heritage Assessment & Management Plan (ACHAMP) has been undertaken to support the EIS, which is required under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Proposal is classified as State Significant Infrastructure (SSI) under the *State Environmental Planning Policy (State and Regional Development) 2011*.

1.1 Proposal Overview

Clarrie Hall Dam is located in the Tweed Shire Local Government Area (LGA), 15 kilometres (km) south-west of Murwillumbah in northern New South Wales (NSW). It is operated by Council as part of the drinking supply network for the Tweed Shire.

The Proposal would increase the dam wall height by 8.5 metres (m) to provide a full supply level (FSL) of 70 m Australian Height Datum (AHD) (RL70 m), thereby increasing the capacity of the dam from 16,000 megalitres (ML) to approximately 42,300 ML. It is estimated the increased capacity will provide a secure water supply for the Tweed Shire until at least 2046.

The Proposal includes:

- constructing access roads to the construction areas and establishing a construction site
- re-establishing the quarry used to construct the original dam
- removing and storing parapet walls for reuse
- increasing the base width of the valley-side abutment and raising the new embankment crest to RL75.5 m
- increasing the height of the concrete-faced rockfill embankment and constructing a new concrete-lined spillway higher up in the left abutment
- extending the upstream concrete face to the new crest height, ensuring the upstream and downstream embankment slopes are consistent with the existing concrete face
- raising the intake tower and associated access bridge
- constructing a new section of Clarrie Hall Dam Road to provide access to the right abutment of the dam wall
- establishing new recreation and operational facilities at the dam, including an amenities block, public shelters, viewing areas, interpretation signage, paths, car parks and landscaping, security fences, lights, monitoring equipment and boat ramp
- removing or reconstructing infrastructure at Crams Farm predicted to be impacted by the Proposal
- upgrading of the Kyogle Road and Doon Doon Road intersection.

Figure 1 shows the Development Site of the Proposal.

© ECO LOGICAL AUSTRALIA PTY LTD

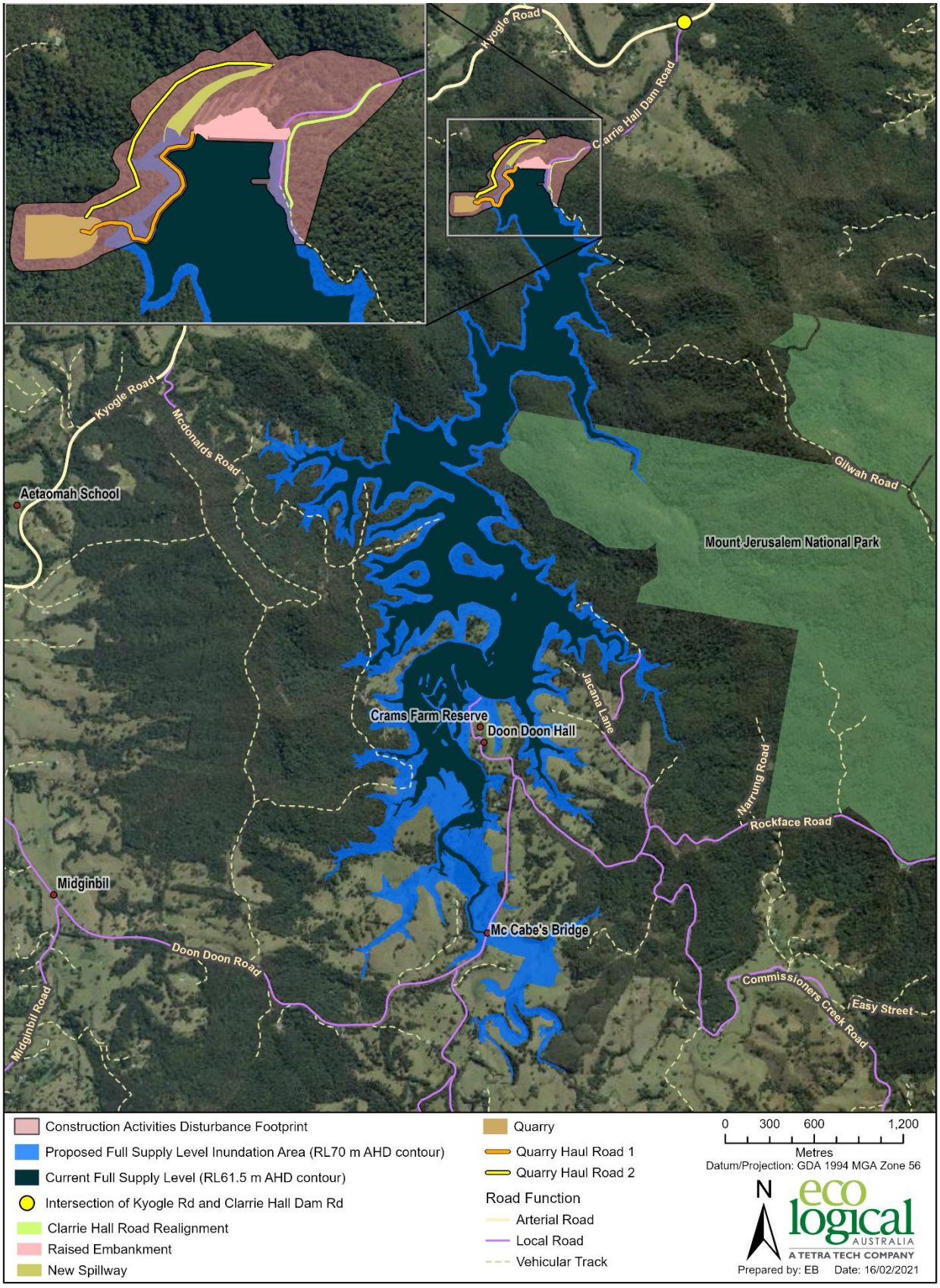


Figure 1: The Proposal's Development Site

1.2 Scope of this Document

This ACHAMP builds upon an Aboriginal Cultural Heritage Assessment (ACHA) conducted by Navin Officer Heritage Consultants (NOHC) in 2018. Tweed Shire Council engaged NOHC to assess, through archaeological survey and background research, Aboriginal heritage constraints and possible impacts from the Proposal. The ACHA informed the decision-making process to proceed to the planning, approval, and land acquisitions phase.

This ACHAMP includes a review of the ACHA against the Secretary's Environmental Assessment Requirements (SEARs) issued after the ACHA was completed, assesses the direct and indirect impacts on Aboriginal heritage and recommends measures for the care and salvage of Aboriginal heritage that will be impacted by the Proposal. The assessment of impacts and the proposed measures to avoid and minimise those impacts outlined in this ACHAMP are required in order to fulfil the Secretary's Environmental Assessment Requirements (SEARs) for this project (SSI-9458).

1.3 Navin Officer Heritage Consultants – Archaeological Assessment 2018

The ACHA by NOHC included a desktop assessment and a two-week survey. NOHC identified 87 Aboriginal sites within vicinity of the Proposal including the Construction Activities Disturbance Footprint, the full supply level (RL 70m AHD) and the Probable Maximum Flood level (RL 77m AHD). Of those 87, it was determined that 21 sites would not be directly impacted and a further 5 were already inundated by the existing dam.

NOHC determined that 28 Aboriginal sites would be permanently inundated by the raising of the dam wall, and that 19 of those sites should be subject to further assessment through archaeological excavation. Subsequently, ELA undertook excavation of those 19 sites and updated the ACHA as summarised in this ACHAMP. The results of the excavation can be found in Section 7 of this ACHAMP.

1.4 Study Area Location and Spatial Definitions

Clarrie Hall Dam is located on Doon Doon Creek, a tributary of the Tweed River and is located approximately 15 km southwest of Murwillumbah, within the Tweed Shire Local Government Area (LGA), Parish of Nullum, County of Rous. The Dam has a catchment area of 60 km^2. The current FSL of the Clarrie Hall Dam, representing the water level height of the Dam at full capacity, is RL61.5 m AHD, providing a current storage capacity of 16,000 ML. The proposed raising of the dam wall would raise the FSL to RL70m AHD, as shown in Figure 1, and increase the capacity of the Dam to 42,300 ML.

The main spatial components of the Proposal are the "Construction Activities Disturbance Footprint" which includes construction activity areas including the dam wall, spillway, road upgrades, new roads, the quarry, temporary stockpile sites, construction compounds, and new recreation and operational facilities; the "Intersection of Kyogle Road and Clarrie Hall Dam Road" which will be upgraded; the "Inundation Area (RL70m contour)" which reflects the proposed Dam waterline boundary at Full Supply Level (FSL); and the "Probable Maximum Flood (PMF - RL77m contour)" which reflects the theoretical maximum flood height that could be achieved.

© ECO LOGICAL AUSTRALIA PTY LTD

1.5 Potential Impacts

It is expected that all areas within the catchment of the dam up to FSL of 70m AHD may be permanently inundated. Areas above the FSL may be temporarily inundated during a flood event. No flood event will exceed the PMF.

To provide an indication of the scale and frequency of flood events, a flood event of 1:1000 to 1:10,000-year magnitude will only result in temporary flood inundation to approximately RL74m AHD. A 1:100-year flood event, similar to Cyclone Debbie which caused flooding in the Tweed Shire in 2017 is likely to result in temporary inundation to approximately RL72 m AHD. Water levels are estimated to return to the FSL within approximately 48 hours following most flooding events.

The impacts associated with the FSL have been assessed by this Management Plan. Further, to take the most conservative approach the impacts associated with the most extreme possible flood have been assessed.

The impacts associated with the FSL, PMF and Construction Activities Disturbance Footprint have been further characterised below.

Impacts associated with permanent inundation up to FSL (referred to as Impact Type - FSL) may include:

- In general, permanent inundation of sites located at or below RL70m AHD.
- Potential deposition of sediment over artefacts and archaeological deposits.
- Potential wave erosion and loss of sedimentary matrix during shoreline exposure.

Impacts associated with temporary flooding above the FSL (referred to as Impact Type - PMF) may include:

- Potential temporary inundation during flood events at sites located between RL70m and RL77m AHD. Above 70m AHD the higher sites are less likely to be inundated in a flood event.
- Potential temporary overlay of sediments (sediments would be washed away in subsequent rain events and therefore would be a temporary impact).
- No wave erosions or loss of sedimentary matrix during shoreline exposure is anticipated as evident by the existing shoreline that shows minimal evidence of flood disturbance.

Impacts associated with the Construction Activities Disturbance Footprint may include:

- Potential direct disturbance of PADs within the Construction Activities Disturbance Footprint.

1.6 Cumulative Impacts

An assessment of the cumulative impacts of the Proposal have been undertaken taking into account other projects that have been approved but where construction has not commenced, projects that have commenced construction, and projects that have recently been completed.

1.7 Aim and Objectives of the ACHAMP

The aim of this ACHAMP is to provide a procedural framework for the assessment and management of all Aboriginal cultural heritage within the impact area of the Proposal which complies with all Aboriginal cultural heritage legislative and consent requirements. It outlines the protocols, procedures,

© ECO LOGICAL AUSTRALIA PTY LTD

timeframes, and delegation of responsibility for the implementation of the mitigation/conservation measures proposed within this document.

1.8 Authorship

This ACHAMP has been prepared by ELA Senior Archaeologist Tyler Beebe and ELA Archaeologist Jennifer Norfolk. Tyler has an MA in Cultural and Environmental Heritage from the Australian National University (ANU). Jennifer has an MA in Marine Archaeology from the University of Southampton. This report has been reviewed by Karyn McLeod, ELA Principal Heritage Consultant, who has an MA in Cultural Heritage from Deakin University and Mark Longbottom, ELA Principal Approvals, who has an extensive experience in impact assessments.

This ACHAMP has been prepared in consultation with the Registered Aboriginal Parties (RAPs) for this project and the Aboriginal Cultural Heritage Division of Heritage NSW, Department of Premier and Cabinet (Heritage NSW).

2. Regulatory Requirements

2.1 Secretary's Environmental Assessment Requirements (SEARs)

The SEARs were issued by the NSW Department of Planning, Industry and Environment (DPIE) on 23 April 2019, replacing the previous version of 15 August 2018. The SEARs outline the specific requirements to be addressed by the EIS for the Proposal. Table 1 presents the SEARs relevant to this ACHAMP and includes a summary of each component of the SEARs addressed in this report.

Table 1: Relevant Key Issue SEARs for Aboriginal Heritage

SEARs Desired Performance Outcome	Guidelines for Health and Safety as listed in SEARs	Relevant Requirements	Where addressed in this report
8. Heritage The design, construction and operation of the proposal facilitates, to the greatest extent possible, the long term protection, conservation and management of the heritage significance of items of environmental heritage and Aboriginal objects and places. The design, construction and operation of the proposal avoids or minimises impacts, to the greatest extent possible, on the heritage significance of environmental heritage and Aboriginal objects and places.	Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (OEH, 2011) Aboriginal Cultural Heritage Consultation requirements for proponents (DECCW, 2010) Code of practice for archaeological investigation of Aboriginal objects in NSW (DECCW, 2010) NSW Skeletal Remains: Guidelines for Management of Human Remains Archaeological Assessment Guidelines (Heritage Council, 1996)	1. The Proponent must identify and assess any direct and/or indirect impacts (including cumulative impacts) to the heritage significance of: (a) Aboriginal places and objects, as defined under the *National Parks and Wildlife Act 1974* and in accordance with the principles and methods of assessment identified in the current guidelines; (b) Aboriginal places of heritage significance, as defined in the Standard Instrument – Principal Local Environmental Plan; (c) environmental heritage, as defined under the *Heritage Act 1977*; (d) items listed on the National and World Heritage lists.	Section 5 Appendix E
		4. The EIS must identify and describe the Aboriginal cultural heritage values that exist across the whole area that will be affected by the proposal and document these in an Aboriginal Cultural Heritage Assessment Report (ACHAR). This may include the need for surface survey and test excavation. The investigation, assessment and reporting of Aboriginal cultural heritage values must be conducted in accordance with the current Code of Practice and Guide and in consultation with OEH regional branch officers. Impacts on Aboriginal cultural heritage values are to be assessed and documented in the ACHAR. The ACHAR must demonstrate attempts to avoid impact on cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the ACHAR must outline measures proposed to mitigate impacts. Any objects recorded as part of the assessment must be documented and notified to OEH.	Section 5, Section 7, Section 10, & Appendix E
		5. Consultation with Aboriginal people must be undertaken and documented in accordance with the current consultation requirements for proponents. The significance of cultural heritage values for Aboriginal people who have a cultural association with the land must be documented in the ACHAR.	Section 3, & Appendix E

2.2 Legislative Requirements

The requirements for the management of Aboriginal cultural heritage in NSW are provided primarily within the *NSW National Parks and Wildlife Act 1974* (NPW Act) and the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act). The NPW Act provides statutory protection for all Aboriginal archaeological sites and Aboriginal cultural heritage places, while the EP&A Act sets out the framework for how Aboriginal heritage values are to be formally assessed in land use planning and development consent processes.

2.2.1 NSW *Environmental Planning and Assessment Act 1979* (EP&A Act)

The proposed raising of Clarrie Hall Dam is being assessed as a State Significant Infrastructure (SSI) under Part 5, Division 5.2 of the EP&A Act. State Significant Infrastructure is assessed under the SEARs, a series of project-specific environment assessment requirements issued by the Secretary for Planning. Projects assessed as SSI are done so by the Secretary, with Heritage NSW serving an advisory role in the assessment process, rather than as the approval body. As such, SSI projects do not require an Aboriginal Heritage Impact Permit under Part 6 of the *National Parks and Wildlife Act 1974,* as is required for non-SSI projects. Instead, this ACHAMP serves as the basis for mitigation and conservation of Aboriginal sites and places that will be impacted by the proposed works and has been prepared in accordance with the project SEARs.

There are no formal NSW ACHAMP guidelines published by Heritage NSW. The development of an ACHAMP has been undertaken in consultation between ELA, the project RAPs and with Heritage NSW. All RAPs have been given a review and comment period upon completion of the draft ACHAMP.

If approval of the Minister for Planning is achieved, this ACHAMP will have statutory force through conditions of approval.

2.2.2 NSW *National Parks and Wildlife Act 1974* (NPW Act)

The NPW Act, administered by the Aboriginal heritage division of Heritage NSW, is the primary piece of legislation for the protection of Aboriginal cultural heritage in NSW. The NPW Act gives the Director General of Heritage NSW responsibility for the proper care, preservation and protection of 'Aboriginal objects' and 'Aboriginal places', two distinct forms of Aboriginal cultural heritage that are defined under the Act as follows:

> "an *Aboriginal object* is any deposit, object or material evidence (that is not a handicraft made for sale) relating to Aboriginal habitation of NSW, before or during the occupation of that area by persons of non-Aboriginal extraction (and includes Aboriginal remains). An *Aboriginal place* is a place declared so by the Minister administering the NPW Act because the place is or was of special significance to Aboriginal culture. It may or may not contain Aboriginal objects" (DECCW 2010).

Part 6 of the NPW Act provides specific protection for Aboriginal objects and places by making it an offence to harm them. An *Aboriginal Heritage Impact Permit* (AHIP) should be obtained if impacts to Aboriginal objects and/or places are anticipated. As mentioned in Section 2.2.1**,** SSI projects do not require an AHIP for impacts to Aboriginal sites or salvage of Aboriginal sites. However, S89A of the NPW Act requires notification of the location of sites of Aboriginal objects within a reasonable time, with penalties for non-notification, including daily penalties, a requirement that is statutorily required in all instances including SSI projects.

3. Consultation

3.1 Aboriginal Stakeholder Consultation

Aboriginal stakeholder consultation has been fully incorporated into every stage of the development of both the ACHA prepared by NOHC in 2018 and in the preparation of this ACHAMP. Consultation activities have been informed by the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010) guidelines, which set out the requirements for 'consulting with those Aboriginal people who can provide information about the significance of Aboriginal cultural heritage as part of the heritage assessment process'

Although it is not compulsory to follow this set of consultation guidelines in the preparation of ACHAMP's, it is a process that is highly recommended by both Heritage NSW and the Secretary in demonstrating an acceptable level of consultation with, and input from, local Aboriginal stakeholder groups.

3.1.1 Background – Aboriginal Consultation in the Development of the Clarrie Hall ACHA (NOHC 2018)

The following section is an excerpt from the ACHA (NOHC 2018), detailing the process of Aboriginal stakeholder consultation undertaken by NOHC:

The requirements apply to all activities throughout NSW that have the potential to harm Aboriginal objects or places and that also require an AHIP. The requirements specify four stages of consultation:

> **Stage 1** - notification of project proposal and registration of interest
>
> **Stage 2** - presentation of information about the proposed project
>
> **Stage 3** – gathering information about cultural significance
>
> **Stage 4** – review of draft cultural heritage assessment report

An advertisement was placed in the *Tweed Daily News* on the 26 July 2017, and the *Tweed Link* on 8 August 2017.

Letters were sent to the:

- Tweed Byron Local Aboriginal Land Council;
- Aboriginal Advisory Committee: Tweed Shire Council;
- North Coast Local Land Services;
- NSW OEH;
- Native Title Services Corporation Ltd; and
- Office of the Registrar Aboriginal Land Rights Act 1983.

A search was made of the National Native Title Tribunal registers on 11 July 2017.

Following advice received from OEH, letters were sent to:

- Aaron Talbott & Natalene Mercy
- Banjalang Aboriginal Corporation

- Baryulgil Square Co-operative Society Ltd
- Bundjalung Elders Council Aboriginal Corporation
- Burabi Aboriginal Corporation
- Burra:Waj:Ad
- Canowindra Tweed Byron Aged and Disabled Aboriginal Corporation
- Minjungbal Cultural Museum
- Tweed Aboriginal Co-operative Society Pty Ltd
- Bundjalung Tribal Society
- Tweed Byron Local Aboriginal Land Council
- Durahrwa Training and Development Aboriginal Corporation
- Jackie McDonald
- Jason McDonald.

The closing date for expressions of interest was 25 August 2017.

Registrations of interest were received from:

- Tweed Byron Local Aboriginal Land Council
- Jackie McDonald
- Jason McDonald
- Kyle Slabb (c/o Tweed Byron LALC)
- Paul Buxton
- Mleeka Hart (Tweed Aboriginal Co-operative Society Pty Ltd).

3.1.1.1 Stage 2 and 3

A preliminary survey methodology and cultural information request was sent to registered groups on 28 August 2017. This included an invitation to all RAPs to participate in a workshop to discuss the preliminary survey methodology for the Clarrie Hall Dam raising project.

Following the preliminary methodology workshop on 7 September 2017, the survey methodology was revised and sent to all RAPs on 19 September 2017, for further comment.

A second workshop was held on 9 October 2017, to inform the survey methodology and discuss the logistics of the upcoming archaeological survey field program.

3.1.1.2 Field Participation

Representatives of the registered parties who participated in the field study were:

- Ian Fox, Des Williams and Warren Phillips (Tweed Byron LALC);
- Jason McDonald, Paul Buxton and Adam Mazarella (McDonald Family); and
- Mleeka Hart and Mark Rotumah (Tweed Co-op).

3.1.1.3 Stage 4 Onwards

The following consultation activities were undertaken for the ACHA:

- The Draft Aboriginal Cultural Heritage Assessment (ACHA) was provided to all registered Aboriginal parties (RAPs) for review and comment on 15 March 2018;
- All registered Aboriginal parties (RAPs) were invited to a workshop held on 10 April 2018 at the Tweed Heads Civic Centre, to discuss the Draft Aboriginal Cultural Heritage Assessment (ACHA) and the broader Clarrie Hall Dam raising project;
- Requests were made by RAPs at the workshop for further time to submit written comments, and this was agreed to by Tweed Shire Council (TSC).
- Comments were received from Tweed Byron LALC, Jackie McDonald, and Mleeka Hart (Tweed Co-Op) up to 21 May 2018.

The ACHA also recommended the following future activities which will be achieved through the EIS approval process.

- The ACHAMP must be made available the RAPs for review and comment
- The Proponent should then submit the finalised ACHAMP with the Environmental Impact Statement (EIS) in order to obtain project approval.
- If the project receives the relevant approvals as an SSI project, heritage related impact mitigation measures should be fully implemented prior to development related impacts.

3.1.2 Background – Aboriginal Consultation in the Development of the Clarrie Hall ACHAMP (ELA 2020)

3.1.2.1 Consultation Resumption

Following completion of the ACHA by NOHC, consultation commenced between ELA and the RAPs who originally registered for the ACHA on 29 January 2020. This consultation provided an update on the Proposal status and the fieldwork proposed to be undertaken by ELA, based on the recommendations of the ACHA and to ensure the requirements of the SEARs were achieved. All correspondence between ELA and the RAPs is included as Appendix A.

3.1.2.2 Field Survey

After re-establishing the consultation process between ELA and the project RAPs, invitations to participate in site survey of the study area were sent out to all project RAPs on 31 March 2020. A total of five RAP groups responded to the survey invite, expressing their interest to be involved in the survey.

3.1.2.3 Test Excavation Methodology and Participation

The methodology for test excavation (Appendix A) to be undertaken by ELA of sites identified as possessing moderate heritage significance within the study area were sent to the project RAPs for a 14-day review period on 18 May 2020. A single response was received from the RAPs on the methodology of the test excavation as provided in Table 2.

Table 2: RAP comments on methodology

Organisation	Comment	ELA Response
Jackie McDonald (Traditional Owner)	Hello Tyler, Thank you for the opportunity to comment on the draft Test Excavation Methodology for the raising of the Clarrie Hall Dam Project. I have discussed the Methodology with Paul and Jason (registered stakeholders) and make our comments and suggestions below. I have included our young ones who worked with you into this email as well. We understand that this next stage is still only preliminary works and that additional surveys and assessments will need to take place, prior to inundation, particularly in those areas that were not surveyed by Navin Officer due to time constraints. Our suggestions are: Page 5: Stage 1 Test Pits (second dot point, 'down to the sterile clay layer (B-horizon) Suggested inclusion that, in the event that artefacts are found in the A-Horizon, that some sampling be taken from the B-Horizon to see if any artefacts have made their way into the clay over time. (Comment: understanding that if no artefacts are found in the pit, this would not be necessary) Page 5: Stage 2 Expansion Pits (first dot point, 'expanded into a 1m x 1m square at the discretion of the Excavation Director.) Suggested inclusion that reads….'expanded into x 1m x 1m square at the discretion of the RAPS and the Excavation Director.' Regards Jackie McDonald	no response required

Invitations were sent on 11 June 2020 by ELA to the project RAPs to be involved in the test excavation of sites (19) proposed to be excavated within the methodology document. A total of five representatives of the RAPs accepted this invitation and participated in the test excavation program.

- Traditional Owner Jackie McDonald
- Traditional Owner Jason McDonald
- Traditional Owner Paul Buxton
- Tweed Aboriginal Co-operative Society Pty Ltd
- Tweed Byron Local Aboriginal Land Council.

3.1.2.4 Additional Field Survey 19-22 April 2021

Invitations were sent on 29 March 2021 by ELA to the project RAPs to participate in further field surveys to address modification in the Construction Area Disturbance Footprint and additional sites that were identified as previously being restricted. Representatives of the RAPs accepted this invitation and participated in the further field survey.

- Traditional Owner Jackie McDonald
- Traditional Owner Jason McDonald
- Traditional Owner Paul Buxton
- Tweed Byron Local Aboriginal Land Council.

3.1.2.5 Consultation Meetings 23 April 2021 & 3 June 2021

The objective of the consultation meetings was to update the group on the progress of the EIS, reinforce the strategic need for the project, discuss comments received on the first version and discuss potential impacts and management strategies at specific cultural heritage sites. The meetings were attended by representatives of all five RAPs. Complete meeting minutes are included in Appendix A.

3.1.2.6 Draft review and comment period

The RAPs were given the opportunity to review and comment on the draft ACHAMP. In consultation with the RAPs, a five-week comment period was determined to be adequate with a closing date set as 25 June 2021. ELA received comment from two RAPs.

The comments are summarised in the table below and are included in full in Appendix A.

Table 3: ACHAMP comments

Organisation	Date Received	Comment	ELA Response
Tweed Byron LALC	25 June 2021	The field work has demonstrated very clearly that the catchment of the Clarrie Hall Dam is replete with Aboriginal cultural heritage (ACH). There is undoubtedly an abundance of ACH which was 'lost' when the dam was first built, and more will be lost when the water level is raised. The surveys and test-pits that have been completed should be understood to have sampled the ACH of the area. In the interests of clarity: apart from the agreed requirement for further discussions regarding salvage of ACH, there are three vital sites that are still require further discussion in terms of mitigation of impacts, namely the marked tree near the dam wall and the two rock shelters that will be affected by the higher water levels.	The marked tree near the dam wall will not be impacted. Appropriate mitigation measures associated with the two rock shelters will be developed further through consultation with the Aboriginal community post EIS approval.
Jackie McDonald – Traditional Owner	25 June 2021	Thank you for allowing my family's views on the Aboriginal Cultural Heritage Assessment Management Plan (ACHAMP) for the Clarrie Hall Dam Project. I acknowledge that Tweed Shire Council undertook regular consultations about various water security options, but it is difficult to accept that not all water sourcing options were given equal considerations, or that more innovative and modern ways (e.g. the Bradfield scheme) have not been explored to the fullest extent to secure water into the future, other than damming our waterways and annihilating the Tweed's Aboriginal heritage in that area forever. Despite the agreement to have further discussions around mitigating measures for the rock shelters and scarred trees, with all due respect for what has been done so far, our family do not support the ACHAMP, that will ensure the destruction of more of the Aboriginal Cultural landscape for the purpose of raising the dam.	None

3.2 Native Title

An updated search of the National Native Title Tribunal, National Native Title Register, Register of Native Title Claims, Unregistered Claimant Applications, and the Register of Indigenous Land Use Agreements was undertaken on 14 May 2021. The search identified that the Tweed River Bundjalung People lodged a native title claim (Tribunal No NC2020/002) on 04 August 2020 over an area including the Clarrie Hall Dam but that claim was not accepted for registration dated 16 September 2020.

3.3 Government Agency Consultation

As discussed previously, this ACHAMP updates the existing ACHA prepared by NOHC in 2018. The consultation in relation to the ACHA was undertaken in accordance with relevant guidelines.

The test excavation and survey methodology prepared by ELA was reviewed by Heritage NSW. The ACHAMP will form part of the EIS and will be reviewed by DPIE as part of the EIS assessment process.

4. Aboriginal Heritage Context

4.1 Aboriginal Ethnohistory

The following section contains some terms from historical literature that are today considered inappropriate and may be offensive to Aboriginal people. They are only included for historical clarity in this report.

Early historical references to the Aboriginal people of the Tweed and surrounding districts are rare. Captain James Cook on May 15, 1770, 'discovered smoke in many places and saw a group of natives' 25 kilometres south of the Tweed River (Cousins 1933:9). The first direct contact with the Aboriginal population of northern coastal NSW was made by the explorer Lieutenant John Oxley on October 31, 1823. Uniake (1825:40) describes the contact as occurring with 200 Aboriginal men approximately five kilometres from the mouth of the Tweed River.

From the 1820s until the early 1860s, the number of white people visiting the northern rivers district was generally limited to escaped convicts and woodcutters exploiting the pine and cedar forests. 'Aboriginal people on the Tweed had early on assisted the first cedar-getters in guiding them to valuable stands of timber in return for rum and tobacco' (Longhurst 1980).

The early 1860s saw the arrival of white settlers under the Robertson Land Act, and by 1863 the region was occupied by farmers. Relations between the Aboriginal population and white settlers were hostile at times.

Linguistic studies, using word lists compiled by early settlers suggest that the tribes in the Tweed and surrounding districts were part of a larger tribal and linguistic grouping stretching from the Clarence River in the south (Yamba-Iluka, NSW) to the Logan River in the north (Beenleigh, Queensland) and west to the Great Dividing Range (Tenterfield, NSW) (Tindale 1974). This linguistic area, known as Bandjalung, was probably divided into numerous dialect areas, roughly approximating tribal boundaries (Longhurst 1980:18).

The Clarrie Hall Dam study area is located within the tribal boundaries of the Bundjalung and specifically in the dialect of the Nganduwal/ Nagandowal. The Nganduwal/ Nagandowal is a dialect area which centred on the Tweed River basin. Linguists note that the Minyangbal dialect (Tweed coast area) and the Nganduwal/ Nagandowal dialect are very similar and may have around 90% common word usage between the two (Fox and Slabb 2016:97).

The area around Wollumbin (Mount Warning) is recorded to be part of the Moorung-Moobar Clan area (Fox and Slabb 2016:96). The other clans in the Tweed area (closer to the coast) are Tul-gin-gin and Coodjinburra.

Joshua Bray arrived in the district in the early 1860s when he was Police Magistrate of Murwillumbah. His recollections are an important source of ethno-historic information about the Aboriginal people of the Tweed Valley (Bray 1901). He describes a 'tribe' (probably a clan division) called Coodjingburra occupying the coast between the Tweed and Brunswick Rivers and approximately 10 miles inland from the coast. The Coodjingburra used to mix frequently with the Ballina and Richmond River Aboriginal groups.

Local Aboriginal Woman Jackie McDonald has pointed out that her 'great, great Grandmother, Kitty is mentioned in the Bray diaries as Kitty worked for Joshua Bray. Jackie is of the belief that Aboriginal people within the historical record should be mentioned by name wherever possible, rather than generic names such as "natives, blacks or original inhabitants" (pers comm.).

N. C. Hewitt quoted Henry Barnes of Dryaaba Station saying, 'Some disease came amongst the blacks about 1858, and nearly one-third of them on the coast died' (Tweed Daily 1923 Supplement). In October 1923, a writer, 'Old Hand', in the Northern Star stated, 'Dysentery occurred among the blacks in 1865 and carried off hundreds of victims.'

Adrian Piper (1983) noted:

Between 1820 and 1860 the Tweed River Aborigines were able to accommodate the European impact on their subsistence economy. During the period they made contact with the vanguard of European society, explorers, escaped convicts, timber cutters and possibly the crews of whaling ships. Contact with these Europeans had little detectable impact on the indigenous economy, yet the disease they introduced set in train one of the major causes for the destruction of the Tweed River aborigines. In spite of the few Europeans involved in contact with aborigines in the Tweed Valley prior to 1860, disease had undermined their ability to withstand the major European incursion after 1864 (LTRHS 1999:15-16).

William Marks in his personal diary (1872-1879), mentions the barter of honey, fish and oysters that transpired with the original inhabitants in exchange for 'goodies' of flour, sugar, tea and tobacco. Allison Smith, daughter of the first pilot at Tweed Heads, stated in an interview 'At that time [early 1870s] hundreds of natives camped within the present town site'.

Adrian Piper (1983) noted:

Between 1865 and 1875 the solid social fabric and economic [Aboriginal] structure collapsed as the basis of a viable society. The last recorded Booral ceremony took place on the Upper Tweed in about the mid eighteen seventies. This is significant for it emphasises how devastating the impact of farming into the Tweed Valley really was. The ritual life is perhaps the strongest and most enduring element of any society, yet in the Tweed Valley it barely survived fifteen years of contact with farmers. With the loss of both traditional land and the ritual essential to aboriginal society the Tweed aborigines became refugees in their own land (LTRHS 1999:53).

The Aboriginal population of the Tweed area likely numbered at least 2,000 at the time of European colonisation. Census figures indicate that within 50 years of European settlement up to 90% of the Aboriginal population had perished (Fox and Slabb 2016:103). The introduction of European diseases was a major contributing factor to this population decline.

It should be noted that, while considerable evidence exists for large scale Aboriginal population decline within the first 50 years of European settlement in the Tweed Valley, local Aboriginal people have continued to live in the region continuously to this day, and maintain a strong and uninterrupted cultural connection to the land, water, flora, and fauna of the region.

5. Impacts to Aboriginal Sites and Aboriginal Heritage Values

The survey and ACHA prepared by NOHC in 2018 identified 19 Potential Archaeological Deposits (PADs) of moderate significance that were recommended for subsurface archaeological test excavation. Over the course of June-August 2020 ELA undertook test excavation of those 19 sites, a summary of the sites and recommended mitigation measures can be found in the Table 3 below. All proposed mitigation measures included in this ACHAMP will be finalised prior to construction and will be completed in further consultation with the Aboriginal community.

The impacts associated with the FSL and temporary flooding, and Construction Area Disturbance Footprint have been assessed by this ACHAMP. Impacts associated with the temporary flood inundation are considered to be very unlikely to occur and would be of minor impact. Impacts associated with the FSL, temporary flooding and direct impacts, have been characterised in Section 1.5

Further details of the excavation program can be found in Section 6 below. Please note: All proposed mitigation measures are post-EIS approval.

In addition, all levels of significance assessed and detailed throughout this report are based on a level of scientific significance and do not reflect the level of cultural significance that these sites have for the Aboriginal community. The level of scientific significance was determined based on best archaeological practice.

Table 4: Aboriginal sites subject to excavation ELA 2020

AHIMS ID	Site Name	Easting/ Northing	Site Feature(s)	Archaeological Scientific Significance (post excavation)	Potential Impact (Refer to Section 1.5)	Mitigation
04-1-0235	CHD-A30	528546/ 6851931	PAD** w/ artefact	Low	FSL/ PMF	Surface collection only
04-1-0237	CHD-A35	529276/ 6851927	PAD w/ artefact	Low	FSL/ PMF	Surface collection only
04-1-0238	CHD-A36	529329/ 6852032	PAD w/ artefact	Moderate/ High	FSL	Salvage excavation / surface collection
04-1-0239	CHD-A37	529185/ 6851364	PAD w/ artefact	Low	FSL	No further assessment warranted
04-1-0240	CHD-A38	529329/ 6852032	PAD w/ artefact	Low	FSL/ PMF	Surface collection only
04-1-0249	CHD-A48	528981/ 6850601	PAD w/ artefact	Moderate/ High	FSL/ PMF	Salvage excavation / surface collection
04-1-0281	CHD-A55	529679/ 6851583	PAD w/ artefact	Moderate/ High	FSL	Salvage excavation / surface collection
04-1-0289	CHD-PAD8	529329/ 6852412	PAD	Low	FSL	No further assessment warranted
04-1-0288	CHD-PAD9	528985/ 6850890	PAD	Moderate/ High	FSL/ PMF	Salvage excavation / surface collection

AHIMS ID	Site Name	Easting/ Northing	Site Feature(s)	Archaeological Scientific Significance (post excavation)	Potential Impact (Refer to Section 1.5)	Mitigation
04-1-0296	CHD-PAD1	529208/ 6850100	PAD	Moderate/ High	FSL	Salvage excavation
04-1-0295	CHD-PAD2	529073/ 6848784	PAD	Moderate/ High	PMF	Salvage excavation
04-1-0293	CHD-PAD3	5296635/ 6848425	PAD	Low	PMF	Surface collection only
04-4-0294	CHD-PAD4	529983/ 6848487	PAD	Low	PMF	Surface collection only
04-1-0292	CHD-PAD5	529897/ 6850818	PAD	Low	FSL	No further assessment warranted
04-1-0291	CHD-PAD6	529989/ 6851186	PAD	Low	FSL	No further assessment warranted
04-1-0290	CHD-PAD7	530308/ 6851196	PAD	Low	FSL	No further assessment warranted
04-1-0280	CHD-A1	529145/ 6850356	PAD w/ artefact	Low	FSL	Surface collection only
04-1-0254	CHD-A27	529737/ 6850665	PAD w/ artefact	Low	FSL	Surface collection only
04-1-0264	CHD-A17	529675/ 6848621	PAD w/ artefact	Moderate/ High	FSL/ PMF	Salvage excavation
* PAD (Potential Archaeological Deposit)						

Table 5: Additional sites registered by ELA during excavation 2020

AHIMS ID	Site Name	Easting/ Northing	Site Feature	Archaeological Scientific Significance	Impact Type (Refer to Section 1.5)	Mitigation
40-1-0303	CHD_ST2	529419/ 6851590	Scarred Tree	High	FSL	No mitigation measures proposed.
04-1-0301	CHD-AS1	529842/ 6848369	Artefact scatter	Moderate/ High	PMF	Surface collection
04-1-0302	CHD-1	528954/ 6851377	Artefact	Moderate/ High	PMF	Surface collection

Table 6: Identified impacted sites by NOHC 2018

AHIMS ID	Site Name	Easting/ Northing	Site Feature	Archaeological Scientific Significance	Impact Type (Refer to Section 1.5)	Mitigation
04-1-0279	CHD-A2	528864/ 6850079	Isolated artefact	Low	PMF	Surface collection
04-1-0277	CHD-A4	528959/ 6849895	Artefact scatter	Low	FSL	Surface collection
04-1-0274	CHD-A7	529003/ 6849231	Isolated artefact	Low	FSL	Surface collection
04-1-0273	CHD-A8	529026/ 6849156	Artefact scatter	Low	FSL/ PMF	Surface collection
04-1-0272	CHD-A9	529324/ 6848931	Isolated artefact	Low	PMF	Surface collection
04-1-0271	CHD-A10	529778/ 6849122	Isolated artefact	Low	PMF	Surface collection
04-1-0270	CHD-A11	529994/ 6849137	Isolated artefact	Low	PMF	Surface collection
04-1-0269	CHD-A12	529741/ 6849545	Isolated artefact	Low	PMF	Surface collection
04-1-2068	CHD-A13	529683/ 6849555	Isolated artefact	Low	PMF	Surface collection
04-1-0267	CHD-A14	529314/ 6848218	Isolated artefact	Low	PMF	Surface collection
04-1-0266	CHD-A15	529055/ 6848121	Isolated artefact	Low	PMF	Surface collection
04-1-0263	CHD-A18	529487/ 6848386	Isolated artefact	Low	PMF	Surface collection
04-1-0261	CHD-A20	529742/ 6848117	sandstone pitting / holes (cultural significance)	Low	PMF	No mitigation measures proposed.
04-1-0260	CHD-A21	529712/ 6848071	Isolated artefact	Low	PMF	Surface collection
04-1-0259	CHD-A22	529744/ 6848075	Artefact scatter	Low	PMF	Surface collection
04-1-0257	CHD-A24	530402/ 6848008	Isolated artefact	Low	PMF	Surface collection
04-1-0253	CHD-A28	529965/ 6849999	Isolated artefact	Low	PMF	Surface collection
04-1-0252	CHD-A29	530208/ 6849906	Isolated artefact	Low	PMF	Surface collection
04-1-0232	CHD-A31	528569/ 6852189	Artefact scatter	Low	FSL	Surface collection

AHIMS ID	Site Name	Easting/ Northing	Site Feature	Archaeological Scientific Significance	Impact Type (Refer to Section 1.5)	Mitigation
04-1-0234	CHD-A33	528468/ 6851873	Isolated artefact	Low	PMF	Surface collection
04-1-0244	CHD-A42	528999/ 6850748	Isolated artefact	Low	FSL	Surface collection
04-1-0246	CHD-A44	528762/ 6850920	Isolated artefact	Low	FSL	Surface collection
04-1-0250	CHD-A45	528790/ 6850991	Isolated artefact	Low	FSL	Surface collection
04-1-0231	CHD-A51	529048/ 6850447	Isolated artefact	Low	FSL	Surface collection
04-1-0230	CHD-A52	528887/ 6850483	Isolated artefact	Low	PMF	Surface collection
04-1-0251	CHD-A53	528876/ 6850364	Isolated artefact	Low	PMF	Surface collection
04-1-0284	CHD-G1	529116/ 6849526	Chalcedony source	Low	FSL	Collect reference samples for possibility of future stone sourcing studies
04-1-0286	CHD RS1	530514/ 6850095	Rock Shelter Complex	High	FSL	Further investigation prior to construction
04-1-0014	DD-6	Restricted *	Rock shelter	High	FSL	Further consultation and assessment is warranted
04-1-0011	Midginbill DD3	Restricted *	Isolated find	Low	FSL	Surface collection
04-1-0010	Midginbill DD2	Restricted *	Isolated find	Low	PMF	Surface collection
04-1-0009	Midginbill DD1	Restricted *	Isolated find	Low	PMF	Surface collection
04-1-0090	CHD BMP 05-0036	Restricted *	Rock shelter	Moderate	FSL	Further investigation prior to construction
04-1-0130	Clarrie Hall Dam 2 BMP-05-0112	Restricted *	Isolated find	Low	PMF	Surface collection
04-1-0194	Byrrill Ridge 4 Tweed ACH Artefacts	528978/ 6850447	Isolated find	Low	PMF	Surface collection
04-1-0285	CHD-ST1	529760/ 6854393	Scarred tree	High	Potential Direct	Avoid - Tree protection zone assessment to be undertaken prior to construction.

* Restriction applied. The RAPs were provided detail on the locations and features of these Restricted sites to discuss mitigation measures. Please contact ahims@environment.nsw.gov.au for further site information

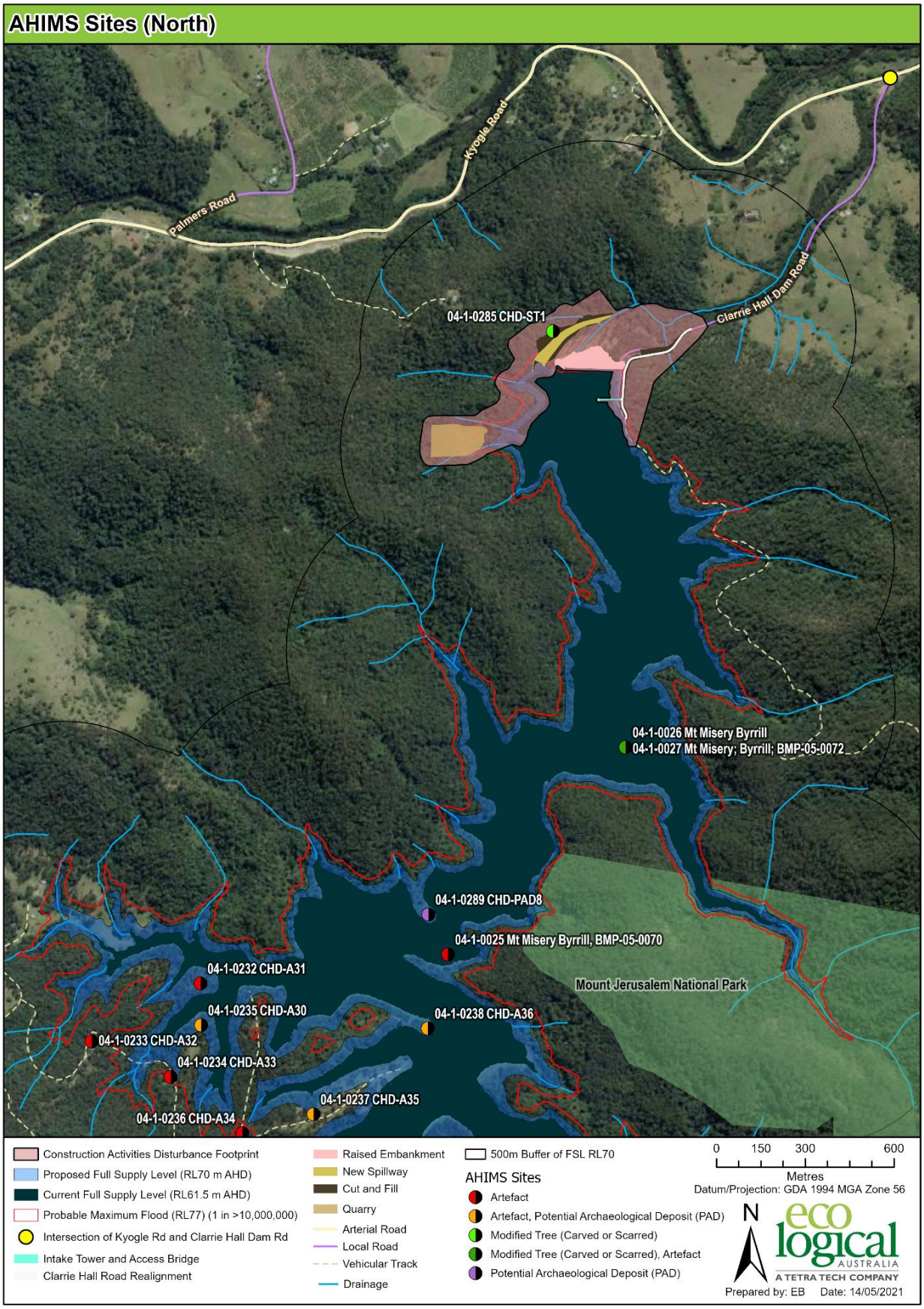


Figure 2: Registered AHIMS sites northern section of Clarrie Hall Dam

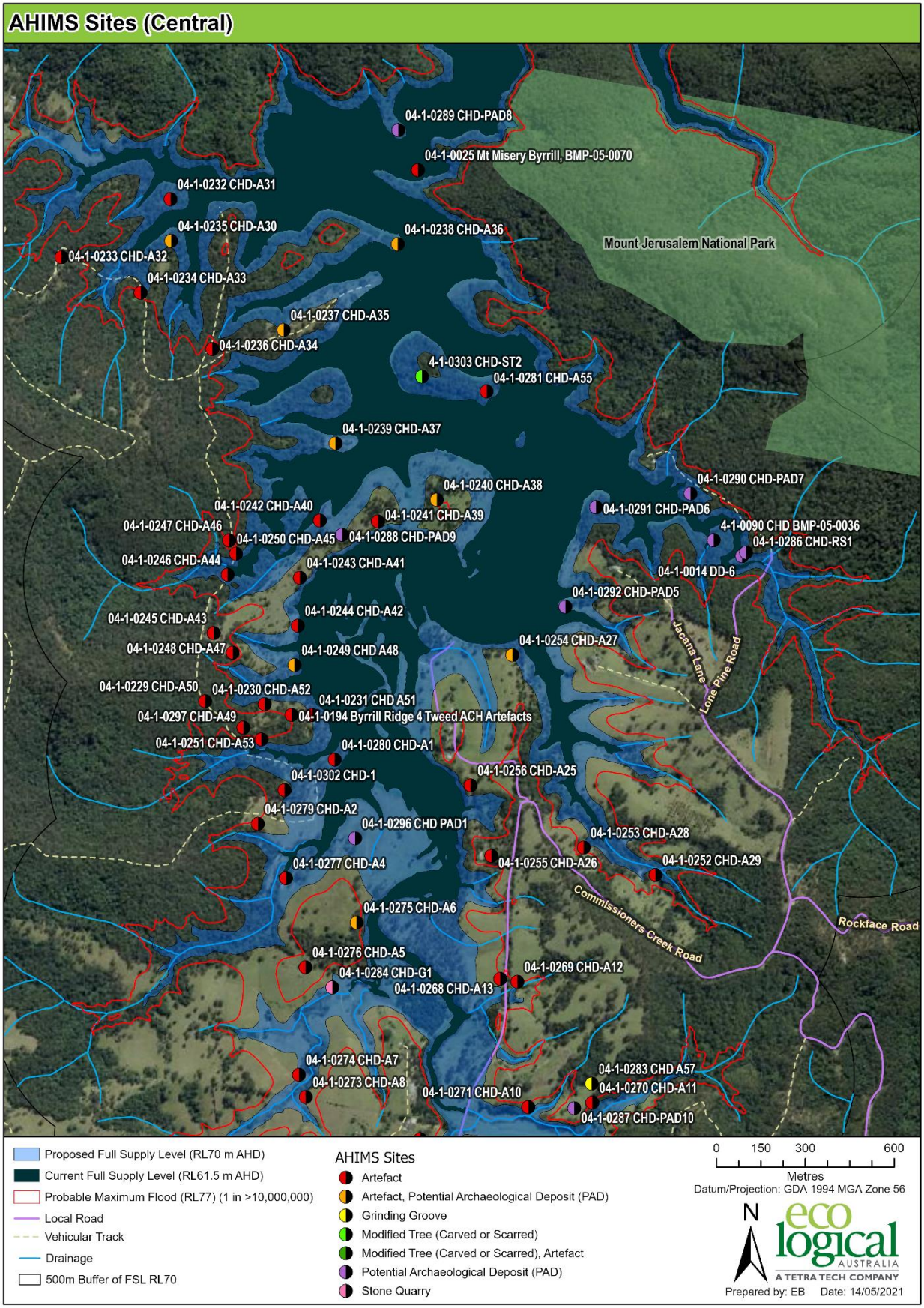


Figure 3: Registered AHIMS sites central section of Clarrie Hall Dam

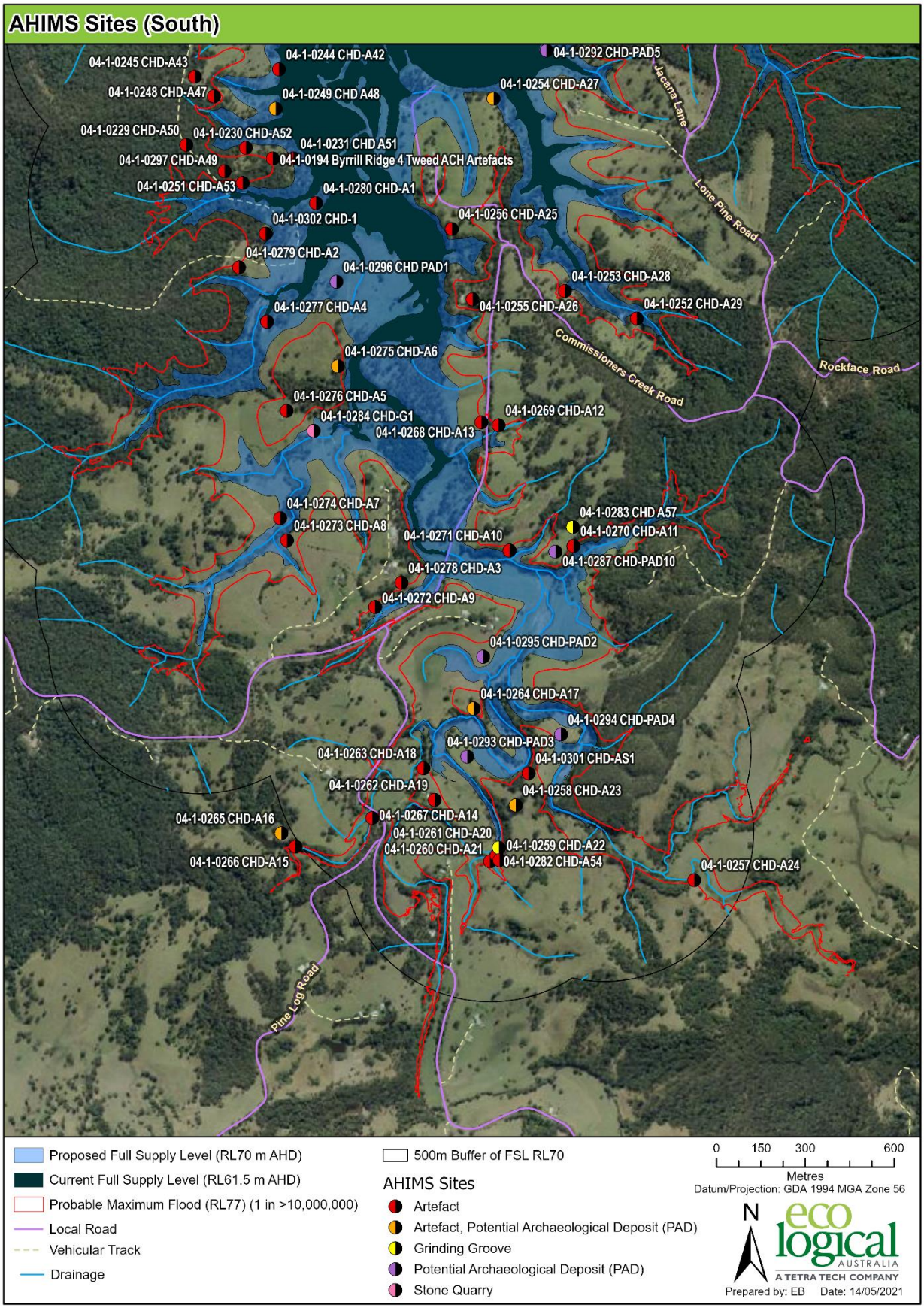


Figure 4: Registered AHIMS sites southern section of Clarrie Hall Dam

6. Post Excavation Lithic Analysis

The identification of artefact types, raw material, their distributions, and associations, were used to inform the interpretation of site use, antiquity, and significance. The current excavation program yielded a relatively large artefact collection (known as an 'assemblage') and provides a powerful and definitive sample of the Aboriginal archaeology of the region. However, the real value of the assemblage lies in the information that these artefacts contain and the story they can tell.

There are several different ways to 'count' an assemblage, depending on questions and trends observed in the data. For example, counting the number of artefacts of each raw material might suggest differences in how these materials were used, both within an individual site and when sites across the landscape are compared. Similarly, by looking at how many tools were recovered versus the quantity of waste material (i.e. 'debitage') we may gain insights into the sort of activities taking place across a landscape. Looking at where artefacts occur can also take place on several levels and this information is important when interpreting what a site was used for and why.

Detailed (laboratory) analysis entailed recording a number of characteristics for each individual artefact. Stone artefact raw materials were examined through a hand lens (x10 magnification) with appropriate raw material categories recorded. Artefact attributes were chosen in accordance with the research aims and were derived from Andrevsky (1988), Cotterell and Kamminga (1987), Hiscock (1993), Holdaway and Stern (2004) and Kamminga (1982). Each artefact was recorded in database form, suitable for comparative analysis on a local and regional basis (0).

© ECO LOGICAL AUSTRALIA PTY LTD

7. Excavated Aboriginal Sites ELA 2020

The following chapter is a summary of all sites excavated by ELA during the test excavation program that was undertaken from 29 June to 28 August 2020. The following information includes the number of transects, the number of excavation squares dug at each site and concludes with a significance assessment in support of appropriate mitigation measures.

7.1 AHIMS 04-1-0293 (CHD PAD3)

CHD PAD3 is located in the southern portion of the study area on an elevated flood terrace between two arms of Doon Doon Creek. Excavations and visual observations confirmed that there was approximately 2-3 metres of alluvial soils that had been built up from past flooding events. These flood events and the deposit of alluvial soil would have disturbed any intact archaeological deposit that may have been present.

CHD PAD3 Quick Reference	
Easting	**Northing**
5296635	6848425
# of Transects	**# of test squares**
Transects A & B	5
Artefacts	**Significance**
0	Low

Three test pits were placed along the top of the flood terrace (Transect A) with a further two placed on the lower floodplain adjacent to the creek (Transect B). No artefacts were recovered from any of the excavated test squares. Examination of the creek bed revealed cobbles of raw material that would have been used in the production of Aboriginal stone tools, and nodules of naturally occurring ochre was observed. The ochre would have been used in the production of art and in ritual body modifications. No further excavation or heritage assessment of the site is warranted prior to impacts; however, the Aboriginal community should have an opportunity to collect samples of the raw material and ochre observed within the creek bed.

CHD PAD3 was originally recorded by NOHC as an area of potential archaeological deposit (PAD). The current investigation determined an absence of archaeological deposit. This site represents a commonly occurring site type in the region. Site integrity is low, and the site exhibited low archaeological potential. Further investigations of the area would not contribute to our understanding of Aboriginal landscape use in the area. Based on the intactness, representativeness, and research potential, the site is determined to have low archaeological significance.

Figure 5: Excavation on top of the alluvial terrace

Figure 6: Extent of the depth of the alluvial deposit

© ECO LOGICAL AUSTRALIA PTY LTD

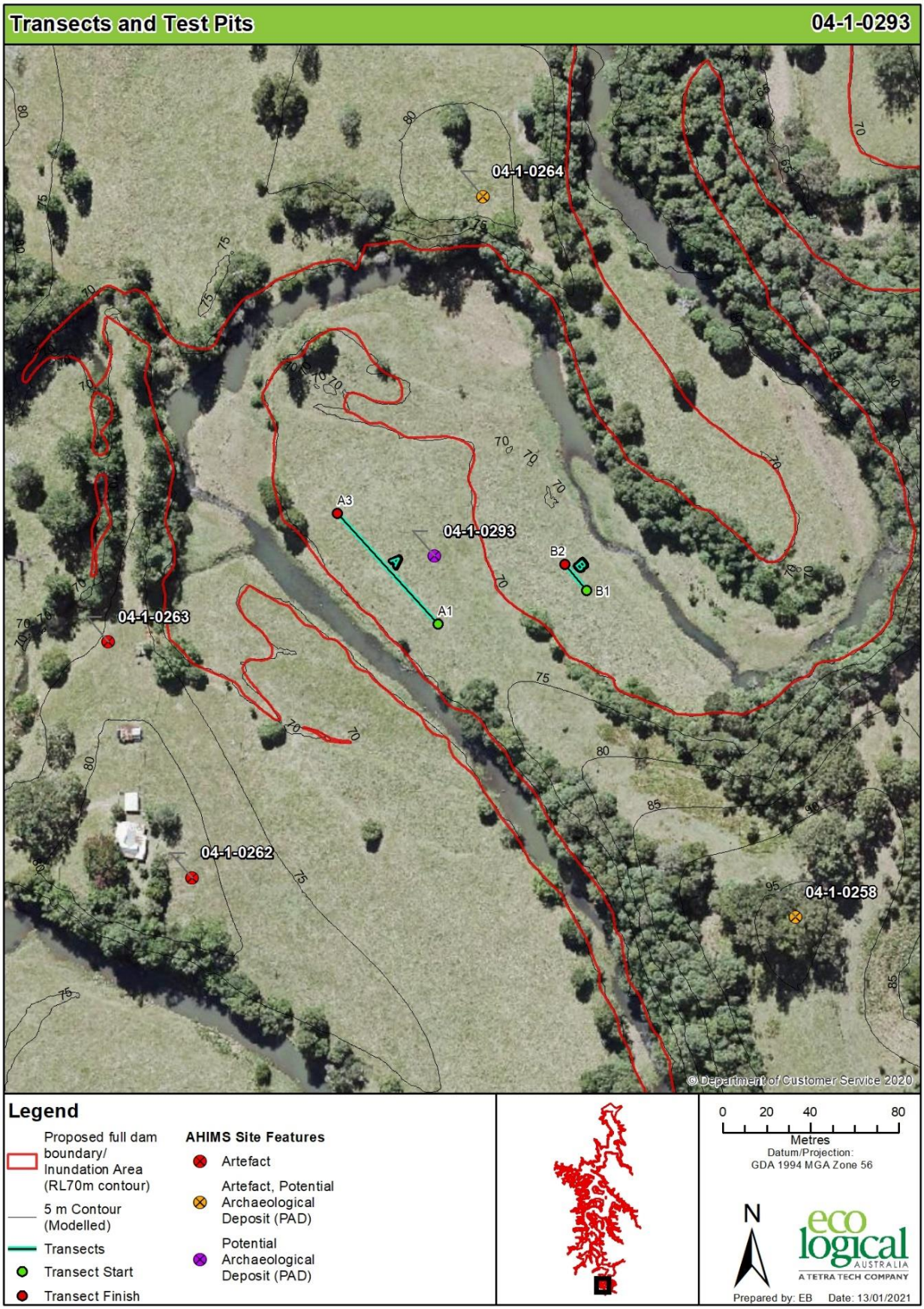


Figure 7: PAD 3 location and transects

7.2 AHIMS 04-1-0294 (CHD PAD 4)

CHD PAD 4 is located in the southern portion of the study area on a gently sloping landform sitting above the flood plain of Doon Doon Creek. Transect A (6 test squares) was placed along the gently sloping landform, Transect B (3 test squares) was placed along the foot of the slope on a small terrace landform above Doon Doon Creek, and Transect C was placed across the sloping landform. Each transect contained a single artefact.

CHD PAD 4 Quick Reference	
Easting	**Northing**
529983	6848487
# of Transects	**# of test squares**
Transects A - C	13
Artefacts	**Significance**
3 total artefacts mean density 0.33/50cm^2	Low

During the course of the excavation, a RAP identified a nearby artefact scatter that had not been previously registered as a site. After confirming its presence, it was named CHD-AS1 and was subsequently registered on the AHIMS database as AHIMS #04-1-0301. The site is located to the south-east of the excavation area at 529842E, 6848487N. The site consisted of two cores and five flakes with three types of material represented, silcrete, chert, and chalcedony.

Although no further assessment of PAD 4 is warranted, the Aboriginal community should be afforded the opportunity to collect the artefacts making up CHD-AS1 before the proposed impacts. Additionally, such as with PAD 3 cobbles of raw material and naturally occurring nodules of ochre were observed within the creek bed, as such the Aboriginal community should also be afforded the opportunity to collect a sample of this material.

CHD PAD 4 was originally recorded by NOHC as an area of potential archaeological deposit (PAD). The current investigation recovered three artefacts from 13 test squares placed within the PAD. This site represents a commonly occurring site type in the region. Site integrity is low, and the site exhibited low archaeological potential. Further investigations of the area would not contribute to our understanding of Aboriginal landscape use in the area. Based on the intactness, representativeness, and research potential, the site is determined to have low archaeological significance.

Figure 8: Looking upslope along Transect A

Figure 9: Looking downslope along Transect A

Figure 10: Site CHD-AS1

Figure 11: CHD-AS1 location

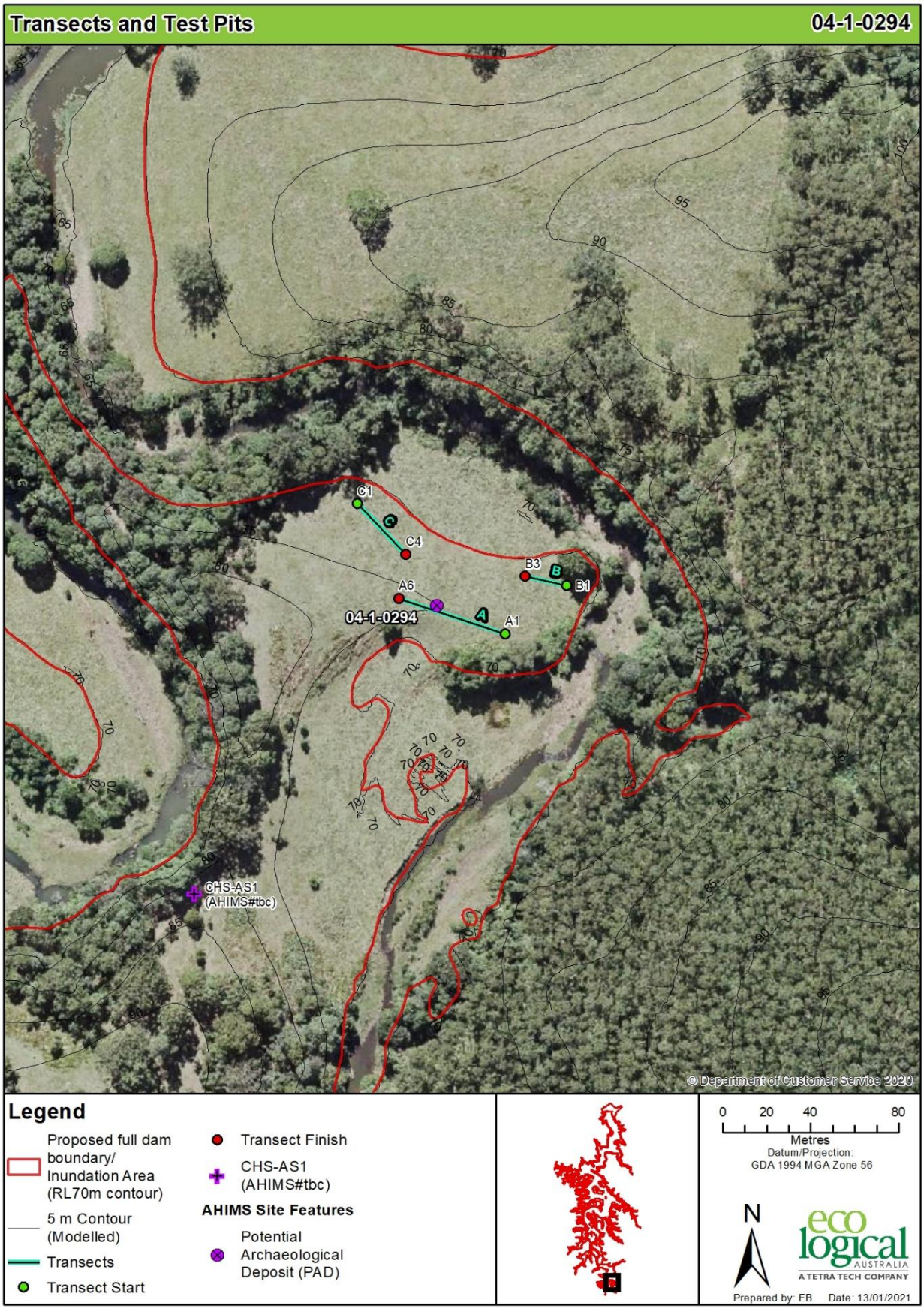


Figure 12: CHD PAD4 location showing Transects A-C, and registered site CHD-AS1

7.3 AHIMS 04-1-0254 (CHD A27)

CHD A27 is located on the southern shore of the existing dam, within the property of Crams Farm. The excavation consisted of 5 parallel transects placed in a north-south direction. Three artefacts were recovered from Transect A (9 test squares), 14 artefacts were recovered from Transect B (12 test squares), 36 artefacts were recovered from Transect C (13 test squares), 49 artefacts were recovered from Transect D (13 test squares, and 10 artefacts were recovered from Transect E (7 test squares). Artefacts were observed on an exposed surface in the southern portion of the PAD area. Although, a larger number of artefacts were recovered from Transect D in comparison to the other transects, the average number/density recovered from across the site was quite low in comparison to other sites investigated, as such no further heritage assessment is warranted. The Aboriginal community should be afforded the opportunity to undertake a surface collection of exposed artefacts prior to proposed impacts.

CHD A27 Quick Reference	
Easting	**Northing**
529737	6850665
# of Transects	**# of test squares**
Transects A - E	54
Artefacts	**Significance**
112 total artefacts mean density 0.48/50cm^2	Low

CHD A27 was originally recorded by NOHC as an area of potential archaeological deposit (PAD) with artefact. The current investigation recovered 112 artefacts from 54 test squares placed within the PAD. This site represents a commonly occurring site type in the region. Site integrity is low, and the site exhibited low archaeological potential. Further investigations of the area would not contribute to our understanding of Aboriginal landscape use in the area. Based on the intactness, representativeness, and research potential, the site is determined to have low archaeological significance.

Figure 13: Test square location with CHD A27

Figure 14: Example of the clay base of a typical test square within CHD A27

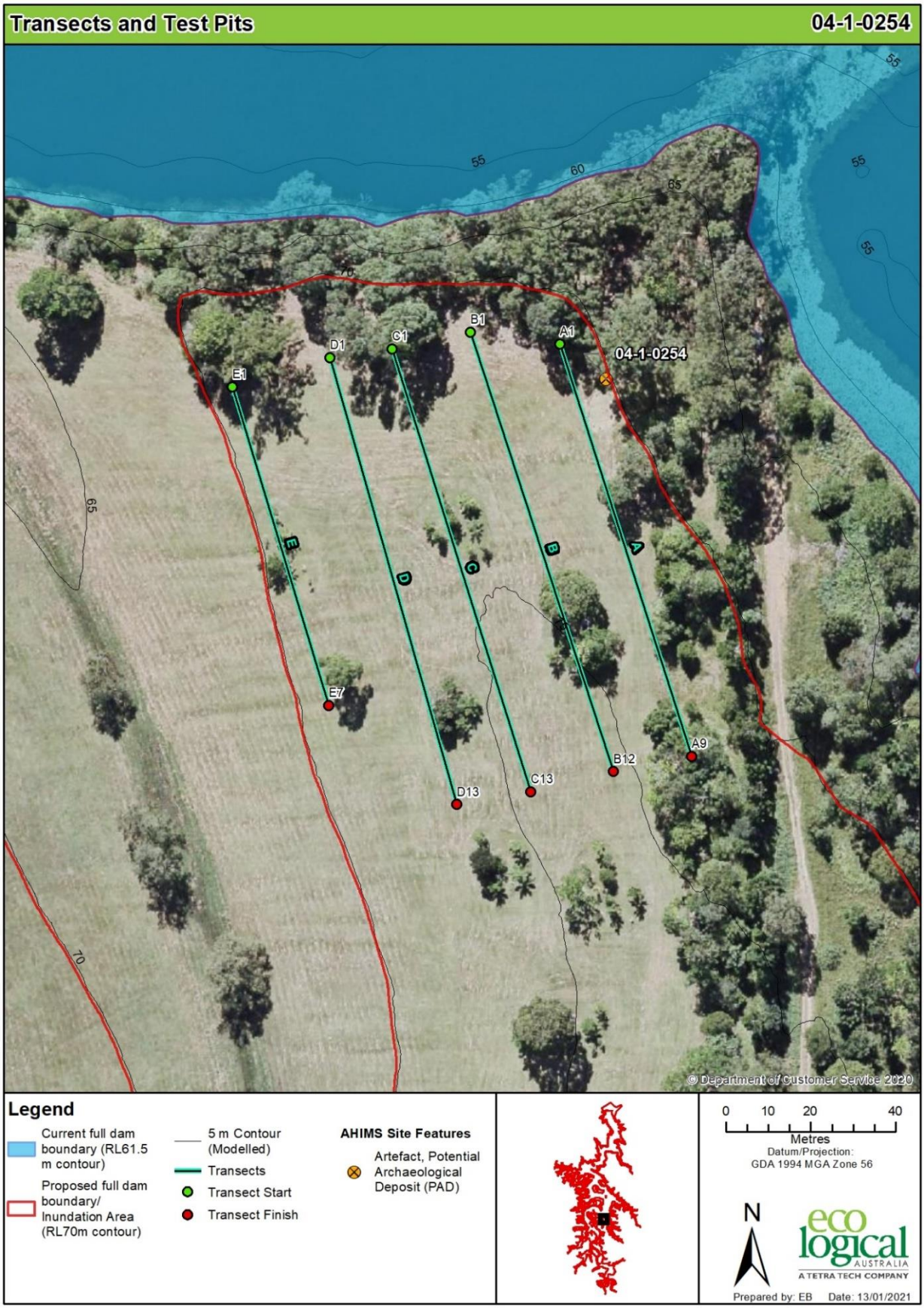


Figure 15: CHD A27 excavation area

7.4 AHIMS 04-1-0235 (CHD A30)

CHD A30 is located in the central portion of the dam along its eastern shore. The site is located on a sloping peninsula landform, sloping from south to north. Transects A-C were parallel transects placed along a gentle slope/hillcrest in a north-south direction. Transects D & E were placed at the foot of the slope adjacent to the water. Seven artefacts were recovered from Transect A (7 test squares), eight artefacts were recovered from Transect B (8 test squares), two artefacts were recovered from Transect C (3 test squares), and one artefact was collected from both Transect D (4 test squares) and Transect E (5 test squares). Artefacts were observed on the exposed surfaces along the slope. No further heritage assessment is warranted; however, the Aboriginal community should be afforded the opportunity to undertake a surface collection of exposed artefacts prior to proposed impacts.

CHD A30 Quick Reference	
Easting	**Northing**
528546	6851931
# of Transects	**# of test squares**
Transects A - E	27
Artefacts	**Significance**
19 total artefacts mean density 0.7/50cm^2	Low

CHD A30 was originally recorded by NOHC as an area of potential archaeological deposit (PAD) with artefact. The current investigation recovered 19 artefacts from 27 test squares placed within the PAD. This site represents a commonly occurring site type in the region. Site integrity is low, and the site exhibited low archaeological potential. Further investigations of the area would not contribute to our understanding of Aboriginal landscape use in the area. Based on the intactness, representativeness, and research potential, the site is determined to have low archaeological significance.

Figure 16: Test square location within CHD A30

Figure 17: Example of a typical test square within CHD A30

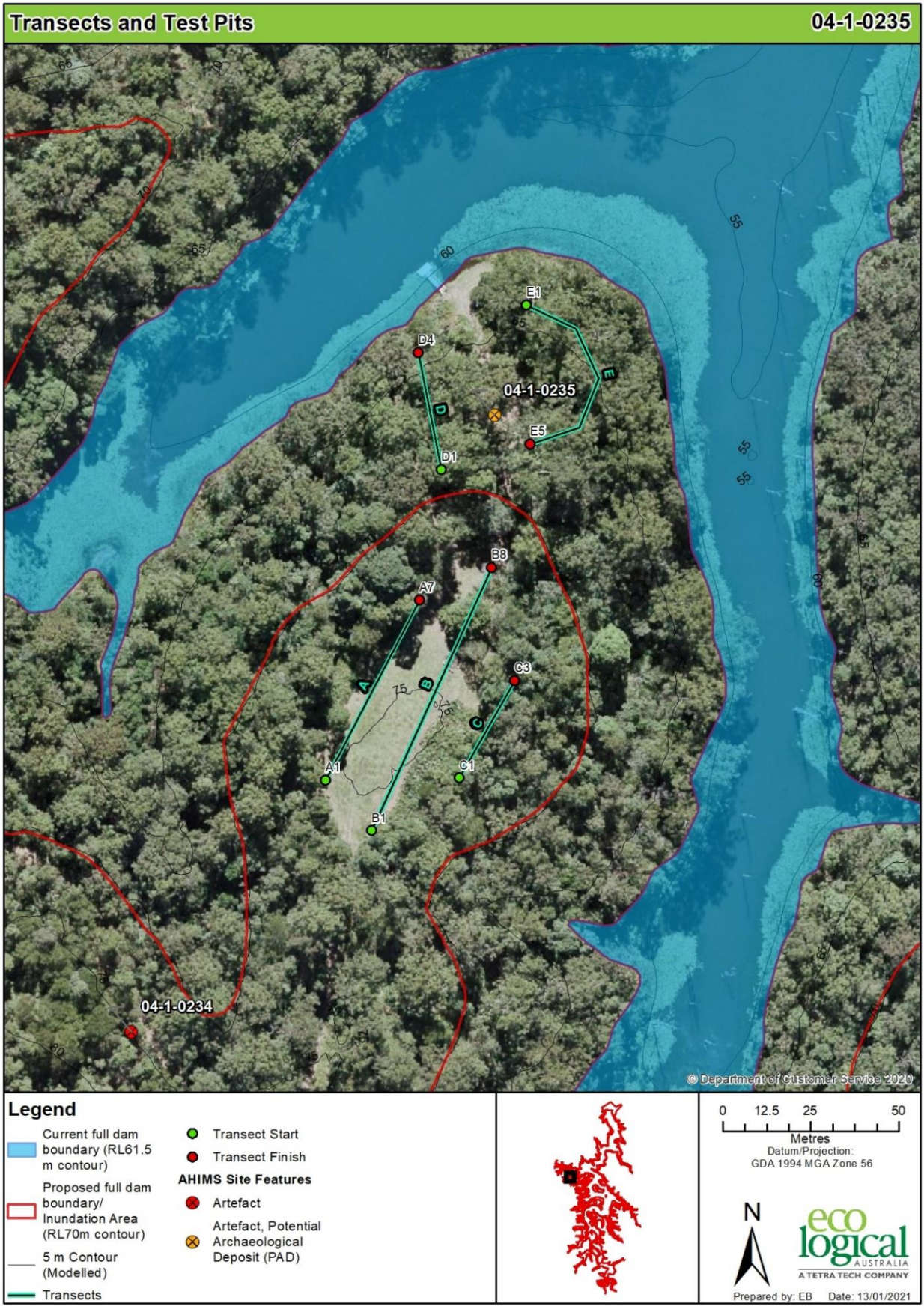


Figure 18: CHD A30 location and transect locations

7.5 AHIMS 04-1-0292 (CHD PAD 5)

CHD PAD 5 is located in the southern portion of the existing dam along its eastern shore. The site is located on a gently sloping peninsula landform. Transects A & B were placed parallel to one another running west to east along the lower slope of the peninsula. Transect C was placed in a north-south direction running across the slope. Four artefacts were recovered from Transect A (6 test squares), three artefacts were recovered for Transect B (7 test squares), and no artefacts were recovered from the 3 test squares of Transect C.

CHD PAD 5 Quick Reference	
Easting	**Northing**
529897	6850818
# of Transects	**# of test squares**
Transects A – C	16
Artefacts	**Significance**
7 total artefacts mean density 0.4/50cm^2	Low

No artefacts were observed on the surface of the PAD area, as such surface artefact collection is not necessary. No further heritage assessment is warranted.

CHD PAD 5 was originally recorded by NOHC as an area of potential archaeological deposit. The current investigation recovered seven artefacts from 16 test squares placed within the PAD. This site represents a commonly occurring site type in the region. Site integrity is low, and the site exhibited low archaeological potential. Further investigations of the area would not contribute to our understanding of Aboriginal landscape use in the area. Based on the intactness, representativeness, and research potential, the site is determined to have low archaeological significance.

Figure 19: Test square location within CHD PAD 5

Figure 20: Aboriginal stone hand axe recovered from the excavation

Figure 21: CHD PAD 5 location with transects

7.6 AHIMS 04-1-0291 (CHD PAD 6)

CHD PAD 6 is located towards the southern end of the existing dam along its eastern shore. The site is located on a gently sloping peninsula like landform. Five parallel transects were placed across the slope. Zero artefacts were recovered from Transect A (3 test squares), one artefact was recovered from Transect B (1 test square), two artefacts were recovered from Transect C (6 test squares), one Artefact was recovered from Transect D (5 test squares), and 21 artefacts were recovered from Transect E (7 test squares). The central portion of the PAD area was moderately disturbed by an existing vehicle track. The eastern and western margins of the PAD sloped away from the vehicle track towards the water.

No surface artefacts were observed, as such surface artefact collection is not necessary. No further heritage assessment is warranted.

CHD PAD 6 Quick Reference	
Easting	**Northing**
529989	6851186
# of Transects	**# of test squares**
Transects A – E	24
Artefacts	**Significance**
25 total artefacts mean density 0.9/50cm^2	Low

CHD PAD6 was originally recorded by NOHC as an area of potential archaeological deposit. The current investigation recovered 25 artefacts from 24 test squares placed within the PAD. This site represents a commonly occurring site type in the region. Site integrity is low, and the site exhibited low archaeological potential. Further investigations of the area would not contribute to our understanding of Aboriginal landscape use in the area. Based on the intactness, representativeness, and research potential, the site is determined to have low archaeological significance.

Figure 22: PAD 6 looking toward the water

Figure 23: Typical excavation square within CHD PAD 6

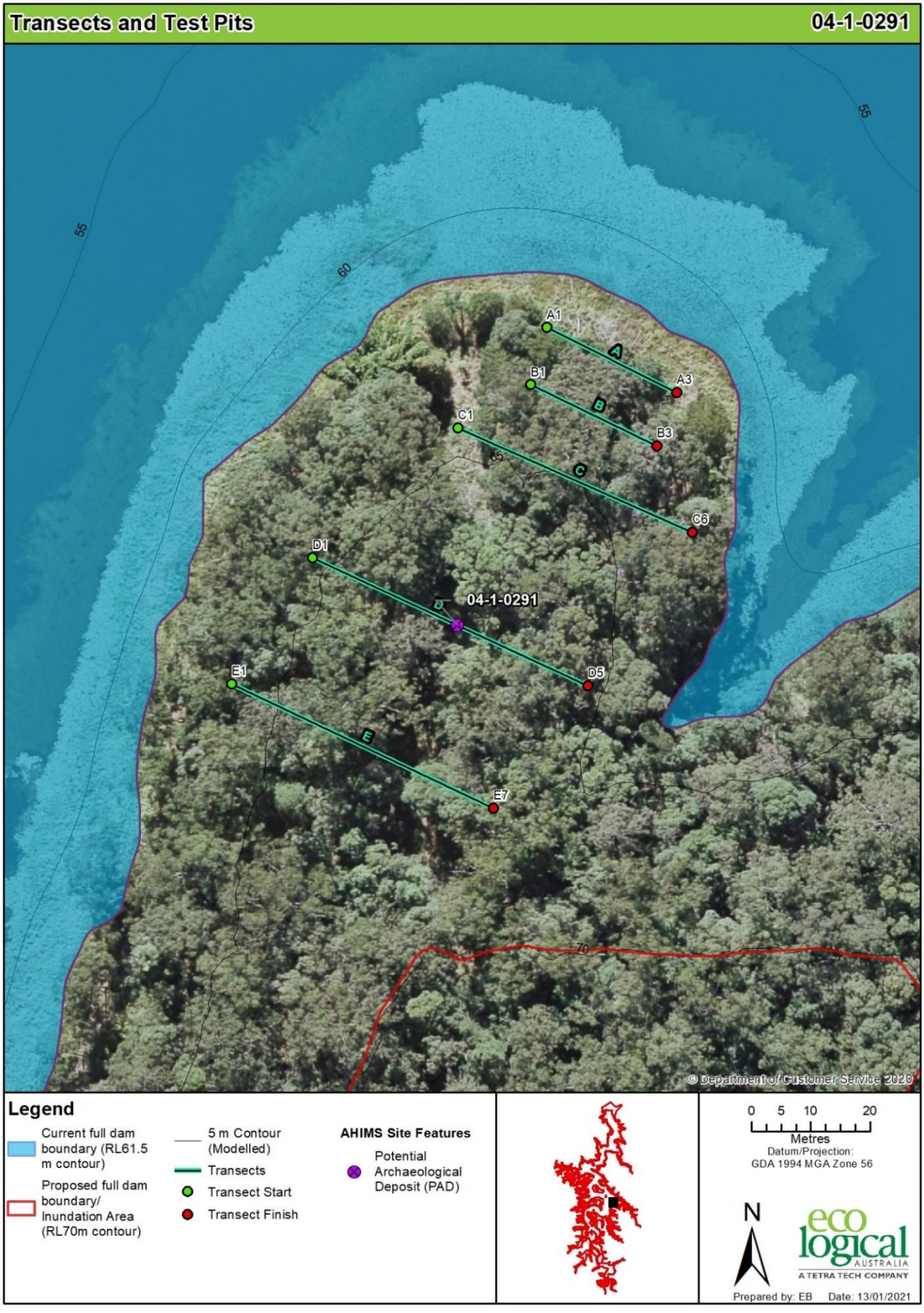


Figure 24: CHD PAD6 location and transects

7.7 AHIMS 04-1-0280 (CHD A1)

CHD A1 is located on the southern shore of the existing dam. The PAD area consists of a gentle eastern running slope flattening out into a peninsula like landform. The site was excavated using seven transects placed across the site and one stand-alone excavation square (G). Five artefacts were recovered from Transect A (9 test squares), 13 artefacts were recovered from transect B (6 test squares), six artefacts were recovered from Transect C (5 test squares), eight artefacts were recovered from Transect D (4 test squares), one artefact was recovered from Transect E (5 test squares), three artefacts were recovered from Transect F (3 test squares), two artefacts were recovered from the stand-alone G test square, and no artefacts were recovered from Transect H (3 test squares).

CHD A1 Quick Reference	
Easting	**Northing**
529145	6850356
# of Transects	**# of test squares**
Transects A – H	38
Artefacts	**Significance**
38 total artefacts mean density 1/50cm^2	Low

A previously unregistered Aboriginal stone hand axe was identified in the western portion of the identified PAD (528954E, 6851377N). The site was registered with AHIMS as CHD-1 and was assigned the AHIMS number 04-1-0302. The Aboriginal community should be afforded the opportunity to collect site CHD-1 and any other surface artefacts that may have been previously overlooked. No further heritage assessment is warranted.

CHD A1 was originally recorded by NOHC as an area of potential archaeological deposit. The current investigation recovered 38 artefacts from 38 test squares placed within the PAD. This site represents a commonly occurring site type in the region. Site integrity is low, and the site exhibited low archaeological potential. Further investigations of the area would not contribute to our understanding of Aboriginal landscape use in the area. Based on the intactness, representativeness, and research potential, the site is determined to have low archaeological significance.

Figure 25: PAD area 04-1-0280

Figure 26: Aboriginal stone hand axe, CHD-1

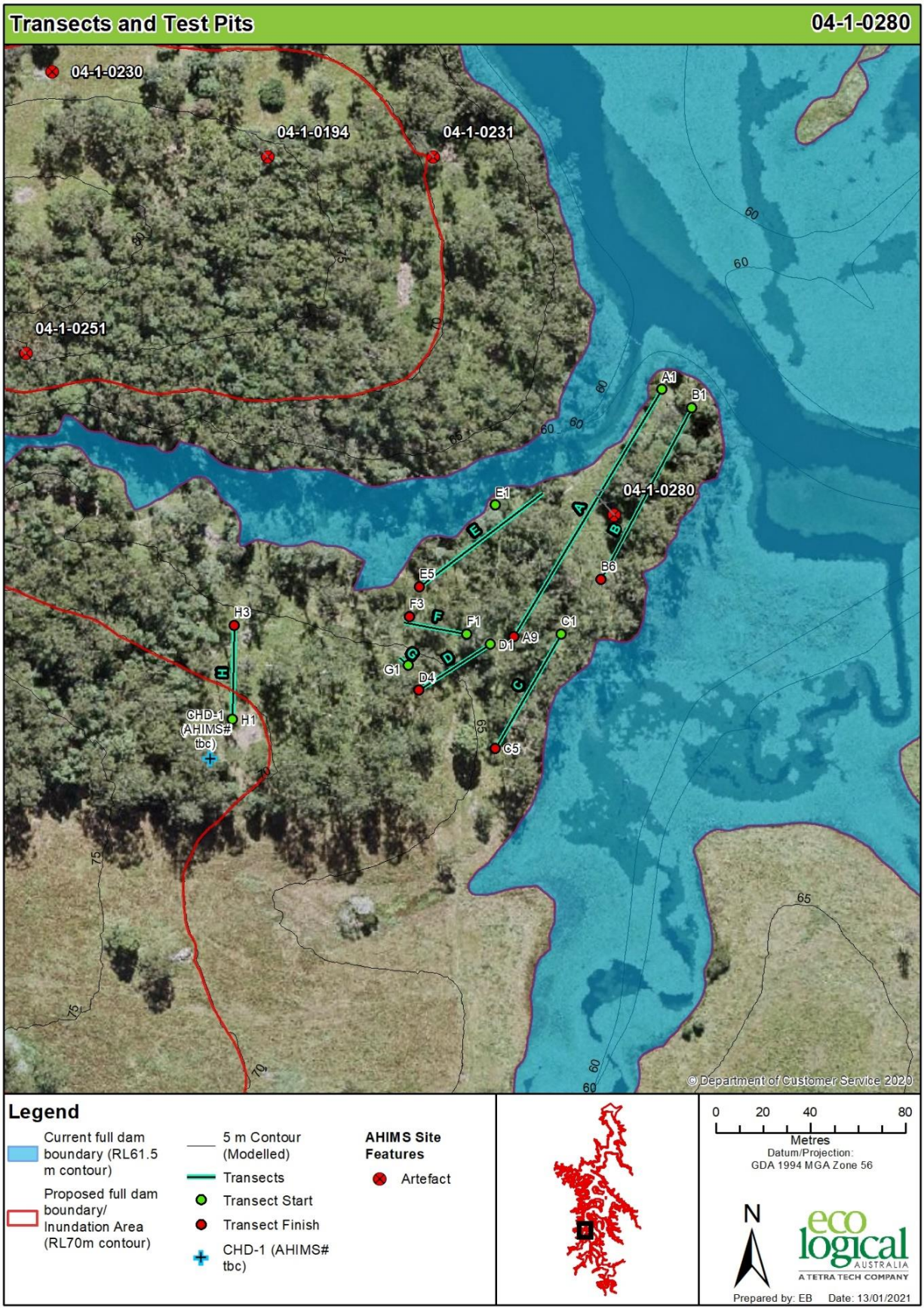


Figure 27: CHD A1 location and transects

7.8 AHIMS 04-1-0240 (CHD A38)

CHD A38 is located along the southwestern portion of the existing dam. The site location consists of a gentle slope running approximately north to south. Transects A, B, & C were placed across the slope, with Transect D placed following the slope to the north of the other three transects. Ten artefacts were recovered from Transect A (6 test squares), one artefact was recovered from Transect B (3 test squares), and zero artefacts were recovered from both Transect C (4 test squares) and Transect D (4 test squares).

NOHC identified the site as PAD with artefact, and the artefact was unable to be identified during excavation; however, the Aboriginal community should be afforded the opportunity to inspect and complete collection of all surface artefacts prior to proposed impacts. No further heritage assessment is warranted.

CHD A38 Quick Reference	
Easting	**Northing**
529015	6850200
# of Transects	**# of test squares**
Transects A – D	17
Artefacts	**Significance**
11 total artefacts mean density 0.64/50cm^2	Low

CHD A38 was originally recorded by NOHC as an area of potential archaeological deposit (PAD) with artefact. The current investigation recovered 11 artefacts from 17 test squares placed within the PAD. This site represents a commonly occurring site type in the region. Site integrity is low, and the site exhibited low archaeological potential. Further investigations of the area would not contribute to our understanding of Aboriginal landscape use in the area. Based on the intactness, representativeness, and research potential, the site is determined to have low archaeological significance.

Figure 28: CHD A38 looking toward water

Figure 29: Silcrete flake fragment

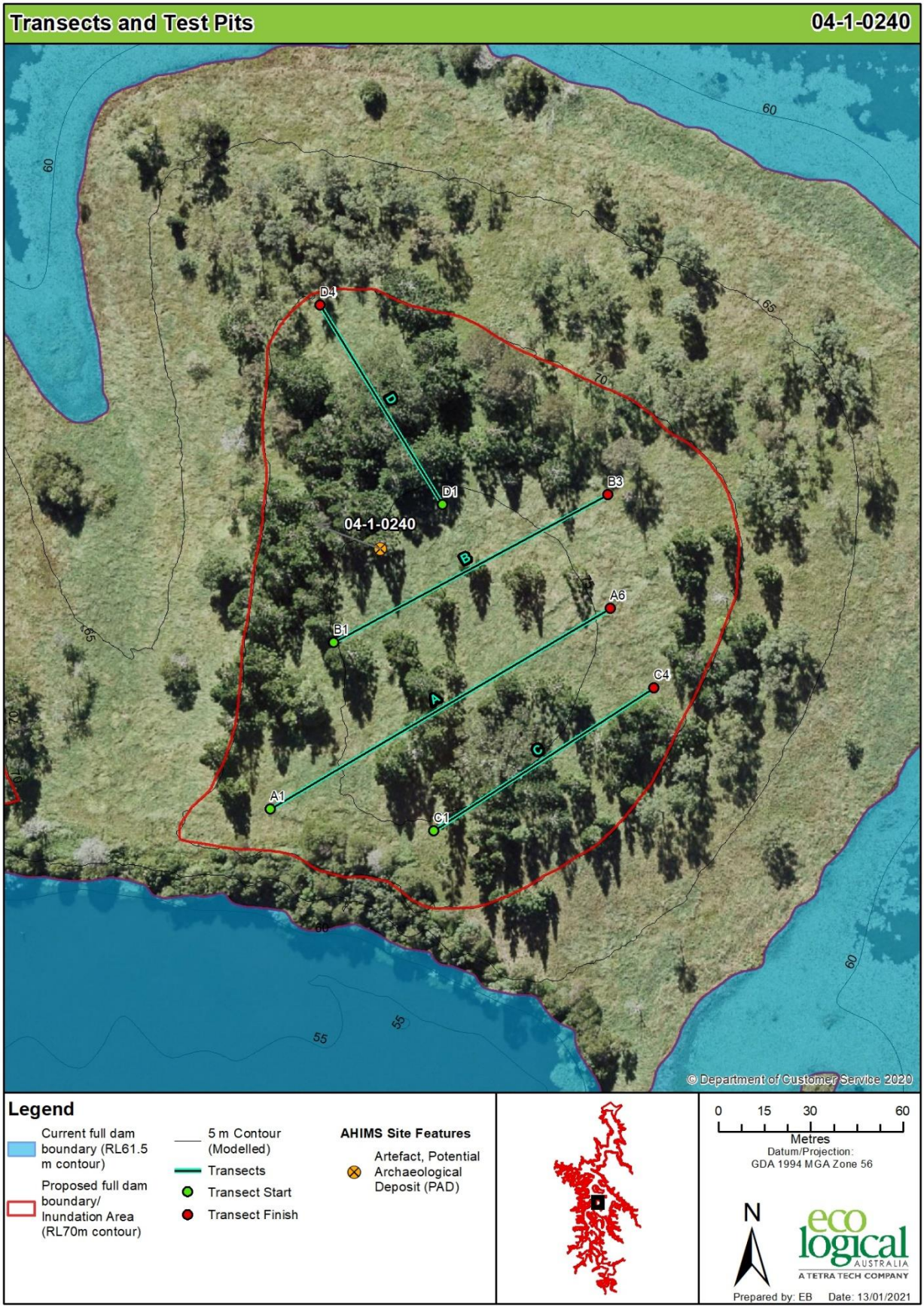


Figure 30: CHD A38 location and transects

7.9 AHIMS 04-1-0289 (CHD PAD 8)

CHD PAD8 is located with the northern portion of the existing dam along its western shore. The PAD area consisted of a relatively flat peninsula landform, with three parallel transects placed across it. CHD PAD8 was found to be heavily overgrown with Lantana, and the soils were identified as being very rocky and significantly disturbed with mixed basal clays observed throughout the soil deposit.

CHD PAD 8 Quick Reference	
Easting	**Northing**
529329	6852412
# of Transects	**# of test squares**
Transects A – C	9
Artefacts	**Significance**
1 total artefact mean density 0.11/50cm^2	Low

CHD PAD 8 was originally recorded by NOHC as an area of potential archaeological deposit. The current investigation recovered one artefact from nine test squares placed within a significantly disturbed landscape. This site represents a commonly occurring site type in the region. Site integrity is low, and the site exhibited low archaeological potential. Further investigations of the area would not contribute to our understanding of Aboriginal landscape use in the area. Based on the intactness, representativeness, and research potential, the site is determined to have low archaeological significance.

Figure 31: CHD PAD 8

Figure 32: Typical soil profile

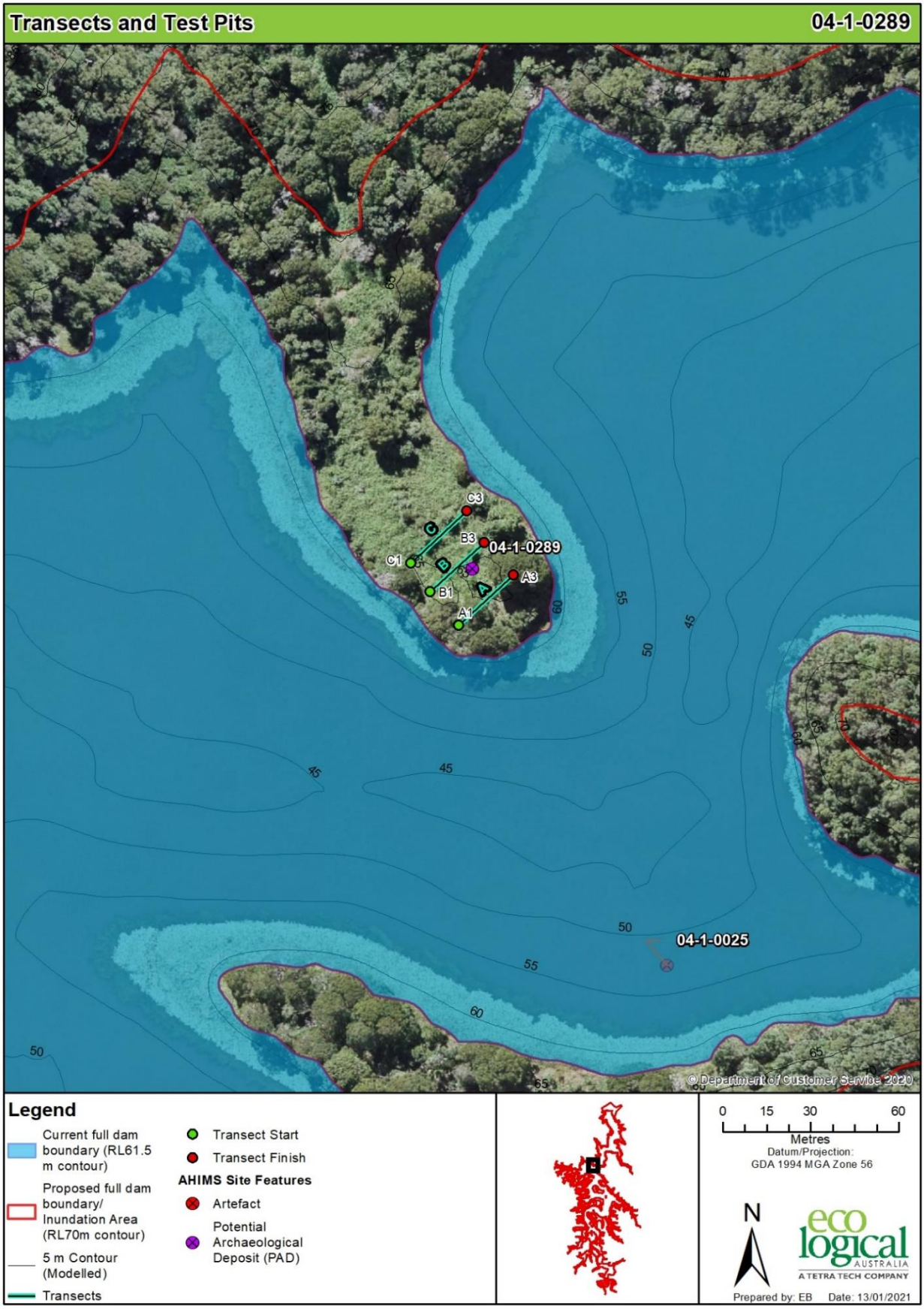


Figure 33:CHD PAD 8 location and transects

7.10 AHIMS 04-1-0239 (CHD A37)

CHD A37 is located within the central portion of the existing dam along its western shore. CHD A37 was situated on a gentle sloping landform peninsula that sloped from west to east towards the water. A total of four transects were placed running up the slope from east to west. Transect A (17 test squares) was placed up the central portion of the landform and contained 16 artefacts, one artefact was recovered from Transect B (6 test squares), two artefacts were recovered from Transect C (9 test squares), and 14 artefacts were recovered from Transect D (11 test squares).

NOHC originally identified the site as PAD with artefact, and the Aboriginal community should be afforded the opportunity to inspect a collect any surface artefacts identified prior to proposed impacts. No further heritage assessment is warranted.

CHD A37 Quick Reference	
Easting	**Northing**
529185	6851364
# of Transects	**# of test squares**
Transects A – D	43
Artefacts	**Significance**
33 total artefacts mean density 0.76/50cm^2	Low

CHD A37 was originally recorded by NOHC as an area of potential archaeological deposit (PAD) with artefact. The current investigation recovered 33 artefacts from 43 test squares placed within the PAD. This site represents a commonly occurring site type in the region. Site integrity is low, and the site exhibited low archaeological potential. Further investigations of the area would not contribute to our understanding of Aboriginal landscape use in the area. Based on the intactness, representativeness, and research potential, the site is determined to have low archaeological significance.

Figure 34: Western extent of site area

Figure 35: Eastern extent of site area

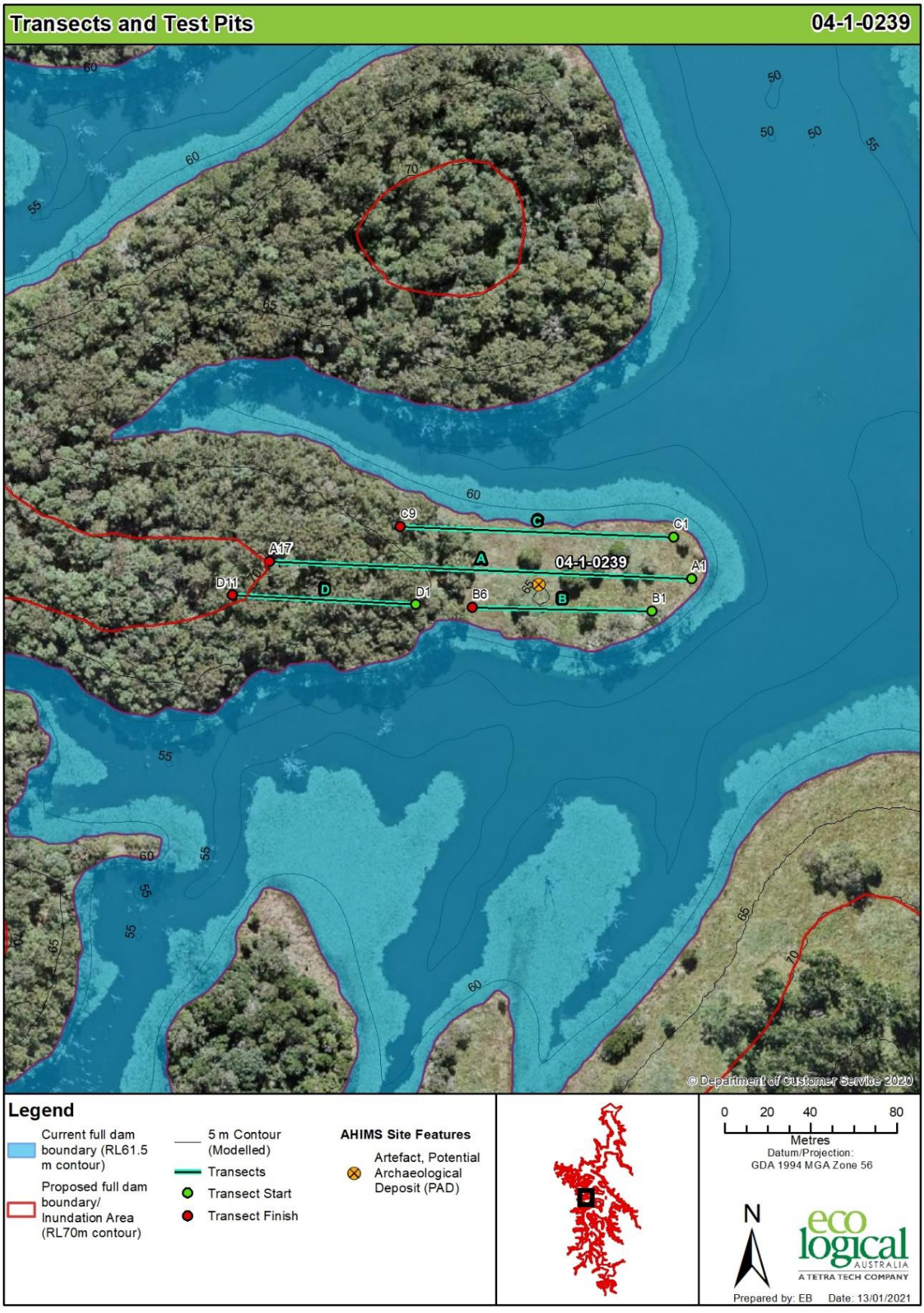


Figure 36: CHD A37 location and transects

7.11 AHIMS 04-1-0290 (CHD PAD 7)

CHD PAD 7 was located with an elevated heavily wooded landform within the south-eastern section of the existing dam. Three parallel transects were placed in a general southeast to northwest direction across the landform. No Aboriginal objects were collected from the test excavation squares, nor were any Aboriginal objects observed on the exposed surface.

CHD PAD 7 Quick Reference	
Easting	**Northing**
530308	6851196
# of Transects	**# of test squares**
Transects A – C	11
Artefacts	**Significance**
Zero total artefacts	Low

No further surface collection or further heritage assessment is warranted.

CHD PAD 7 was originally recorded by NOHC as an area of potential archaeological deposit. The current investigation recovered zero artefacts from 11 test squares placed across the identified PAD area. This site represents a commonly occurring site type in the region. Site integrity is low, and the site exhibited no archaeological potential. Further investigations of the area would not contribute to our understanding of Aboriginal landscape use in the area. Based on the intactness, representativeness, and research potential, the site is determined to have low archaeological significance.

Figure 37: CHD PAD7

Figure 38: Typical test excavation square

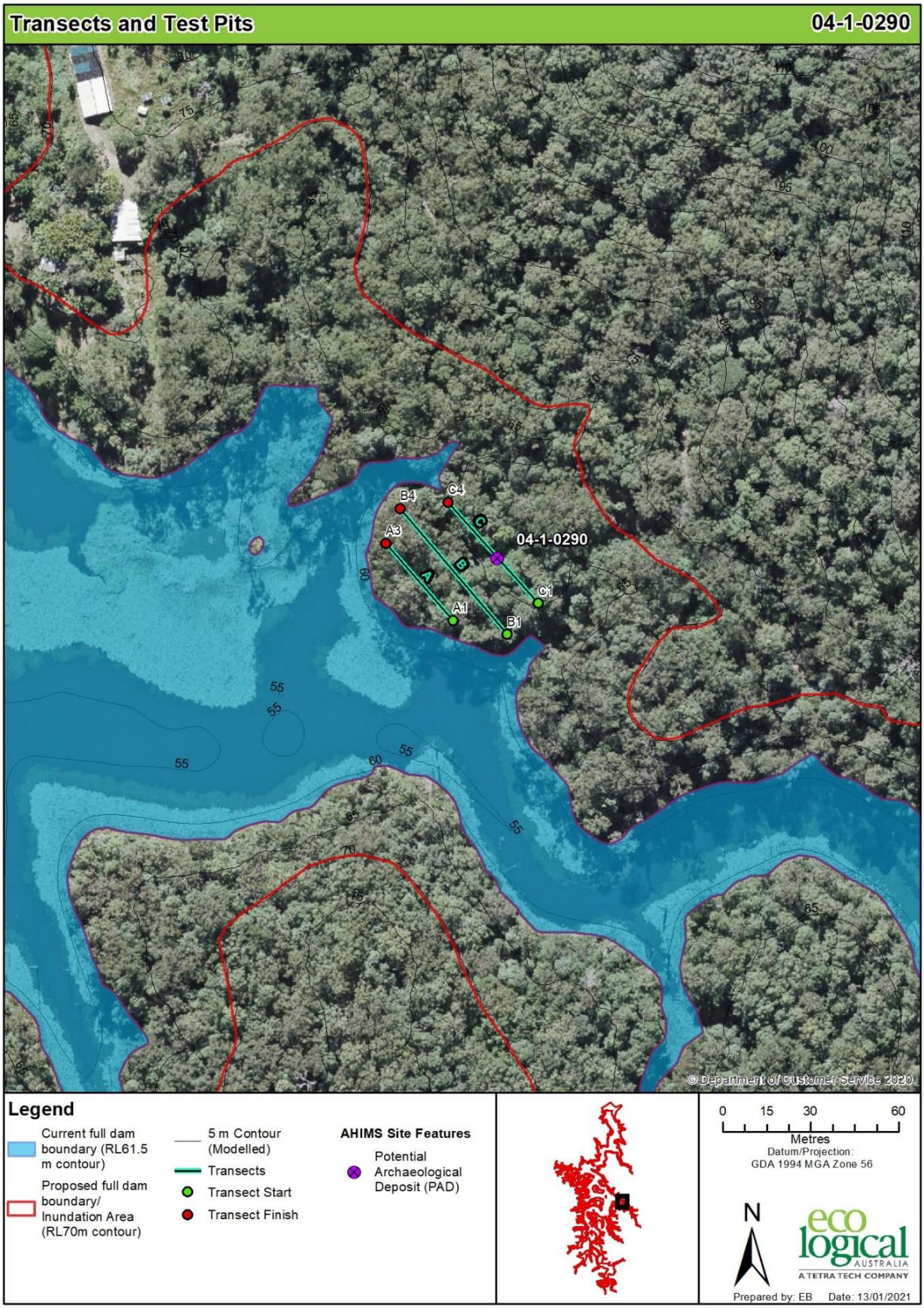


Figure 39: CHD PAD 7 location and transects

7.12 AHIMS 04-1-0237 (CHD A35)

CHD A35 consisted of a sloping landform that sloped from west to east on a peninsula landform located in the central portion of the existing dam along it western shore. Eleven artefacts were recovered from Transect A (13 test squares) which extended along the lower slope of the landform, two artefacts were recovered from Transect B (7 test squares) which investigated the mid-slope landform, Transect C (6 test squares) was placed parallel to Transect B and contained zero artefacts, and Transect D (4 test squares) was placed across the top of slope and contained two artefacts.

NOHC originally identified the site as PAD with artefact. The Aboriginal community should be afforded the opportunity to inspect and collect all surface Aboriginal objects prior to the proposed impacts. No further heritage assessment is warranted.

CHD A35 Quick Reference	
Easting	**Northing**
529276	6851927
# of Transects	**# of test squares**
Transects A – D	24
Artefacts	**Significance**
15 total artefacts mean density 0.62/50cm^2	Low

CHD A35 was originally recorded by NOHC as an area of potential archaeological deposit (PAD) with artefact. The current investigation recovered 15 artefacts from 24 test squares placed within the PAD. This site represents a commonly occurring site type in the region. Site integrity is low, and the site exhibited low archaeological potential. Further investigations of the area would not contribute to our understanding of Aboriginal landscape use in the area. Based on the intactness, representativeness, and research potential, the site is determined to have low archaeological significance.

Figure 40: Transect A test excavation square on lower slope/flats of CHS A35

Figure 41: Sieving for artefacts at CHD A35

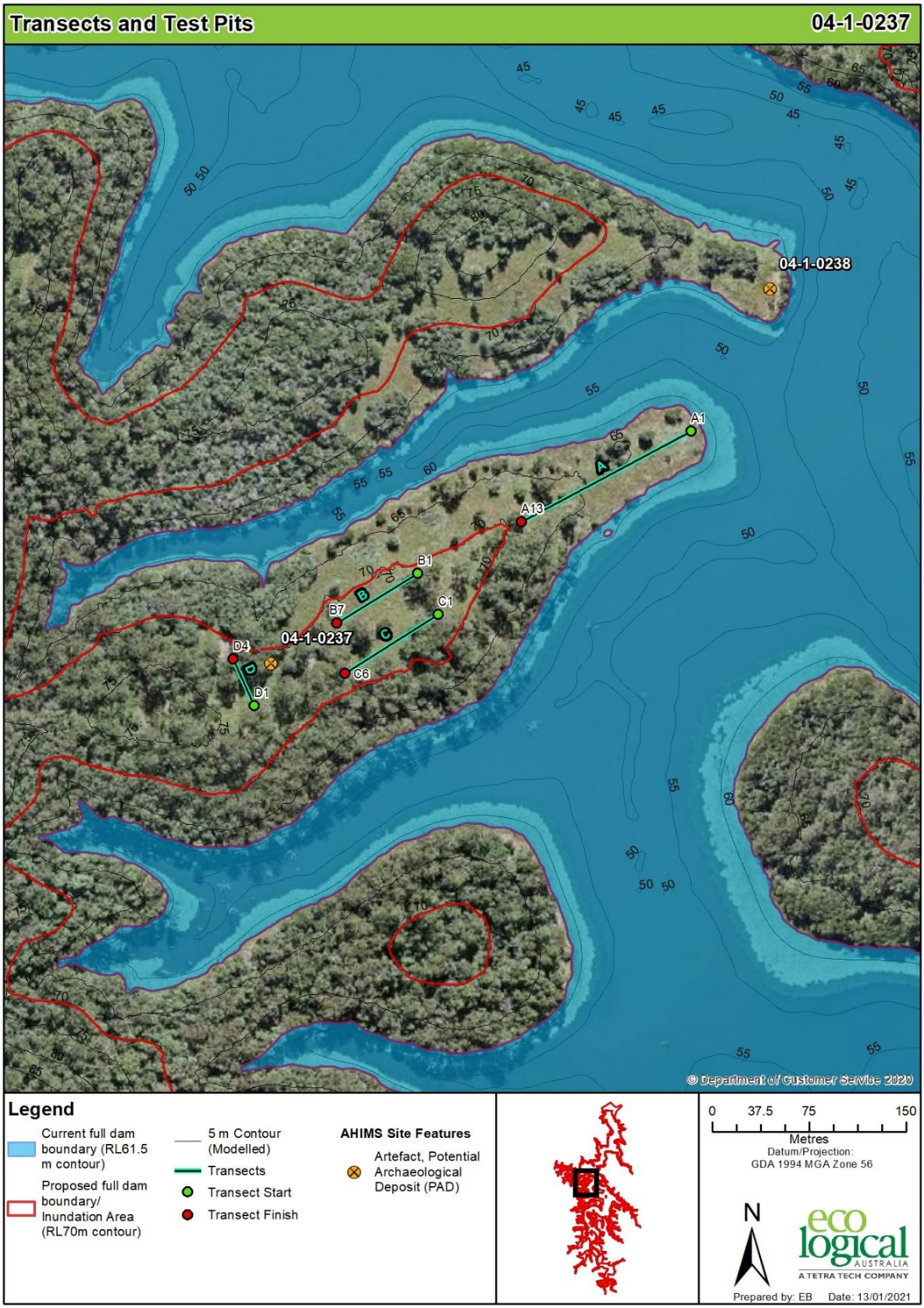


Figure 42: CHD A35 location and transects

7.13 AHIMS 04-1-0295 (CHD PAD 2)

CHD-PAD 2 was located on a lower slope landform immediately to the north of Doon Doon Creek. The site is located within the property recognised as 571 Doon Doon Road, Doon Doon NSW. A total of four parallel transects were placed across the site in a north-south direction. All transects consisted of five excavation squares each. A total of 97 Aboriginal objects were collected from those 20 excavation squares.

CHD PAD 2 Quick Reference	
Easting	**Northing**
529703	6848784
# of Transects	**# of test squares**
Transects A – D	20
Artefacts	**Significance**
97 total artefacts mean density 4.85/50cm^2	Moderate to High

CHD PAD 2 was originally identified by NOHC as an area of potential archaeological deposit. Additionally, it was identified by NOHC as an area potentially impacted by flood inundation. Subsequent excavations by ELA (2020) confirmed that the area contained a moderate to high density archaeological deposit. Further investigations of the area would contribute to our understanding of Aboriginal landscape use in the area. Based on the intactness, representativeness, and research potential, the site is determined to have moderate to high archaeological significance.

Further assessment is warranted in the form of archaeological salvage excavation post EIS approval. The Aboriginal community as part of that salvage should be given the opportunity to collect a sample of raw material, including ochre, from the existing creek bed.

Table 7: Artefact/Excavation Square CHD PAD 2

Artefacts / Transect Excavation Squares				
A1 – 4	A2 – 6	A3 – 5	A4 – 1	A5 - 1
B1 – 11	B2 – 5	B3 – 5	B4 – 2	B5 -3
C1 – 6	C2 – 15	C3 – 7	C4 – 1	C5 - 0
D1 – 2	D2 - 6	D3 - 12	D4 – 3	D5 - 2
Total artefacts recovered = 97				

Table 8: Artefactual material/reduction types

	Flakes	Flake Fragments	Angular Fragments*	Cores/Core Fragment
Chalcedony	4	3	4	3
Chert	7	3	2	3
Silcrete	33	8	4	2
FGS**	-	1	-	-
Quartz/quartzite	-	-	2	-
Tuff/IMT***	10	-	5	3

* Objects that exhibit no diagnostic features, ** Fine Grained Siliceous, *** Indurated Mudstone (IMT)

Figure 43: CHD PAD 2 looking north

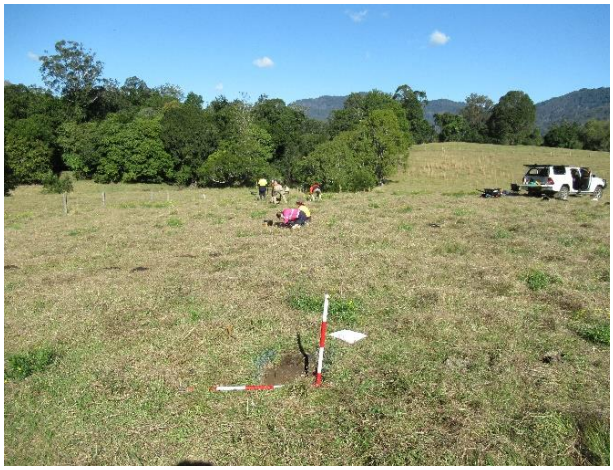


Figure 44: CHD PAD 2 looking south towards creek

Figure 45: Typical excavation unit from CHD PAD 2

Figure 46: Chert core recovered from excavation square D1

Figure 47: CHD PAD 2 showing location, transects and proposed salvage excavation area

7.14 AHIMS 04-1-0296 (CHD PAD 1)

CHD PAD 1 was located south of the existing dam on an alluvial terrace formed by the several tributaries of Doon Doon Creek that flow into the dam. A total of three transects were placed across the site in a north-south direction, consisting of 34 initial test squares (50cm^2) with one test square (B9) expanded to a 1 x 1 metre square in accordance with the excavation methodology.

CHD PAD 1 Quick Reference	
Easting	**Northing**
529208	6850100
# of Transects	**# of test squares**
Transects A – C	34
Artefacts	**Significance**
88 total artefacts mean density 2.58/50cm^2	Moderate to High

CHD PAD 1 was originally identified by NOHC as an area of potential archaeological deposit. Additionally, it is an area that was assessed by NOHC as being impacted by permanent inundation. Subsequent excavations by ELA (2020) confirmed that the area contained a moderate to high density archaeological deposit. Further investigations of the area would contribute to our understanding of Aboriginal landscape use in the area. Based on the intactness, representativeness, and research potential, the site is determined to have moderate to high archaeological significance.

Further assessment is warranted in the form of archaeological salvage excavation post EIS approval.

Table 9: Artefacts/excavation square CHD PAD 1

Artefacts/Transect excavation square						
A2 – 2	A4 – 3	A6 – 1	A7 - 3	B1 – 3	B2 – 3	B4 – 5
B6 – 6	B7 - 4	B8-4	B9 - 31*	B10 – 4	B11 – 1	B12 – 1
C2 – 1	C3 – 2	C4 – 2	C5 – 7	C6 - 3	C8 – 1	C12 - 3
Total artefacts recovered = 88						

* Total artefacts from 1 x 1 metre excavation square

Table 10: Artefactual material/reduction types

	Flakes	Flake Fragments	Angular Fragments	Cores/Core Fragment	Other
Chalcedony	11	3	7	3	-
Chert	5	2	-	-	-
Silcrete	33	3	7	3	-
FGS	1	-	-	-	1*
Tuff/IMT	1	-	2	2	-

* Hammerstone

Figure 48: CHD PAD 1 looking north

Figure 49: CHD PAD 1

Figure 50: Expanded excavation unit B9

Figure 51: Chert core recovered from excavation square B9

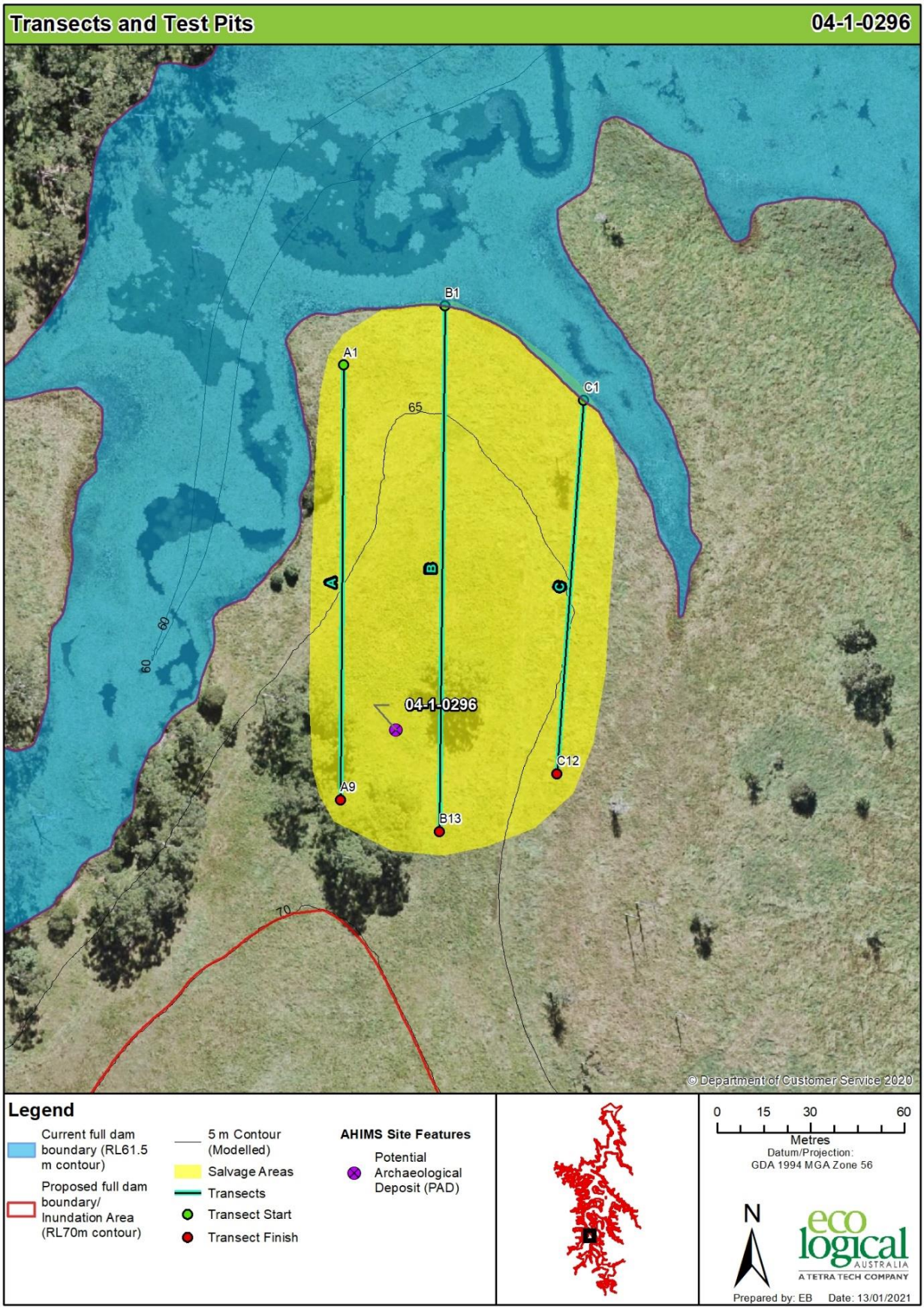


Figure 52: CHD PAD1 location. transects, and proposed salvage area

7.15 AHIMS 04-1-0264 (CHD A17)

CHD A17 consisted of four parallel transects located on a hill crest above Doon Doon Creek and one transect (Transect E) located on the lower slope/floodplain of Doon Doon Creek. Excavations of the site resulted in 32 test excavations squares (50cm^2) with one square (B1) expanded to a 1 x 1 metre excavation unit and another (C4) expanded into a 1m x 50cm excavation unit.

CHD A17 Quick Reference	
Easting	**Northing**
529675	684821
# of Transects	**# of test squares**
Transects A – E	32
Artefacts	**Significance**
210 total artefacts mean density 6.56/50cm^2	Moderate to High

CHD A17 was originally identified by NOHC as an area of potential archaeological deposit and artefact. Additionally, it is an area identified by NOHC as being impacted by a partial permanent and partial flood inundation. ELA relocated the hand axe (04-1-0264) originally identified by NOHC. Subsequent excavations by ELA (2020) confirmed that the area contained a moderate to high density archaeological deposit (210 artefacts). Further investigations of the area would contribute to our understanding of Aboriginal landscape use in the area. Based on the intactness, representativeness, and research potential, the site is determined to have moderate to high archaeological significance.

The vast majority of artefacts were recovered from the four transects on top of the hill, as such ELA has determined that further assessment of this identified area is warranted in the form of archaeological salvage excavation post EIS approval. As part of the salvage the Aboriginal community should be afforded the opportunity to further inspect the area and collect any identified surface artefacts, including the identified Aboriginal stone hand axe. Although its location on top of the hillcrest affords it some protection from direct inundation impacts, indirect impacts, such as erosion resulting from flood/waves, cannot be discounted.

Table 11: Artefacts/excavation square CHD A17

Artefacts / Transect Excavation Squares				
A1 – 3	A2 – 3	A3 – 7	A4 – 5	A5 - 8
A6 - 3	B1 – 27*	B2 – 17	B3 – 15	B4 - 15
B5 – 3	B6 - 5	C1 – 8	C2 – 12	C3 - 13
C4 – 15**	C5 - 6	C6 - 4	D1 – 5	D2 - 8
D3 - 6	D4 – 8	D6 – 6	D7 – 3	E3 – 3
E4 – 1	E5 – 1	**Total artefacts recovered = 210**		

* total from 1x 1 metre expansion, **total from 1 metre x 50cm expansion

Table 12: Artefactual material/reduction types

	Flakes	Flake Fragments	Angular Fragments	Cores/Core Fragment	Other
Chalcedony	23	11	21	13	-
Chert	15	8	4	2	-
Silcrete	56	14	2	4	-
FGS	1	-	1	1	-
Tuff/IMT	13	12	5	3	-
Moonstone	-	-	1	-	-

Figure 53: CHD A17 looking across hillcrest

Figure 54: Excavation unit B1 w/ non cultural burnt clay

Figure 55: Location Aboriginal stone hand axe 04-1-0264

Figure 56: Chalcedony flake tool

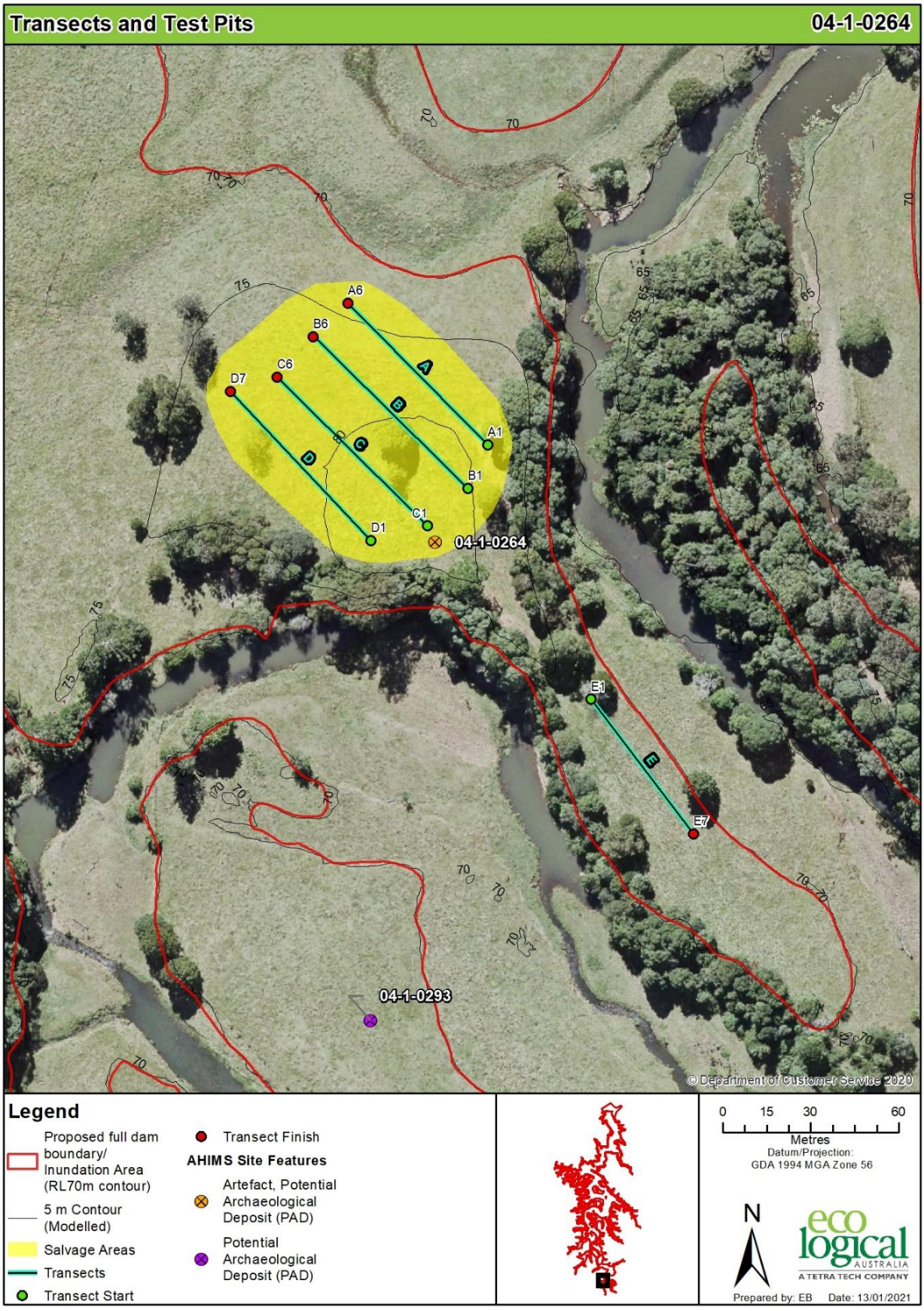


Figure 57: CHD A17 location, transects, and proposed salvage area

7.16 AHIMS 04-1-0238 (CHD A36)

CHD A36 was located on a narrow terrace landform on a peninsula located within the central portion of the existing dam along its western shore. The excavation consisted of four transects, one extending up the centre of the landform (Transect A) with the remaining three crossing Transect A on the perpendicular. Excavation square A1 was expanded into a 1 x 1 metre excavation unit.

CHD A36 Quick Reference	
Easting	**Northing**
529329	6852032
# of Transects	**# of test squares**
Transects A – D	17
Artefacts	**Significance**
40 total artefacts mean density 2.35/50cm^2	Moderate to High

CHD A36 was originally identified by NOHC as an area of potential archaeological deposit and artefact. Additionally, it was identified by NOHC as expected to be impacted by permanent inundation. ELA relocated several of the surface artefacts originally identified by NOHC. Subsequent excavations by ELA (2020) confirmed that the area contained a moderate to high density archaeological deposit within a very discrete area. Further investigations of the area would contribute to our understanding of Aboriginal landscape use in the area. Based on the intactness, representativeness, and research potential, the site is determined to have moderate to high archaeological significance.

ELA has determined that further assessment of this identified area is warranted in the form of archaeological salvage excavation post EIS approval. As part of the salvage, the Aboriginal community should be afforded the opportunity to further inspect the area and collect any identified surface artefacts.

Table 13: Artefacts/transect excavation squares

Artefacts / Transect Excavation Squares				
A1 – 16*	A2 – 1	A3 – 1	A4 – 2	A5 - 1
A6 - 1	A8 – 5	A9 – 1	B1 – 1	B2 - 1
B3 – 2	C1 - 4	C2– 2	C3 – 1	D2 - 1
Total artefacts recovered = 40				

* total from 1x 1metre expansion

Table 14: Artefactual material/reduction types

	Flakes	Flake Fragments	Angular Fragments	Cores/Core Fragment	Other
Chalcedony	6	1	1	4	-
Chert	2	1	-	-	-
Silcrete	7	2	6	1	-
FGS	_	2	1	1	-
Tuff/IMT	1	-	1	-	-
Quartzite	1	-	-	-	-

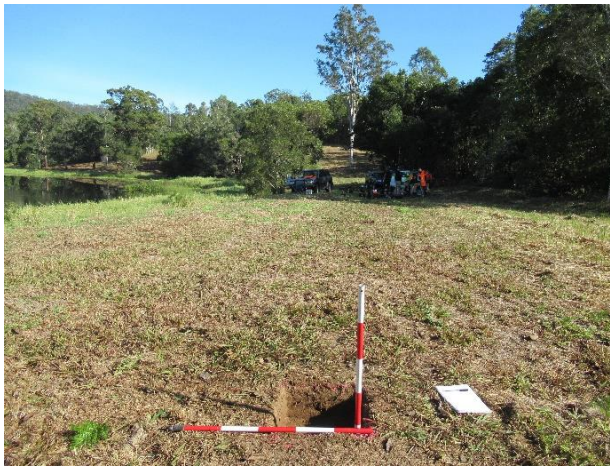


Figure 58: CHD A38 looking west across the site

Figure 59: Excavation unit A1 (foreground)

Figure 60: Unidentified FGS core recovered from C2

Figure 61: Close up of flake scars

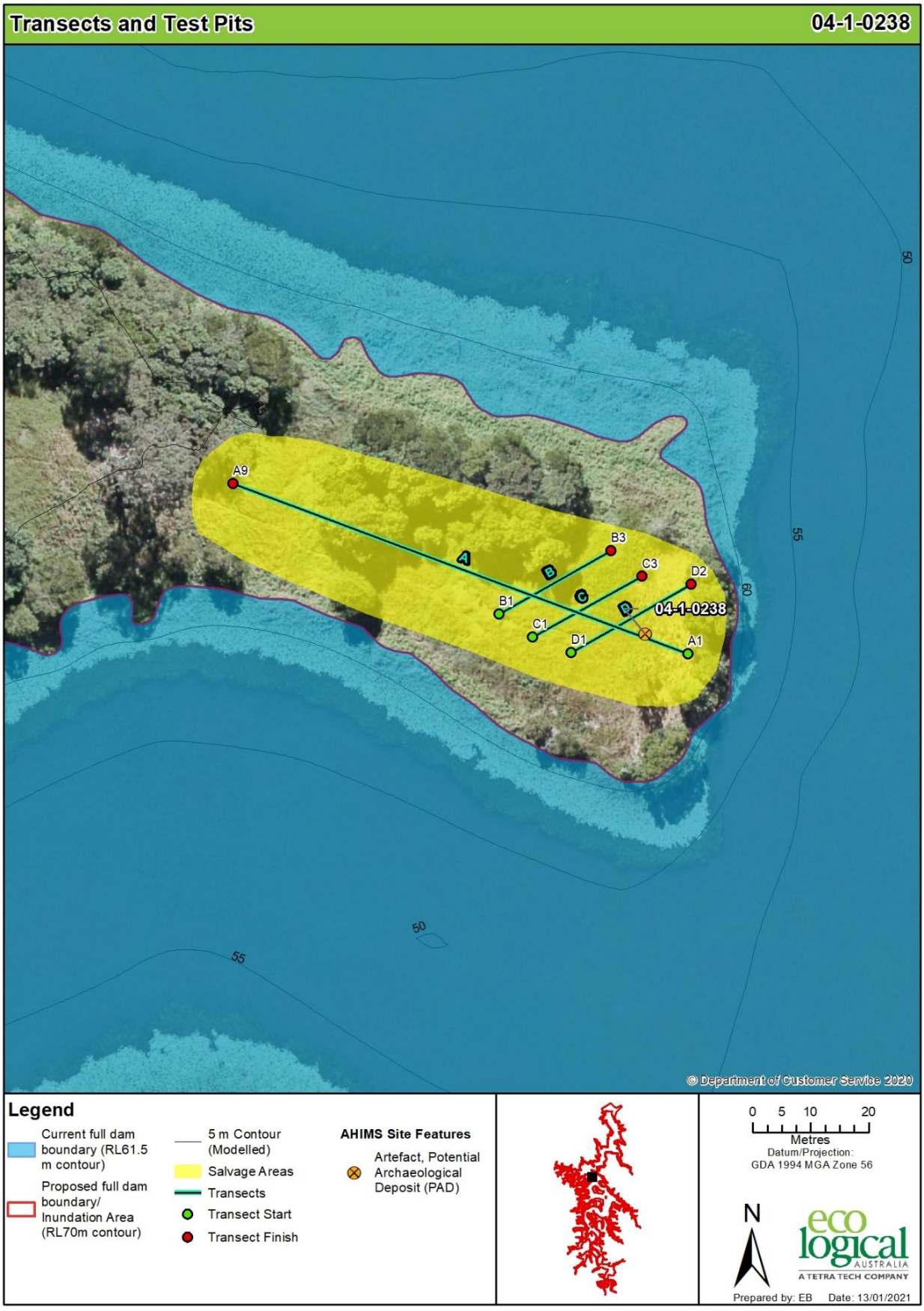


Figure 62: CHD A38 location, transects, and proposed salvage area

7.17 AHIMS 04-1-0249 (CHD A48)

CHD A48 is located on a broad wooded west to east sloping landform located in the southern portion of the existing dam west of the Crams Farm property. The excavation consisted of three parallel transects running up the slope from east to west.

CHD A48 Quick Reference	
Easting	**Northing**
528981	6850601
# of Transects	**# of test squares**
Transects A – C	37
Artefacts	**Significance**
76 total artefacts mean density 2.05/50cm^2	Moderate to High

CHD A48 was originally identified by NOHC as an area of potential archaeological deposit and artefact. The identified artefacts scatter was determined to be impacted by permanent inundation while the remaining PAD area was expected to be impacted by partial flood and permanent inundation. ELA relocated several of the surface artefacts originally identified by NOHC. Subsequent excavations by ELA (2020) confirmed that the area contained a moderate to high density archaeological deposit (76 artefacts). Further investigations of the area would contribute to our understanding of Aboriginal landscape use in the area. Based on the intactness, representativeness, and research potential, the site is determined to have moderate to high archaeological significance.

ELA has determined that further assessment of this identified area is warranted in the form of archaeological salvage excavation post EIS approval. As part of the salvage, the Aboriginal community should be afforded the opportunity to further inspect the area and collect any identified surface artefacts. Although its location affords it some protection from direct permanent and flood inundation impacts, the sloping nature of the landform makes it highly likely that indirect impacts, such as erosion resulting from flood/waves, may occur.

Table 15: Artefacts/transect excavation squares

Artefacts / Transect Excavation Squares				
A2 – 3	A3 – 1	A8 – 2	A11 – 1	A12 – 1
B1 – 4	B2 – 4	B3 – 1	B4 – 1	B5 – 4
B6 – 1	B10 – 1	B11 – 4	B12 – 1	C1 - 13
C2 – 6	C3 – 7	C4 – 1	C5 – 8	C6 – 3
C8 – 3	C10 – 3	C11 – 2	C13 - 1	
Total artefacts recovered = 76				

Table 16: Artefactual material/reduction type

	Flakes	Flake Fragments	Angular Fragments	Cores/Core Fragment	Other
Chalcedony	11	4	6	1	-
Chert	11	4	6	1	-
Silcrete	10	6	4	2	-
FGS	5	-	-	1	2*
MGS	-	-	-	-	1*
Quartz	_	-	1	-	-

* Possible ground stone axe fragments

Figure 63: CHD A48, looking upslope across the site

Figure 64: Excavation unit C1

Figure 65: Possible stone axe fragment

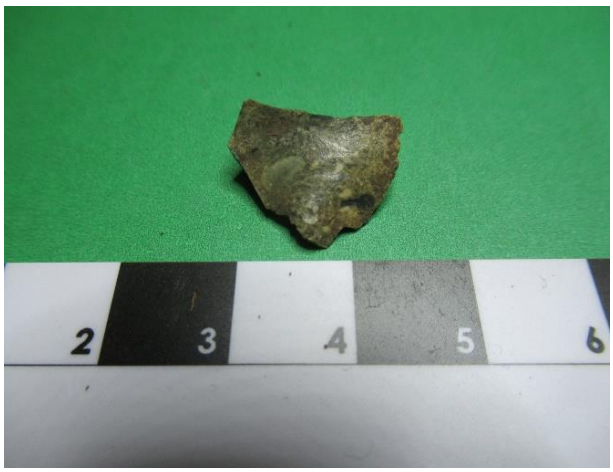


Figure 66: Unusual green chert flake fragment

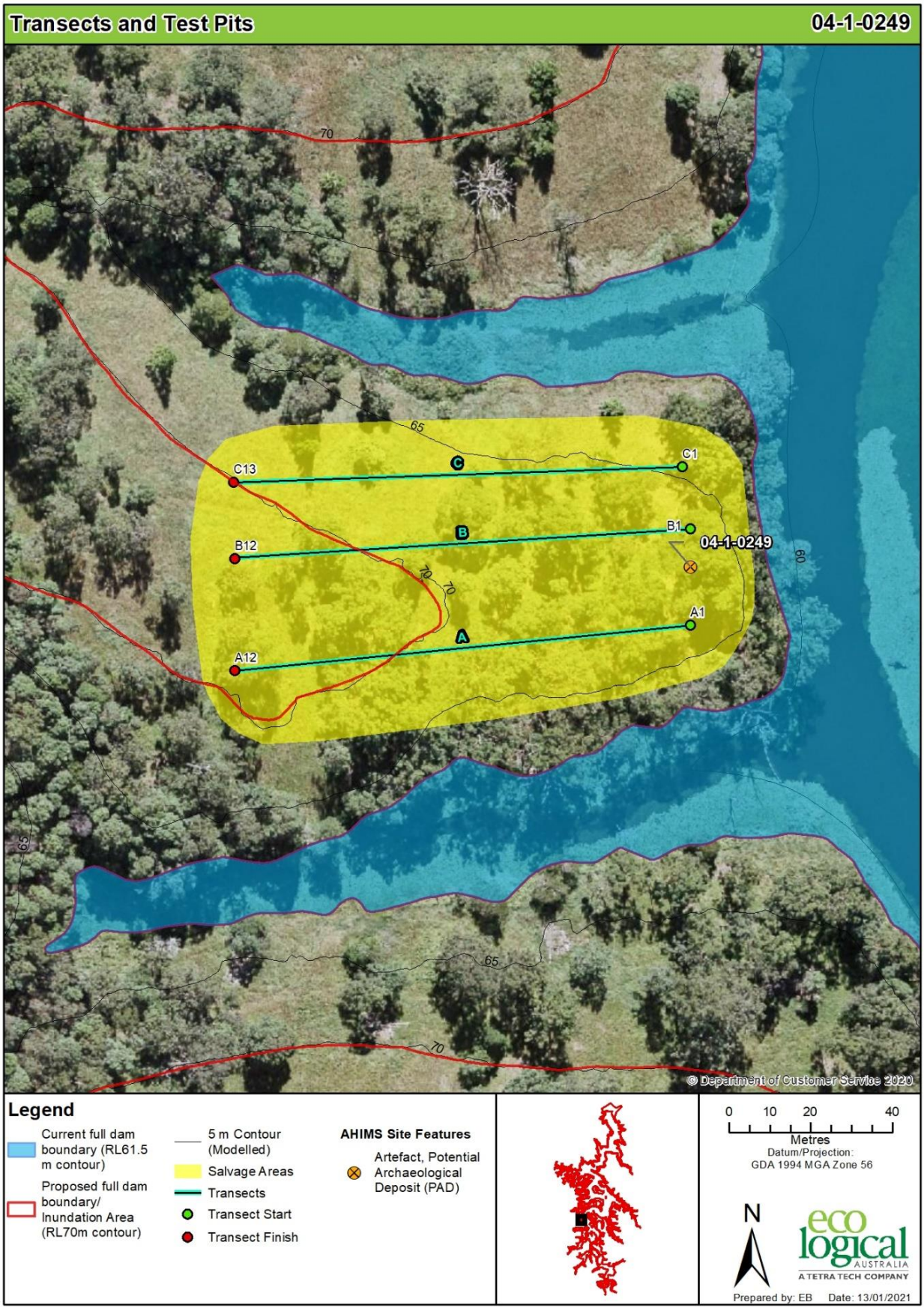


Figure 67: CHD A48 location, transects, and proposed salvage area

7.18 AHIMS 04-1-0288 (CHD PAD 9)

CHD PAD 9 is a large site area containing broad flat hill crests and slopes. The excavated PAD area was approximately 500 metres long and 200 metres wide at its widest point. The PAD was thoroughly tested using 14 separate transects of varying length.

CHD PAD 9 Quick Reference	
Easting	**Northing**
528985	6850890
# of Transects	**# of test squares**
Transects A – N	93
Artefacts	**Significance**
197 total artefacts mean density 2.12/50cm^2	Moderate to High

CHD PAD 9 was originally identified by NOHC as an area of potential archaeological deposit. Additionally, it was identified by NOHC as an area expected to be impacted by partial flood and partial permanent inundation. Subsequent excavations by ELA (2020) confirmed that the area contained a moderate to high density archaeological deposit. Previously unidentified surface artefacts were observed during the excavation. Further investigations of the area would contribute to our understanding of Aboriginal landscape use in the area. Based on the intactness, representativeness, and research potential, the site is determined to have moderate to high archaeological significance.

ELA has determined that further assessment of this identified area is warranted in the form of archaeological salvage excavation post EIS approval. As part of the salvage, the Aboriginal community should be afforded the opportunity to further inspect the area and collect any identified surface artefacts.

Due to the sheer number of test squares dug at this location, artefacts numbers will be broken down per transect as opposed to excavation square. For detailed information about artefact densities per excavation square, please refer to the lithic analysis attached as 0 as well as the test pit data included as Appendix C.

Table 17: Artefacts/transect

Artefacts / transect				
Transect (T) A – 47 (12 squares)	TB – 15 (11 squares)	TC – 63 (13 squares)	TD – 20 (10 squares)	TE – 8 (5 squares)
TF – 6 (5 squares)	TG – 4 (7 squares)	TH – 15 (5 squares)	TJ – 7 (4 squares)	TK – 5 (5 squares)
TL – 5 (6 squares)	TM – 2 (5 squares)	TN – 0 (5squares)		
Total artefacts recovered = 197				

*** There was no Transect I**

Test squares A5 & C5 were both expanded to 1 x 1 metre units, and both had the highest individual number of artefacts with A5 containing 20, and C5 containing 45. A5 also appeared to contain a possible hearth feature with a fair amount of charcoal observed in a circular pattern. A charcoal sample was taken and will be sent off for testing, approximate age of the deposit to be confirmed. Although the entire PAD area has been identified as a salvaged area, ELA recommends that proposed salvage be focused within the area of Transect A, B, & C. Although its location affords it some protection from direct

permanent and flood inundation impacts, the sloping nature of the ridge landform makes it highly likely that indirect impacts, such as erosion resulting from flood/waves, may occur.

Table 18: Artefactual material/reduction type

	Flakes	Flake Fragments	Angular Fragments	Cores/Core Fragment	Other
Chalcedony	44	10	29	7	-
Chert	13	3	4	-	-
Silcrete	19	4	8	2	-
Tuff/IMT	15	5	4	7	
Quartzite	5	-	-	-	-
FGS	9	1	2	4	-
MGS	-	-	-	1	-

Figure 68: PAD 9 area

Figure 69: Excavation unit A5, possible hearth feature

Figure 70: Chalcedony flake

Figure 71: Chalcedony core

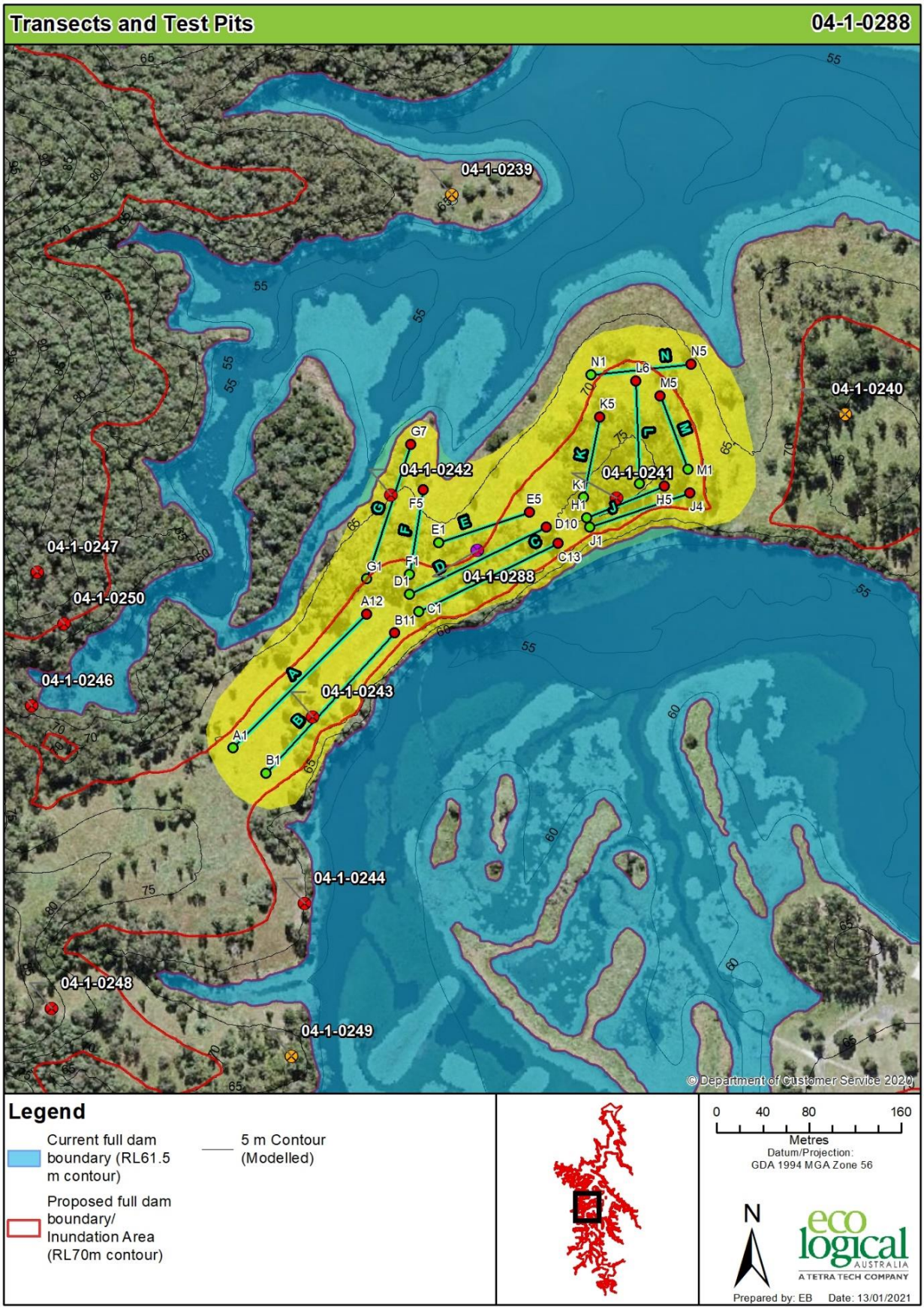


Figure 72: PAD 9 location, transects, and proposed salvage area

7.19 AHIMS 04-1-0281 (CHD-A55)

CHD-A55 is located on a low-lying island towards the southern portion of the existing dam. The entire island will be totally inundated by the proposed raising of the dam at FSL. The entire area investigated by the current excavations was approximately 350 metres long x 180 metres at the widest point of the island.

CHD A55 Quick Reference	
Easting	**Northing**
529679	6851583
# of Transects	**# of test squares**
Transects A – R	62
Artefacts	**Significance**
143 total artefacts mean density 2.3/50cm^2	Moderate to High

CHD A55 was originally identified by NOHC as an area of potential archaeological deposit and artefact scatter, containing three artefacts. NOHC also identified it as an area expected to be impacted by permanent inundation. ELA relocated several of the surface artefacts during the investigation. ELA identified 12 surface artefacts in total and determined that they were part of the scatter observed but unidentified by NOHC. Subsequent excavations by ELA (2020) confirmed that the area contained a moderate to high density archaeological deposit. Most importantly, the ELA investigations identified and recorded a large Aboriginal scarred tree on the island (AHIMS 04-1-0303). Further investigations of the area would contribute to our understanding of Aboriginal landscape use in the area. Based on the intactness, representativeness, and research potential, the site is determined to have moderate to high archaeological significance.

ELA has determined that further assessment of this identified area is warranted in the form of archaeological salvage excavation post EIS approval. As part of the salvage, the Aboriginal community should be afforded the opportunity to further inspect the area and collect all identified surface artefacts. In addition, consultation with the Aboriginal community is highly recommended to determine the proper remediation and preservation of the scarred tree.

Due to the sheer number of test squares dug at this location, artefacts numbers will be broken down per transect as opposed to excavation square. For detailed information about artefact densities per excavation square, please refer to the lithic analysis attached as 0 as well as the test pit data included as Appendix C.

Artefacts / transect				
Transect (T) A – 21 (4 squares)	TB – 29 (5 squares)	TC – 17 (5 squares)	TD – 4 (4 squares)	TE – 13 (3 squares)
TF – 8 (3 squares)	TG – 10 (4 squares)	TH – 9 (3 squares)	TJ – 3 (3 squares)	TK – 2 (3 squares)
TL – 4 (3 squares)	TM – 2 (4 squares)	TN – 6 (4 squares)	TO-0 (2 squares)	TP – 5 (4 squares)
TQ – 8 (4 squares)	TR – 3 (4 squares)	**Total artefacts recovered = 143**		

*** There was no Transect I**

The identified surface scatter of artefacts (n=12) were located between Transects P & Q on the northern end of each respective transect. The scatter is approximately 10 x 10 metres squares and is in an area

of moderate disturbance due to the uprooting of tree and mounding of soils. Source of the disturbance was unable to be determined, but machine disturbance is suspected.

	Flakes	Flake Fragments	Angular Fragments	Cores/Core Fragment	Other
Chalcedony	33	4	16	8	-
Chert	13	2	3	1	-
Silcrete	29	6	4	4	-
Tuff/IMT	6	4	1	1	
FGS	7	1	-	-	-

Figure 73: Excavation square CHD A55

Figure 74: Excavation square, wheelbarrow providing shade for recording

Figure 75: Chalcedony core

Figure 76: Unusual green chert flake

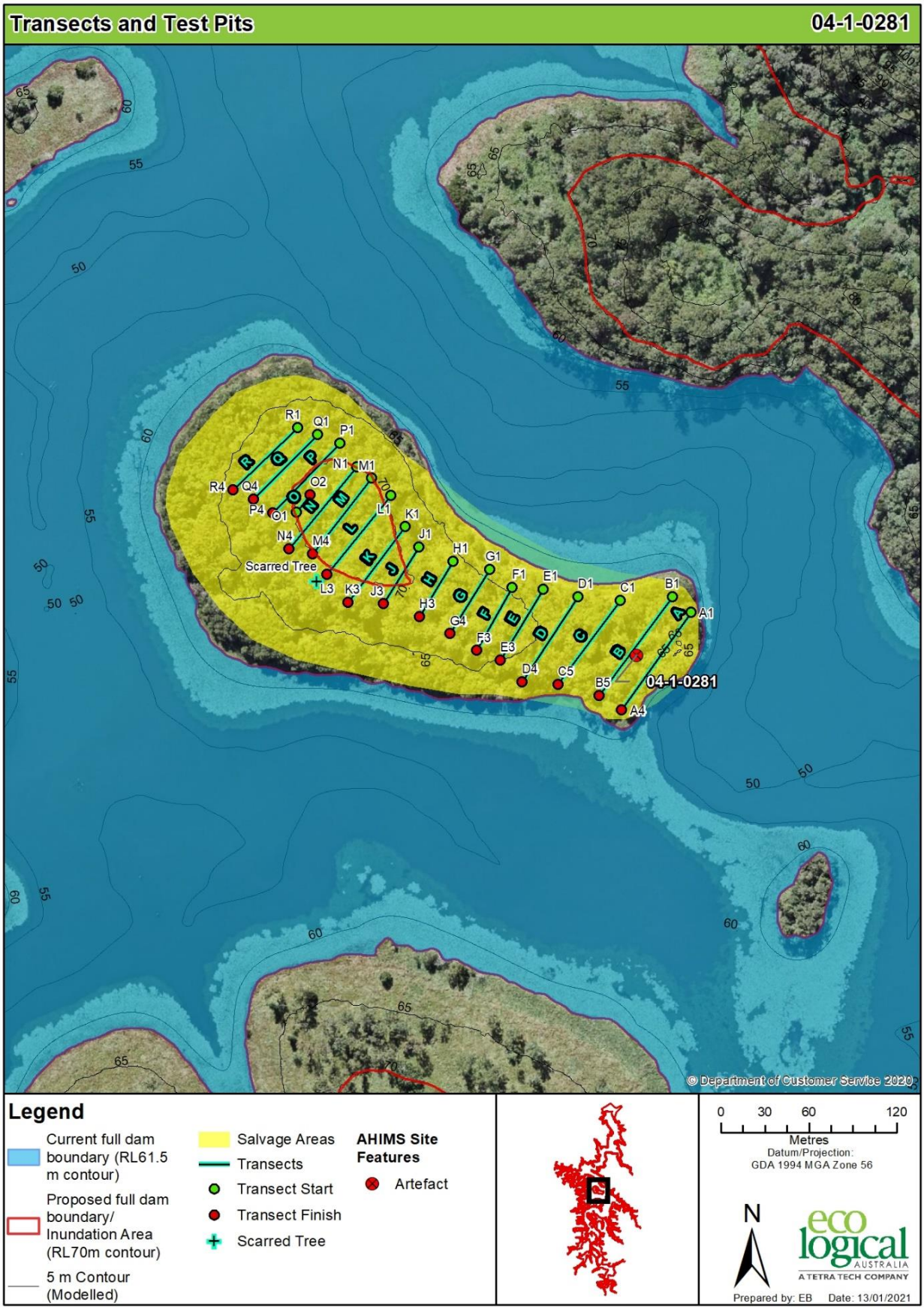


Figure 77: CHD A55 location, transects and proposed salvage area

8. Additional Sites Observed During ELA 2020 Investigation

8.1 CHD-AS1 (04-1-0301)

As mentioned in the preceding chapter Site CHD-AS1 (AHIMS # 04-1-0301) was identified during our 2020 investigations of the previously identified CHD PAD 4 (04-1-0294). The site consisted of one silcrete core, two silcrete flakes, one chalcedony core, and three chalcedony. The site was located on a well-used eroded vehicle track.

As part of EIS approval, the Aboriginal community should be afforded the opportunity to collect these Aboriginal objects to prevent further direct/indirect impacts.

Figure 78: CHD-AS1

Figure 79: CHD-AS1 location

8.2 CHD-1 (04-1-0302)

As mentioned in the preceding chapter Site CHD-1 (AHIMS # 04-1-0302) was identified during our 2020 investigations of the previously identified CHD A1 (04-1-0280). The site consisted of a single Aboriginal stone hand axe. The object was located in a sparsely wooded area toward the northern portion of the identified PAD.

As part of EIS approval, the Aboriginal community should be afforded the opportunity to collect this Aboriginal object to prevent further direct/indirect impacts.

Figure 80: CHD-1

Figure 81: CHD-1 location

8.3 CHD-ST2 (04-1-0303)

As mentioned in the preceding chapter Site CHD-ST2 (AHIMS # 04-1-0303) was identified during our 2020 investigations of the previously identified site CHD A55 (04-1-0281). The site consisted of an Aboriginal scarred tree. The scarred tree was located in the central portion of the identified PAD. The tree species couldn't be determined (unidentified eucalypt and estimated in the field as being approximately 300 years old). The scar itself is thought to be no older than 100 years old based on the level of regrowth observed around the scar. The scar is thought to have been the result of the gathering of tree bark for a shield or possible coolamon (Aboriginal carrying vessel) based on its size and shape. It was noted that the scar has been damaged by a branch termination/pull and lightning strike occurring after the scar was made.

Scarred trees are highly significant as they represent a tangible connection between the current Aboriginal community and their past ancestors. As part of the EIS approval, the Aboriginal community should be further consulted with to determine proper remediation and conservation of the site.

Figure 82: CHD ST2

Figure 83: Measuring the regrowth

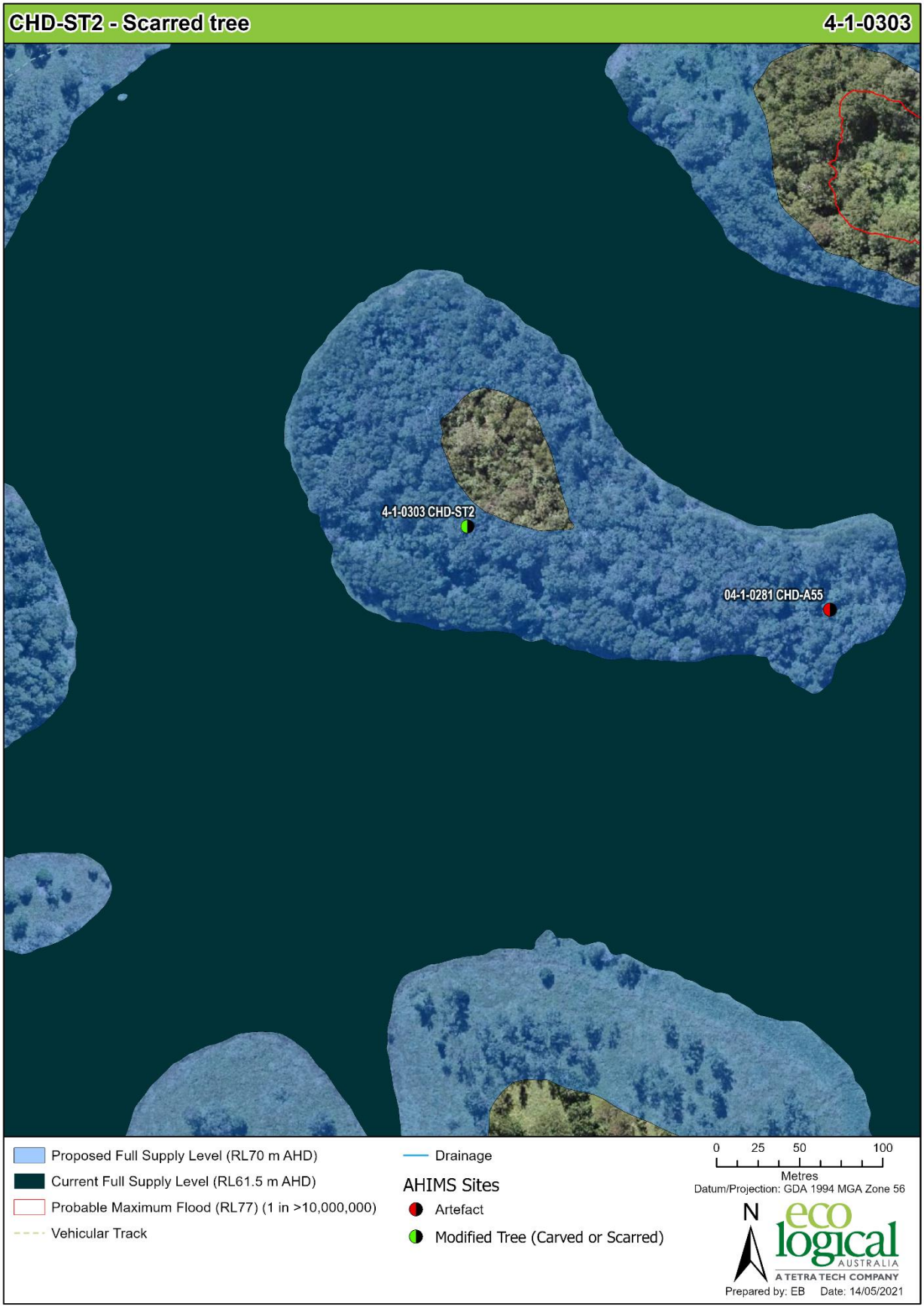


Figure 84: Location of 04-1-0303 (CHD ST2 – Scarred tree)

8.4 CHD-ST1 (04-1-0285)

CHD-ST1 was originally identified by NOHC in 2018 (AHIMS # 04-1-0285). The area where the tree is located is in the vicinity of a proposed haul road that will be used to facilitate the raising of the dam wall. The re-location of the tree occurred on Thursday 30 July 2020 and was attended by ELA Archaeologists, project RAPs, and David Hannah (Tweed Shire Council Senior Environmental Scientist).

The scarred tree was relocated and the original assessment from NOHC was confirmed. The scarred tree was observed to be considerably larger and older than the surrounding vegetation. The tree was also observed to tower over the canopies of neighbouring tree. It was previously identified on site by NOHC and confirmed by ELA and Tweed Shire Council that the species of tree was a Pink Bloodwood.

Scarred trees are highly significant to the Aboriginal community as they represent a tangible connection between the present-day Aboriginal community and their past ancestors. As part of EIS approval, the location of this tree should be noted and included on any and all construction management plans for any works proposed within the area. A tree protection zone assessment will be undertaken prior to construction to ensure impacts from construction and vibration are avoided.

Figure 85: CHD ST1

Figure 86: CHD ST1

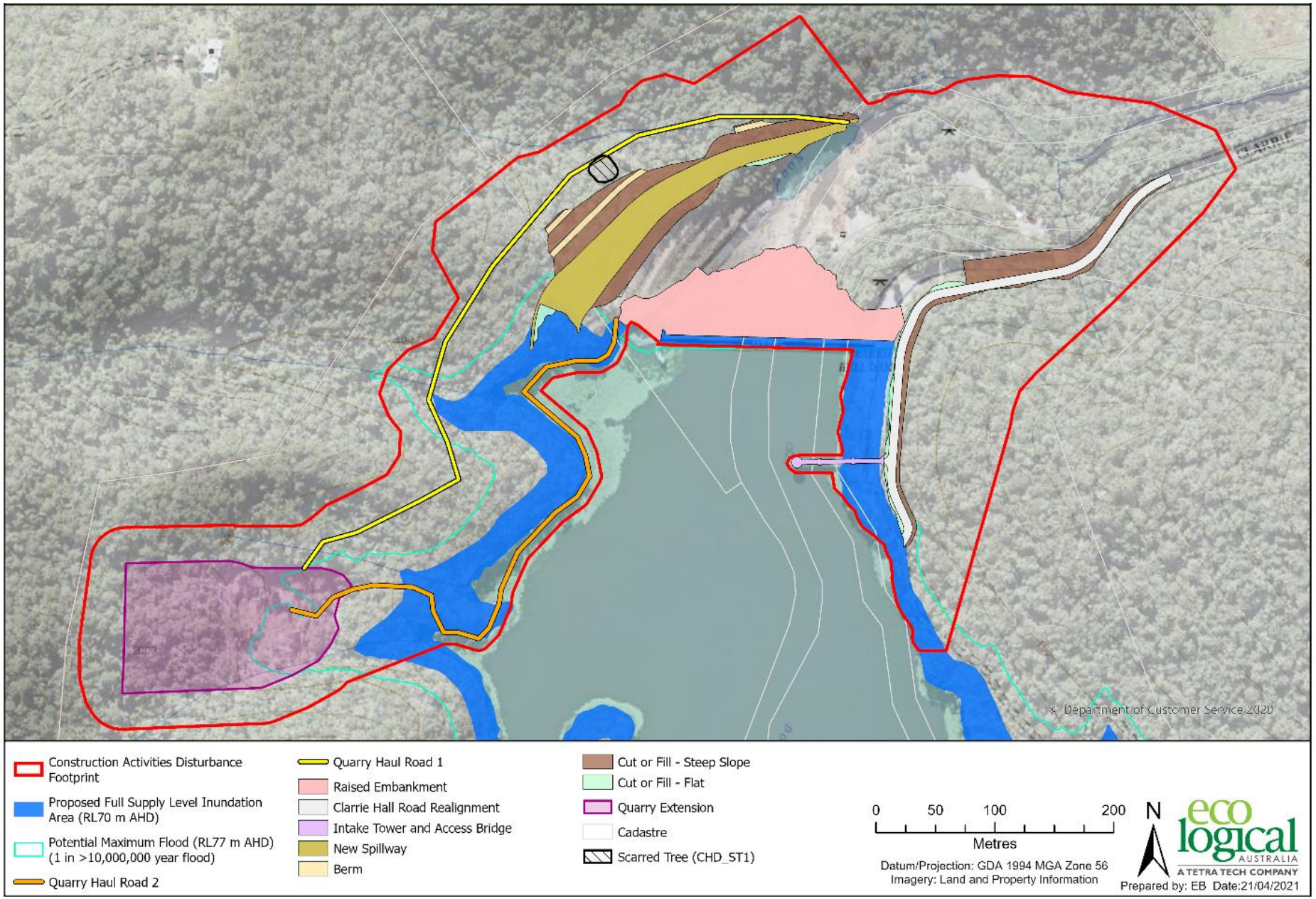


Figure 87: Scarred tree location based on GPS coordinates and canopy size

9. Discussion

9.1 What is the distribution of evidence of past Aboriginal peoples use and occupation within the study area?

Following on from the recommendations made during the NOHC Assessment (2018), the majority of the sites excavated by ELA that contained the highest density of Aboriginal objects were found to be located within close proximity to the remnant course of Doon Doon Creek including sites 04-1-0288, 0281, 0249 and 0264 (Figure 84 below). This is not surprising as past investigations have shown that Aboriginal occupation sites are directly linked to the availability of freshwater.

A regional model for artefact distribution in relation to stream order on the Cumberland Plain has been developed by White and McDonald (2010). Although the model was developed predominantly using data from the Sydney Basin, past ELA excavations have shown that this model can apply to NSW as a whole. White and McDonald (2010) analysed artefact distribution on the north of the Cumberland Plain by examining the results from a number of archaeological investigations in the Rouse Hill area. This research found that artefact distribution varies significantly with stream order, with higher densities of artefacts located next to larger streams. First order streams had a mean density of 0.7 artefacts/m^2, while second order streams had a mean density of 6.5 artefacts/m^2. For fourth order streams this increased to 13.9 artefacts/m^2. There was not enough data on third order streams to make a comparison (White & McDonald 2010:32).

White and McDonald (2010) also tested the significance of distance from water, as this was thought to be a primary determinant of where people camped and hence where artefact density would be represented in the archaeological record. For first order streams, distance from water was not statistically important, with artefact density around first order streams found similar to levels of background scatter. For second order streams, artefact density is highest within 50 m of water and declines with increasing distance from water.

For fourth order streams, artefact density was found to be highest 51-100 m from the stream and lower closer to the stream (<50 m) and declining densities greater than 100 m from the stream (White & McDonald 2010:33).

The White/McDonald regional model for artefact distribution is directly relevant to this assessment as the archaeological excavations showed that the majority of the sites that contained high numbers of artefacts and as a result are subject to salvage are located in proximity to the original channel of Doon Doon Creek.

Only 3% of all the artefacts recovered (n=37 of 1116) displayed any evidence of a cortical surface (original 'outside' of the stone). This indicates that the locations where artefacts were recovered were areas of secondary reduction of the stone with primary reduction occurring at the lithic source, most likely to aid in transport. One of those potential sources was identified by NOHC as a chalcedony source (04-1-0284).

9.2 What types of raw materials, artefact types and tool types are present within the assemblage?

The artefacts collected across all sites showed a varied selection of raw materials, with chalcedony and silcrete being the two predominant lithic material types.

Table 19: Raw material types

Chalcedony	Silcrete	Chert	Tuff/IMT	Other	Total
362	361	141	159	93	**1,116**

Complete stone flakes were the predominant reduction type identified across all excavations, followed by objects identified as angular fragments, which are objects identified as artefacts but contain no morphological characteristics used to identify the reduction method.

Table 20: Lithic reduction type

Flakes	Flake Fragments	Angular Fragments	Core/Core Fragment
582	172	218	129

The formalised tools collected during excavation consisted of two Aboriginal hand axes and one hand axe fragment, six ground stone fragments (two are probable hand axe fragments), two flakes that exhibit retouch flaking, one possible anvil, and three bipolar flakes.

A retouched flake is a flake that shows indication that the cutting edge of the flake has been refined or resharpened. An anvil is just how it sounds. It is a platform used in the production of flakes. The flakes have indication of crushing on one end. These flakes are referred to as bipolar flakes and almost always consist of quartz.

9.3 What types of stone tool technology are present within the sites?

Based on previous excavations within the area and comparable assemblages, it is likely that that the assemblage is representative of the small tool tradition of the Bondaian phase of the Eastern Regional Sequence. The Bondaian phase generally dates to the mid Holocene, typically the last 5,000 years.

9.4 Have the excavations revealed other site types such as hearths, heating ovens, knapping floors or other foci or activities areas?

04-1-0288 (CHD PAD 9) contained a probable hearth. A large amount of charcoal was identified within the 1 x 1 metre unit, and vaguely circular shape to the deposit was observed. Hearths were used not only as a way of cooking food or heating water; they were also used to heat stones in order to aid in the flintknapping process. The deposit within the unit (A-5) contained one of the highest density of artefacts (n=20) recovered from the particular site.

No areas of knapping floors or other foci/activity areas were identified; however, the predominance of material found along the remnant course of Doon Doon Creek is a clear indicator that the creek was an area of focussed activity due to the availability of freshwater and resources.

9.5 Do the results of the test excavation demonstrate any evidence of disturbance within the study area?

As discussed in the previous chapter, several the sites in the southern extent of the study area show significant disturbance from past flood events. Observations from within the creek channel show 3-4 metres of flood (alluvial) deposit accumulating over what would have been the natural ground surface.

On the whole, the level of disturbances observed across the remainder of the excavated sites was low and was largely limited to areas of observed erosion.

9.6 What can the artefact assemblage (or lack thereof) indicate about previous land use by Aboriginal people?

As discussed above, based on the assemblage and the densities found across the excavation areas, it is likely that past Aboriginal people chose to camp near Doon Doon Creek in order to exploit its resources. Some of the areas of PAD previously identified, look attractive now based on their proximity to the dam, realistically these areas were far away from the original channel of Doon Doon Creek, and their lack of archaeological deposit demonstrates that.

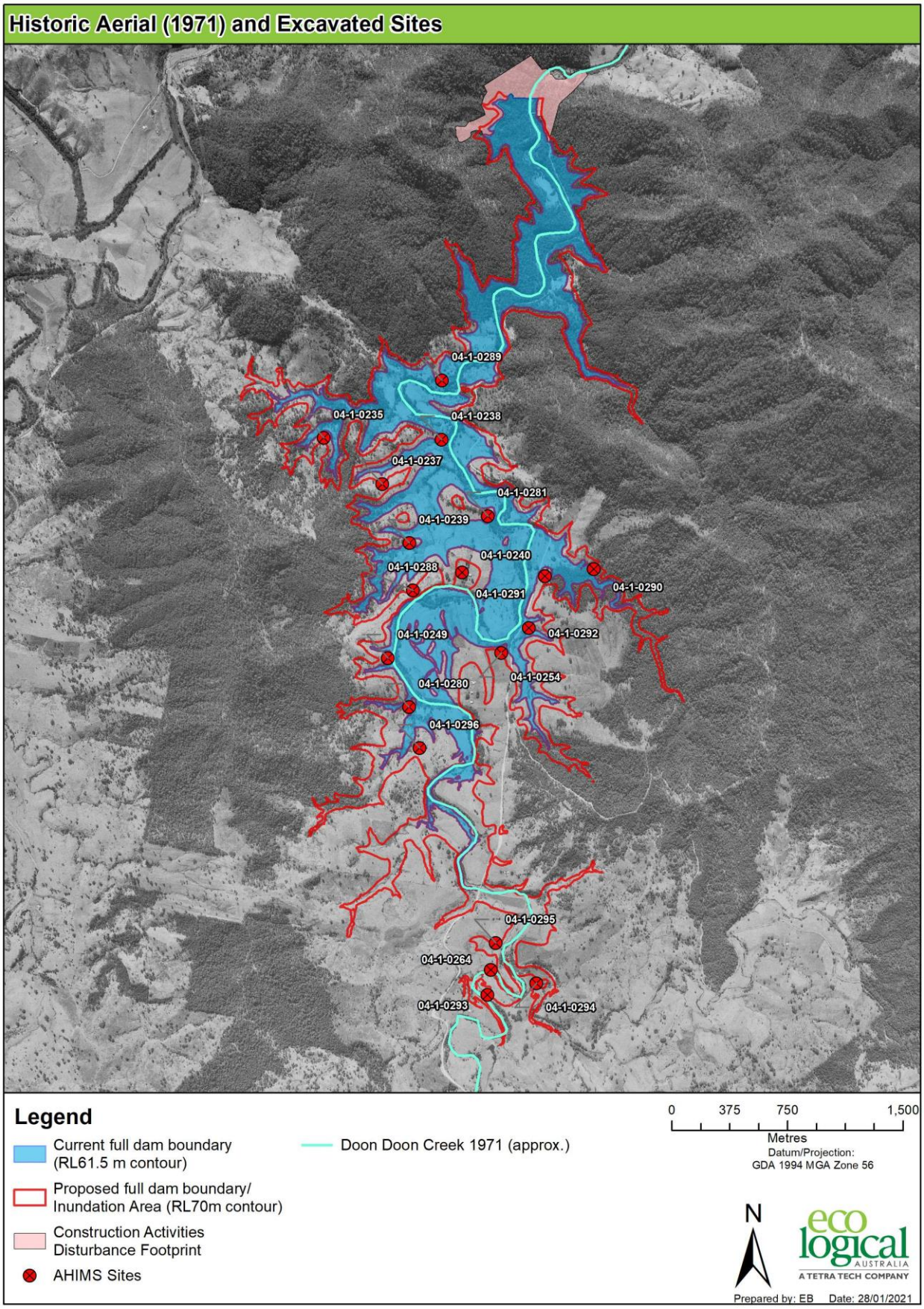


Figure 88: 1971 aerial showing the original course of Doon Doon Creek in relation to the excavated sites

10. Aboriginal Cultural Heritage Management Strategy

The management strategies for Aboriginal cultural heritage identified within the project area are outlined below and build upon the recommendations of the ACHA completed by NOHC (2018)

10.1 Aboriginal Heritage Management Recommendations

The following management recommendations are proposed:

- Prior to construction activities, the mitigation strategies for each site will be finalised in consultation with the RAPs. Archaeological salvage may be required for the sites identified in Table 20 provided below and commencing a program of archaeological salvage will need to be undertaken in further consultation with the RAPs in order to collect a representative sample of the site prior to future impacts
- Post-archaeological salvage, the responsible consultancy should prepare an archaeological salvage report detailing their findings to be presented to Tweed Shire Council and the RAPs
- Where possible, cultural heritage sites should be avoided during construction
- Prior to construction activities commencing surface artefact collection should be conducted at all Aboriginal sites of low local scientific significance or as agreed with the RAPS as identified in Tables 21-22 below
- If scarred tree site CHD-ST1 can be avoided by construction related impacts it should be fenced, and its location clearly marked on development maps and plans
- If impacts to scarred tree site CHD-ST1 are unavoidable, then further assessment and consultation with the Aboriginal community will be necessary to decide on appropriate mitigation measures
- Samples of non-artefactual stone material should be taken from site CHD-G1 (chalcedony source) in order to allow stone sourcing studies in the future.
- No further harm should come to any of the sites listed in this report, until approval from the Minister for Planning is achieved.

10.2 Aboriginal Cultural Heritage Awareness Training

This ACHAMP should be made available to all Tweed Shire Council employees directly associated with the Proposal and to all sub-contractors contracted to undertake the works. However, this ACHAMP is aimed at Tweed Shire Council personnel that may manage the proposed ground disturbing works. All information included in the previous ACHA prepared by NOHC (2018) and this ACHAMP was developed in consultation with the registered Aboriginal parties and includes:

- Information related to the types of Aboriginal cultural heritage sites that are known within the Clarrie Hall Dam project area
- Information related to the types of sites that are in the vicinity but not expected to be impacted by the Proposal
- Information related to the Aboriginal cultural heritage value and archaeological significance of the known sites/artefacts/PADs
- The provision of maps detailing the location of known sites/PADs where ground disturbance is not allowed without further archaeological assessment and further consultation with the RAPs

- Information related to the relevant legislation for the protection of Aboriginal sites.

In addition, if changes to the proposed design occur that may impact previously identified sites not identified as being Impacted by the current proposed works, ELA and the Aboriginal community should be notified at the earliest opportunity

10.3 No Further Assessment Warranted

No further heritage assessment is warranted for those sites determined to contain low archaeological potential (Section 7 above & Tables 20-22 below).

10.4 Further Aboriginal Community Consultation

All proposed mitigation measures included in this ACHAMP will be finalised prior to construction and should be completed in further consultation with the Aboriginal community, especially those associated to proposed impacts to scarred tree or rock shelter sites.

10.5 Protocol for Uninspected Finds

All Aboriginal objects are protected by the NPW Act whether they are registered or not. If any suspected objects are identified during dam wall works or in preparation of the raising of the dam, outside of those previously identified, all works should cease, and Heritage NSW and the Aboriginal community should be notified at first instance.

In the extremely unlikely event that human remains are found, works should immediately cease, and the NSW Police should be contacted. If the remains are suspected to be Aboriginal, Heritage NSW may also be contacted at this time to assist in determining appropriate management.

10.6 Noise and Vibration

Noise and vibration activities are not anticipated to impact on places of Aboriginal cultural heritage significance.

10.7 Aboriginal Site Impact Recording Forms

It is a requirement of Heritage NSW that an Aboriginal Site Impact Recording Form (ASIRF) is submitted after authorised impact to an archaeological site to ensure that information about the status of AHIMS sites is maintained. ASIRFs should be submitted by the consulting archaeologist to Heritage NSW within a reasonable timeframe for any sites subject to impact as a result of activities undertaken associated with the proposed project.

10.8 Care and Control of Artefactual Material

Artefacts collected by ELA in association with the test excavation program will be temporarily held at the ELA office located on Level 7, 19 Bolton Street, Newcastle NSW. They will be stored within a locked cabinet.

Long term management of the Aboriginal objects and any future Aboriginal objects recovered from salvage excavation will be determined in consultation with the Aboriginal community and in accordance

with Requirement 26 'Stone artefact deposition and storage' in the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010).

10.9 Recommended Mitigation Measures

Table 21: Aboriginal sites subject to excavation ELA 2020

AHIMS ID	Site Name	Easting/ Northing	Site Feature(s)	Archaeological Scientific Significance (post excavation)	Potential Impact (Refer to Section 1.5)	Mitigation
04-1-0235	CHD-A30	528546/ 6851931	PAD** w/ artefact	Low	FSL/ PMF	Surface collection only
04-1-0237	CHD-A35	529276/ 6851927	PAD w/ artefact	Low	FSL/ PMF	Surface collection only
04-1-0238	CHD-A36	529329/ 6852032	PAD w/ artefact	Moderate/ High	FSL	Salvage excavation / surface collection
04-1-0239	CHD-A37	529185/ 6851364	PAD w/ artefact	Low	FSL	No further assessment warranted
04-1-0240	CHD-A38	529329/ 6852032	PAD w/ artefact	Low	FSL/ PMF	Surface collection only
04-1-0249	CHD-A48	528981/ 6850601	PAD w/ artefact	Moderate/ High	FSL/ PMF	Salvage excavation / surface collection
04-1-0281	CHD-A55	529679/ 6851583	PAD w/ artefact	Moderate/ High	FSL	Salvage excavation / surface collection
04-1-0289	CHD-PAD8	529329/ 6852412	PAD	Low	FSL	No further assessment warranted
04-1-0288	CHD-PAD9	528985/ 6850890	PAD	Moderate/ High	FSL/ PMF	Salvage excavation / surface collection
04-1-0296	CHD-PAD1	529208/ 6850100	PAD	Moderate/ High	FSL	Salvage excavation
04-1-0295	CHD-PAD2	529073/ 6848784	PAD	Moderate/ High	PMF	Salvage excavation
04-1-0293	CHD-PAD3	5296635 / 6848425	PAD	Low	PMF	Surface collection only
04-4-0294	CHD-PAD4	529983/ 6848487	PAD	Low	PMF	Surface collection only
04-1-0292	CHD-PAD5	529897/ 6850818	PAD	Low	FSL	No further assessment warranted
04-1-0291	CHD-PAD6	529989/ 6851186	PAD	Low	FSL	No further assessment warranted
04-1-0290	CHD-PAD7	530308/ 6851196	PAD	Low	FSL	No further assessment warranted
04-1-0280	CHD-A1	529145/ 6850356	PAD w/ artefact	Low	FSL	Surface collection only

AHIMS ID	Site Name	Easting/ Northing	Site Feature(s)	Archaeological Scientific Significance (post excavation)	Potential Impact (Refer to Section 1.5)	Mitigation
04-1-0254	CHD-A27	529737/ 6850665	PAD w/ artefact	Low	FSL	Surface collection only
04-1-0264	CHD-A17	529675/ 6848621	PAD w/ artefact	Moderate/ High	FSL/ PMF	Salvage excavation
* PAD (Potential Archaeological Deposit)						

Table 22: Additional sites registered ELA 2020

AHIMS ID	Site Name	Easting/ Northing	Site Feature	Archaeological Scientific Significance	Impact Type (Refer to Section 1.5)	Mitigation
40-1-0303	CHD_ST2	529419/ 6851590	Scarred Tree	High	FSL	No mitigation measures proposed.
04-1-0301	CHD-AS1	529842/ 6848369	Artefact scatter	Moderate/ High	PMF	Surface collection
04-1-0302	CHD-1	528954/ 6851377	Artefact	Moderate/ High	PMF	Surface collection

Table 23: Identified impacted sites by NOHC 2018

AHIMS ID	Site Name	Easting/ Northing	Site Feature	Archaeological Scientific Significance	Impact Type (Refer to Section 1.5)	Mitigation
04-1-0279	CHD-A2	528864/ 6850079	Isolated artefact	Low	PMF	Surface collection
04-1-0277	CHD-A4	528959/ 6849895	Artefact scatter	Low	FSL	Surface collection
04-1-0274	CHD-A7	529003/ 6849231	Isolated artefact	Low	FSL	Surface collection
04-1-0273	CHD-A8	529026/ 6849156	Artefact scatter	Low	FSL/ PMF	Surface collection
04-1-0272	CHD-A9	529324/ 6848931	Isolated artefact	Low	PMF	Surface collection
04-1-0271	CHD-A10	529778/ 6849122	Isolated artefact	Low	PMF	Surface collection
04-1-0270	CHD-A11	529994/ 6849137	Isolated artefact	Low	PMF	Surface collection
04-1-0269	CHD-A12	529741/ 6849545	Isolated artefact	Low	PMF	Surface collection
04-1-2068	CHD-A13	529683/ 6849555	Isolated artefact	Low	PMF	Surface collection
04-1-0267	CHD-A14	529314/ 6848218	Isolated artefact	Low	PMF	Surface collection

AHIMS ID	Site Name	Easting/ Northing	Site Feature	Archaeological Scientific Significance	Impact Type (Refer to Section 1.5)	Mitigation
04-1-0266	CHD-A15	529055/ 6848121	Isolated artefact	Low	PMF	Surface collection
04-1-0263	CHD-A18	529487/ 6848386	Isolated artefact	Low	PMF	Surface collection
04-1-0261	CHD-A20	529742/ 6848117	sandstone pitting/ holes (cultural significance)	Low	PMF	No mitigation measures proposed.
04-1-0260	CHD-A21	529712/ 6848071	Isolated artefact	Low	PMF	Surface collection
04-1-0259	CHD-A22	529744/ 6848075	Artefact scatter	Low	PMF	Surface collection
04-1-0257	CHD-A24	530402/ 6848008	Isolated artefact	Low	PMF	Surface collection
04-1-0253	CHD-A28	529965/ 6849999	Isolated artefact	Low	PMF	Surface collection
04-1-0252	CHD-A29	530208/ 6849906	Isolated artefact	Low	PMF	Surface collection
04-1-0232	CHD-A31	528569/ 6852189	Artefact scatter	Low	FSL	Surface collection
04-1-0234	CHD-A33	528468/ 6851873	Isolated artefact	Low	PMF	Surface collection
04-1-0244	CHD-A42	528999/ 6850748	Isolated artefact	Low	FSL	Surface collection
04-1-0246	CHD-A44	528762/ 6850920	Isolated artefact	Low	FSL	Surface collection
04-1-0250	CHD-A45	528790/ 6850991	Isolated artefact	Low	FSL	Surface collection
04-1-0231	CHD-A51	529048/ 6850447	Isolated artefact	Low	FSL	Surface collection
04-1-0230	CHD-A52	528887/ 6850483	Isolated artefact	Low	PMF	Surface collection
04-1-0251	CHD-A53	528876/ 6850364	Isolated artefact	Low	PMF	Surface collection
04-1-0284	CHD-G1	529116/ 6849526	Chalcedony source	Low	FSL	Collect reference samples for possibility of future stone sourcing studies
04-1-0286	CHD RS1	530514/ 6850095	Rock Shelter	High	FSL	Further investigation prior to construction
04-1-0014	DD-6	Restricted*	Rock shelter	High	FSL	Further investigation prior to construction

AHIMS ID	Site Name	Easting/ Northing	Site Feature	Archaeological Scientific Significance	Impact Type (Refer to Section 1.5)	Mitigation
04-1-0011	BMP-050031	Restricted*	Isolated find	low	FSL	Surface collection
04-1-0010	Midginbill DD2	Restricted*	Isolated find	Low	PMF	Surface collection
04-1-0009	Midginbill DD1	Restricted*	Isolated find	Low	PMF	Surface collection
04-1-0090	CHD BMP 05-0036	Restricted*	Rock shelter	Moderate	FSL	Further investigation prior to construction
04-1-0130	Clarrie Hall Dam 2	Restricted*	Isolated find	Low	PMF	Surface collection
04-1-0194	Byrrill Ridge 4 Tweed ACH Artefacts	528978/ 6850447	Isolated find	Low	PMF	Surface collection
04-1-0285	CHD-ST1	529760/ 6854393	Scarred tree	High	Potential Direct	Avoid - Tree protection zone assessment to be undertaken prior to construction

* Restriction applied. The RAPs were provided detail on the locations and features of these Restricted sites to discuss mitigation measures. Please contact ahims@environment.nsw.gov.au for further site information

11. References

Andrevsky, W. (1988). *Lithics: Macroscopic Approaches to Analysis.* Cambridge University Press, New York.

Bray, J. (1901). *Tribal Districts and Customs Science of Man* Vol 4 No 1.

Cotterell, B. & Kamminga, J. (1987). The Formation of Flakes. *American Antiquity 52*(4).

DECCW. (2010). *Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales*.

DECCW. (2010b). *Aboriginal cultural heritage consultation requirements for proponents 2010*. Hurstville, NSW.

Fox & Slabb. (2016). First People. In DeGood, M. *The Fragile Edge: A Natural History of the Tweed Coast*. Boganger NSW.

Hiscock, P. (1993). Bondaian technology in the Hunter Valley, New South Wales. *Archaeology in Oceania* 28:65-76.

Holdaway, S. and Stern, N. (2004). *A Record in Stone: The Study of Australia's Flaked Stone Artefacts*. Museum Victoria, Melbourne VIC.

Kamminga, J. (1982). *Over the edge: functional analysis of Australian stone tools*. University of Queensland.

Longhurst, R. I. (1980). The Gold Coast: Its First Inhabitants. In *John Oxley Journal* Vol 1 No 2 Feb.

Navin Officer Heritage Consultants Pty Ltd. (2018). *Proposed Raising of Clarrie Hall Dam, Murwillumbah NSW: Archaeological Assessment and Aboriginal Cultural Assessment*. Report prepared for Tweed Shire Council.

Office of Environment and Heritage. (2011a). *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*.

Piper, A. (1979). *An archaeological survey of Aboriginal sites within the proposed Doon Creek dam (re-location) area of inundation*.

Tindale, N. (1974). *Aboriginal Tribes of Australia: Their Terrain, Environmental Controls, Distribution, Limits, and Proper Names*. Berkeley University of California Press.

Tweed Shire Council. (2017). *Draft Aboriginal Cultural Heritage Management Plan*.

Uniake, J. (1825). Narrative of Mr. Oxleys Expedition to Port Curtis and Moreton Bay' in *Geographical Memoirs of N.S.W*. Baron Field (ed), London.

White, E., & McDonald, J. (2010). Lithic artefact distribution in the Rouse Hill Development Area, Cumberland Plain, New South Wales. *Australian Archaeology, 70*, 29-38

Appendix B : Test Square Data

Transect (first and last pits)	Easting	Northing	Spacing between pits
04-1-0293	0	0	0
04-1-0264			
A-1	529675	6848621	
A-6	529624	6848624	10m
B-1	529668	6848624	
B-6	529622	6848613	10m
C-1	529670	6848597	
C-6	529620	6848601	10m
D-1	529678	6848583	
D-7	529617	6848591	10m
E-1	529708	6848527	
E-7	529732	6848477	10m
04-1-0294			
A-1	529983	6848487	
A-6	529935	6848503	10m
B-1	530011	6848509	
B-3	529992	6848513	10m
C-1	529916	6848546	
C-4	529938	6848523	10m
CHS-AS1 (AHIMS#04-1-0301)	529842	6848369	
04-1-0295			
A-1	529703	6848784	
A-5	529708	6848745	10m
B-1	529684	6848784	
B-5	529686	6848745	10m
C-1	529674	6848780	
C-5	529673	6848742	10m
D-1	529680	6848784	
D-5	529696	6848749	10m
04-1-0296			
A-1	529208	6850100	
A-9	529174	6850038	10m
B-1	529225	6850090	
B-13	529168	6849974	10m
C-1	529228	6850082	
C-12	529206	6849974	10m
04-1-0254			
A-1	529737	6850665	
A-9	529733	6850581	10m
B-1	529708	6850668	
B-12	529741	6850579	10m
C-1	529692	6850660	
C-13	529693	6850659	10m

© ECO LOGICAL AUSTRALIA PTY LTD

D-1	529666	6850647	
D-13	529761	6850570	10m
E-1	529650	6850676	
E-7	529679	6850589	10m
04-1-0235			
A-1	528546	6851931	
A-7	528566	6851979	10m
B-1	528558	6851993	
B-8	528560	6852000	10m
C-1	528561	6851945	
C-3	528574	6851964	15m
D-1	528568	6852018	
D-4	528536	6852002	15m
E-1	528639	6852103	
E-5	528574	6852021	15m
04-1-0238			
A-1	529329	6852032	
A-9	529255	6852064	10m
B-1	529307	6852039	
B-3	529325	6852046	5m
C-1	529322	6852037	
C-3	529335	6852043	5m
D-1	529331	6852031	
D-2	529342	6852037	5m
04-1-0249			
A-1	528981	6850601	
A-12	528874	6850589	10m
B-1	528986	6850611	
B-12	528876	6850603	10m
C-1	528976	6850630	
C-13	528861	6850619	10m
04-1-0292			
A-1	529897	6850818	
A-6	529948	6850817	10m
B-1	529886	6050013	
B-7	529948	6850814	10m
C-1	529972	6850814	
C-3	529981	6850800	10m
04-1-0291			
A-1	529989	6851186	
A-3	530018	6851181	10m
B-1	529990	6851174	
B-3	530027	6851174	10m
C-1	529989	6851156	
C-6	530042	6851165	10m
D-1	529979	6851149	
D-5	530022	6851135	10m

© ECO LOGICAL AUSTRALIA PTY LTD

E-1	529974	6851135	
E-7	530022	6851123	10m
04-1-0288			
A-1	528985	6850890	
A-12	528972	6850903	10m
B-1	528973	6850902	
B-11	529045	6850970	10m
C-1	529091	6850986	
C-13	529202	6851016	10m
D-1	529095	6850995	
D-10	529182	6851062	10m
E-1	529090	6851034	
E-5	??	??	
F-1	529070	6851048	
F-5	529083	6851100	10m
G-1	529028	6851037	
G-7	529084	6851113	10m
H-1	529244	6851083	
H-5	529304	6851094	10m
J-1	529239	6851082	
j-4	529281	6851105	10m
K-1	529248	6851118	
K-5	529238	6851179	10m
L-1	529262	6851126	
L-6	529295	6851187	10m
M-1	529297	6851128	
M-5	529308	6851189	10m
N-1	529248	6851207	
N-5	529344	6851192	10m
04-1-0280			
A1	529145	6850356	
A9	529071	6850226	10m
B1	529157	6850341	
B6	529114	6850253	10m
C1	529110	6850286	
C5	529057	6850168	10m
D1	529055	6850172	
D4	529014	6850213	10m
E1	529074	6850300	
E5	529038	6850253	15m
F1	529047	6850227	
F3	529033	6850236	10m
G1	529026	6850222	
H1	528962	6850178	
H3	528963	6850199	10m
CHD-1 (AHIMS# tbc)	528954	6850193	
04-1-0240			

A1	529015	6850200	
A6	529463	6851104	20m
B1	529453	6851115	
B3	529511	6851125	20m
C1	529494	6851091	
C4	529548	6851125	20m
D1	529506	6851197	
D4	529472	6851233	
04-1-0290			
A1	530308	6851196	
A3	530288	6851199	15m
B1	530332	6851245	
B4	530319	6851231	15m
C1	530328	6851212	
C4	530332	6851178	15m
04-1-0281			
A1	529679	6851583	
A4	529629	6851507	15m
B1	529664	6851583	
B5	529605	6851513	15m
C1	529644	6851319	
C5	529637	6851574	15m
D1	529614	6851528	
D4	529608	6851584	15m
E1	529615	6851529	
E3	529599	6851535	15m
F1	529546	6851582	
F3	529578	6851572	15m
G1	529554	6851539	
G4	529568	6851583	15m
H1	529540	6851555	
H3	529552	6851581	15m
J1	529511	6851571	
J3	529526	6851602	15m
K1	529471	6851594	
K3	529523	6851599	15m
L1	529449	6851604	
L3	529473	6851627	15m
M1	529439	6851601	
M4	529468	6851628	15m
Scarred Tree	529427	6851593	
N1	529462	6851654	
N4	529463	6851651	15m
O1	529425	6851635	
O2	529437	6851553	15m
P1	529404	6851635	
P4	529441	6851665	15m

Q1	529385	6851652	
Q4	529431	6851675	15m
R1	529385	6851655	
R4	529425	6851689	15m
04-1-0289			
A1	529329	6852412	
A3	529352	6852422	10m
B1	529322	6852412	
B3	529343	6852431	10m
C1	529318	6852424	
C3	529347	685438	
04-1-0239			
A1	529185	6851364	
A17	528927	6851381	15m
B1	529175	6851349	
B6	529102	6851356	
C1	529192	6851380	
C9	529062	6851385	
D1	529050	6851367	
D11	528908	6851368	
Grinding Groove	528985	6851377	
04-1-0237			
A1	529276	6851927	
A13	529087	6851840	15m
B1	529073	6851840	
B7	529002	6851789	15m
C1	529080	6881788	
C6	529024	6851754	15m
D1	528925	6851721	
D4	528905	6851771	15m

© ECO LOGICAL AUSTRALIA PTY LTD

Appendix C : Lithic Catalogue

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0249	1	A2	Spit 1	0-10	Silcrete	flake		0%	1.74	25-29	23	16	5		
04-1-0249	2	A2	Spit 1	0-10	Silcrete	medial fragment		0%	0.71	15-19					
04-1-0249	3	A2	Spit 3	20-30	FGS		groundstone	>70%	10.64	25-29					probably groundstone axe fragment
04-1-0249	4	A3	Spit 1	0-10	FGS		groundstone	>70%	9.33	30-34					probably groundstone axe fragment
04-1-0249	5	A8	Spit 1	0-10	Chalcedony	angular fragment		0%	0.61	10-14					
04-1-0249	6	A8	Spit 2	10-20	Silcrete	angular fragment		0%	0.19	10-14					
04-1-0249	7	A11	Spit 1	0-10	Silcrete	core		0%	91.50	65-69					
04-1-0249	8	A12	Spit 1	0-10	Silcrete	proximal fragment		0%	0.81	10-14					
04-1-0249	9	B1	Spit 1	0-10	Chalcedony	distal fragment		0%	0.18	5-9					
04-1-0249	10	B1	Spit 2	10-20	Silcrete	medial fragment		0%	0.37	10-14					
04-1-0249	11	B1	Spit 3	20-30	Chalcedony	flake		0%	7.08	30-34	30	21	10		
04-1-0249	12	B1	Spit 3	20-30	Chalcedony	angular fragment		0%	0.94	10-14					
04-1-0249	13	B2	Spit 1	0-10	Silcrete	angular fragment		0%	0.63	10-14					
04-1-0249	14	B2	Spit 2	10-20	Chalcedony	flake		0%	8.19	30-34	33	18	13		
04-1-0249	15	B2	Spit 3	20-30	Chalcedony	flake		0%	3.81	25-29	28	18	8		
04-1-0249	16	B2	Spit 3	20-30	Chalcedony	flake		0%	0.28	10-14	8	12	2		
04-1-0249	17	B3	Spit 1	0-10	Chalcedony	flake		0%	2.38	20-24	23	11	6		
04-1-0249	18	B4	Spit 1	0-10	Chalcedony	angular fragment		0%	0.51	5-9					
04-1-0249	19	B5	Spit 1	0-10	Chert	distal fragment		0%	1.77	15-19					
04-1-0249	20	B5	Spit 1	0-10	Silcrete	angular fragment		0%	0.46	5-9					
04-1-0249	21	B5	Spit 2	10-20	Chalcedony	flake		0%	3.28	20-24	23	18	9		
04-1-0249	22	B5	Spit 3	20-30	Chalcedony	proximal fragment		0%	0.86	10-14					
04-1-0249	23	B6	Spit 1	0-10	Chert	flake		0%	0.51	10-14	10	14	3		
04-1-0249	24	B10	Spit 1	0-10	Chalcedony	flake		0%	4.17	20-24	22	22	7		
04-1-0249	25	B11	Spit 1	0-10	Chalcedony	flake		0%	0.20	10-14	13	7	3		
04-1-0249	26	B11	Spit 1	0-10	Silcrete	flake		0%	1.58	15-19	19	12	8		
04-1-0249	27	B11	Spit 1	0-10	FGS		hammerstone fragment	31-69%	23.65	35-39					
04-1-0249	28	B11	Spit 2	10-20	Chert	flake		31-69%	6.09	25-29	28	19	9		
04-1-0249	29	B12	Spit 1	0-10	Chert	proximal fragment		0%	0.51	15-19				yes	green chert
04-1-0249	30	C1	Spit 1	0-10	Chert	flake		0%	2.08	20-24	19	22	5		
04-1-0249	31	C1	Spit 1	0-10	FGS	flake		0%	1.01	15-19	19	13	6		
04-1-0249	32	C1	Spit 1	0-10	Chalcedony	proximal fragment		0%	0.68	10-14					
04-1-0249	33	C1	Spit 2	10-20	Chalcedony	flake		0%	1.84	15-19	18	19	4		
04-1-0249	34	C1	Spit 2	10-20	Chalcedony	angular fragment		0%	30.01	35-39					split chalcedony cobble
04-1-0249	35	C1	Spit 2	10-20	Chalcedony	angular fragment		0%	0.54	10-14					
04-1-0249	36	C1	Spit 2	10-20	Chalcedony	angular fragment		0%	0.87	15-19					split pebble

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0249	37	C1	Spit 2	10-20	Chert	proximal fragment		0%	0.54	10-14					
04-1-0249	38	C1	Spit 2	10-20	Silcrete	proximal fragment		0%	0.45	10-14					
04-1-0249	39	C1	Spit 2	10-20	Silcrete	medial fragment		0%	1.52	15-19					
04-1-0249	40	C1	Spit 3	20-30	Silcrete	flake		0%	6.27	40-44	41	20	7		
04-1-0249	41	C1	Spit 3	20-30	Chalcedony	core		0%	76.28	55-59					
04-1-0249	42	C1	Spit 4	30-40	Silcrete	flake		0%	1.06	15-19	18	13	4		
04-1-0249	43	C2	Spit 1	0-10	Silcrete	flake		0%	0.11	5-9	7	5	3		
04-1-0249	44	C2	Spit 1	0-10	Chert	flake		0%	0.64	10-14	12	14	3		
04-1-0249	45	C2	Spit 1	0-10	Silcrete	flake		0%	0.16	20-24	21	11	9		
04-1-0249	46	C2	Spit 1	0-10	Chert	angular fragment		0%	0.82	15-19					
04-1-0249	47	C2	Spit 1	0-10	Chert	angular fragment		0%	0.12	5-9					
04-1-0249	48	C2	Spit 2	10-20	FGS	flake		0%	24.38	50-54	51	27	13		
04-1-0249	49	C3	Spit 2	10-20	Silcrete	flake		0%	1.88	20-24	21	18	4		
04-1-0249	50	C3	Spit 2	10-20	Silcrete	flake		0%	1.78	20-24	23	16	4		
04-1-0249	51	C3	Spit 2	10-20	Silcrete	core	fragment	0%	4.84	25-29					
04-1-0249	52	C3	Spit 2	10-20	Silcrete	angular fragment		0%	3.11	15-19					
04-1-0249	53	C3	Spit 2	10-20	Silcrete	flake		0%	0.36	10-14	10	12	2		
04-1-0249	54	C3	Spit 2	10-20	Silcrete	proximal fragment		0%	1.28	10-14					
04-1-0249	55	C3	Spit 2	10-20	FGS	flake		0%	0.29	10-14	14	7	3		
04-1-0249	56	C4	Spit 3	20-30	Quartz	angular fragment		0%	6.81	20-24					
04-1-0249	57	C5	Spit 1	0-10	Chert	flake		0%	0.34	5-9	5	7	3		
04-1-0249	58	C5	Spit 2	10-20	Chert	flake		0%	0.94	15-19	19	10	4		
04-1-0249	59	C5	Spit 3	20-30	Chert	core		0%	7.55	20-24					
04-1-0249	60	C5	Spit 3	20-30	Chert	distal fragment		0%	2.38	15-19					
04-1-0249	61	C5	Spit 3	20-30	Chert	angular fragment		0%	0.61	5-9					
04-1-0249	62	C5	Spit 3	20-30	Chert	proximal fragment		0%	0.52	10-14					
04-1-0249	63	C5	Spit 4	30-40	Chert	flake		0%	2.45	20-24	15	23	6		
04-1-0249	64	C5	Spit 4	30-40	Chalcedony	distal fragment		0%	0.85	10-14					
04-1-0249	65	C6	Spit 1	0-10	Chert	flake		0%	1.21	15-19	16	19	3		
04-1-0249	66	C6	Spit 2	10-20	Silcrete	flake		0%	1.65	15-19	18	14	4		
04-1-0249	67	C6	Spit 2	10-20	FGS	flake		0%	0.41	10-14	13	13	3		
04-1-0249	68	C8	Spit 1	0-10	Chalcedony	flake		0%	0.81	15-19	18	9	4		
04-1-0249	69	C8	Spit 1	0-10	Chalcedony	flake		0%	0.19	10-14	11	10	2		
04-1-0249	70	C8	Spit 3	20-30	Chert	flake		0%	0.24	5-9	9	7	4		
04-1-0249	71	C10	Spit 1	0-10	FGS	core		0%	240.78	95-99					large cobble with 4 negative flake scars
04-1-0249	72	C10	Spit 1	0-10	Chert	distal fragment		0%	0.69	15-19					
04-1-0249	73	C10	Spit 1	0-10	Chert	split flake		0%	0.50	10-14					
04-1-0249	74	C11	Spit 2	10-20	FGS	flake		0%	48.36	50-54	54	28	20		
04-1-0249	75	C11	Spit 2	10-20	Chert	flake		0%	3.24	20-24	21	20	7		

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0249	76	C13	Spit 1	0-10	MGS		axe fragment	0%	101.46	75-79					possible axe fragment
04-1-0295	77	A1	Spit 2	10-20	Chalcedony	angular fragment		0%	6.52	20-24					
04-1-0295	78	A1	Spit 2	10-20	Tuff	flake		0%	0.83	15-19	14	19	3		
04-1-0295	79	A1	Spit 2	10-20	Tuff	angular fragment		0%	0.57	10-14					
04-1-0295	80	A1	Spit 3	20-30	Chalcedony	distal fragment		0%	0.22	5-9					
04-1-0295	81	A2	Spit 1	0-10	Silcrete	flake		0%	8.64	25-29	27	26	10		
04-1-0295	82	A2	Spit 1	0-10	Chalcedony	flake		0%	0.31	10-14	13	8	2		
04-1-0295	83	A2	Spit 1	0-10	Chert	flake		0%	0.41	10-14	11	12	3		
04-1-0295	84	A2	Spit 2	10-20	Chert	flake		0%	1.61	15-19	14	19	5		
04-1-0295	85	A2	Spit 2	10-20	Chert	core	fragment	0%	10.24	30-34					
04-1-0295	86	A2	Spit 3	20-30	Silcrete	flake		0%	17.91	40-44	43	30	10		
04-1-0295	87	A3	Spit 1	0-10	Silcrete	flake		0%	1.59	20-24	19	22	3		
04-1-0295	88	A3	Spit 1	0-10	Tuff	flake		0%	0.81	15-19	19	12	4		
04-1-0295	89	A3	Spit 3	20-30	Silcrete	flake		0%	1.38	15-19	14	19	6		
04-1-0295	90	A3	Spit 3	20-30	Silcrete	flake		0%	3.63	25-29	27	16	7		
04-1-0295	91	A3	Spit 3	20-30	Silcrete	flake		0%	4.76	30-34	30	15	7		
04-1-0295	92	A4	Spit 1	0-10	Chert	angular fragment		0%	0.13	10-14					
04-1-0295	93	A6	Spit 3	20-30	Tuff/IMT	core		0%	32.53	35-39				yes	
04-1-0295	94	B1	Spit 1	0-10	Silcrete	flake		0%	0.27	15-19	16	12	2		
04-1-0295	95	B1	Spit 1	0-10	Silcrete	core	fragment	0%	7.79	25-29					
04-1-0295	96	B1	Spit 1	0-10	Chert	flake		0%	2.27	15-19	12	19	8		
04-1-0295	97	B1	Spit 3	20-30	Chert	flake		0%	0.42	20-24	21	8	3		
04-1-0295	98	B1	Spit 3	20-30	Chert	distal fragment		0%	0.23	10-14					
04-1-0295	99	B1	Spit 3	20-30	Chert	flake		0%	0.53	10-14	14	13	3		
04-1-0295	100	B1	Spit 3	20-30	Quartzite	angular fragment		0%	2.61	15-19					
04-1-0295	101	B1	Spit 4	30-40	Chalcedony	distal fragment		0%	1.82	20-24					
04-1-0295	102	B1	Spit 4	30-40	Quartz	angular fragment		0%	2.29	15-19					
04-1-0295	103	B1	Spit 4	30-40	FGS	distal fragment		0%	0.43	10-14					
04-1-0295	104	B1	Spit 5	40-50	Silcrete	flake		0%	0.36	10-14	10	14	3		
04-1-0295	105	B2	Spit 2	10-20	Tuff/IMT	flake		0%	2.06	15-19	19	19	4		
04-1-0295	106	B2	Spit 2	10-20	Silcrete	flake		0%	1.83	15-19	19	16	5		
04-1-0295	107	B2	Spit 2	10-20	Chalcedony	distal fragment		0%	0.38	10-14					
04-1-0295	108	B2	Spit 4	30-40	Silcrete	flake		0%	0.44	10-14	14	13	4		
04-1-0295	109	B2	Spit 4	30-40	Silcrete	flake		0%	0.46	15-19	19	9	3		
04-1-0295	110	B3	Spit 1	0-10	Silcrete	flake		0%	1.37	15-19	19	16	3		
04-1-0295	111	B3	Spit 1	0-10	Tuff/IMT	flake		0%	1.55	15-19	17	15	5		
04-1-0295	112	B3	Spit 1	0-10	Silcrete	medial fragment		0%	0.48	10-14					
04-1-0295	113	B3	Spit 1	0-10	Silcrete	proximal fragment		0%	0.55	10-14					
04-1-0295	114	B3	Spit 2	10-20	Chalcedony	core	fragment	0%	4.12	20-24					

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0295	115	B4	Spit 1	0-10	Chalcedony	angular fragment		0%	3.01	15-19					
04-1-0295	116	B4	Spit 3	20-30	Chalcedony	angular fragment		0%	1.71	15-19					
04-1-0295	117	B5	Spit 1	0-10	Chert	flake		0%	1.86	25-29	28	17	4		
04-1-0295	118	B5	Spit 1	0-10	Silcrete	flake		0%	2.42	20-24	24	14	8		
04-1-0295	119	B5	Spit 3	20-30	Silcrete	distal fragment		0%	0.59	10-14					
04-1-0295	120	C1	Spit 1	0-10	chalcedony	flake		0%	3.31	15-19	23	17	8		
04-1-0295	121	C1	Spit 1	0-10	chalcedony	flake		0%	1.50	20-24	14	24	5		
04-1-0295	122	C1	Spit 1	0-10	Silcrete	flake		0%	0.58	20-24	21	9	3		
04-1-0295	123	C1	Spit 3	20-30	Chert	flake		0%	1.01	15-19	16	16	4		
04-1-0295	124	C1	Spit 3	20-30	Silcrete	flake		0%	1.43	15-19	13	19	5		
04-1-0295	125	C2	Spit 1	0-10	Silcrete	flake		0%	1.35	15-19	19	13	5		
04-1-0295	126	C2	Spit 1	0-10	Silcrete	angular fragment		0%	3.14	20-24					
04-1-0295	127	C2	Spit 1	0-10	Silcrete	flake		0%	0.18	5-9	9	8	2		
04-1-0295	128	C2	Spit 1	0-10	Silcrete	flake		0%	0.18	5-9	9	6	3		
04-1-0295	129	C2	Spit 1	0-10	Tuff/IMT	angular fragment		0%	1.01	10-14					
04-1-0295	130	C2	Spit 1	0-10	Silcrete	distal fragment		0%	0.18	10-14					
04-1-0295	131	C2	Spit 1	0-10	Silcrete	distal fragment		0%	0.11	5-9					
04-1-0295	132	C2	Spit 2	10-20	Tuff/IMT	flake		0%	7.31	25-29	29	16	12		
04-1-0295	133	C2	Spit 2	10-20	Silcrete	flake		0%	0.71	15-19	19	14	3		
04-1-0295	134	C2	Spit 2	10-20	Silcrete	flake		0%	1.16	15-19	16	16	8		
04-1-0295	135	C2	Spit 2	10-20	Chert	core	fragment	0%	1.01	10-14					
04-1-0295	136	C2	Spit 2	10-20	Silcrete	angular fragment		0%	0.16	5-9					
04-1-0295	137	C2	Spit 2	10-20	Silcrete	distal fragment		0%	0.27	5-9					
04-1-0295	138	C2	Spit 2	10-20	Chert	distal fragment		0%	0.36	10-14					
04-1-0295	139	C3	Spit 1	0-10	Silcrete	flake		0%	1.14	15-19	13	19	6		
04-1-0295	140	C3	Spit 1	0-10	Silcrete	angular fragment		0%	0.21	5-9					
04-1-0295	141	C3	Spit 2	10-20	Silcrete	flake		0%	2.71	25-29	28	13	7		
04-1-0295	142	C3	Spit 2	10-20	Silcrete	flake		0%	4.88	20-24	24	15	11		
04-1-0295	143	C3	Spit 2	10-20	Chalcedony	angular fragment		0%	0.66	5-9					
04-1-0295	144	C3	Spit 3	20-30	Silcrete	flake		0%	0.59	15-19	19	9	4		
04-1-0295	145	C3	Spit 3	20-30	Tuff/IMT	flake		0%	0.71	15-19	17	15	3		
04-1-0295	146	C4	Spit 2	10-20	Silcrete	angular fragment		0%	1.69	20-24					
04-1-0295	147	C1	Spit 4	30-40	Tuff/IMT	angular fragment		0%	2.05	15-19					
04-1-0295	148	C2	Spit 3	20-30	Tuff/IMT	flake		0%	3.51	20-24	24	17	10		
04-1-0295	149	D1	Spit 2	10-20	Tuff/IMT	core		0%	13.46	25-29					
04-1-0295	150	D1	Spit 2	10-20	Silcrete	flake		0%	2.79	20-24	22	18	6		
04-1-0295	151	D2	Spit 1	0-10	Silcrete	flake		0%	1.56	15-19	18	18	4		
04-1-0295	152	D2	Spit 1	0-10	Silcrete	flake		0%	0.37	10-14	13	11	2		
04-1-0295	153	D2	Spit 2	10-20	Silcrete	flake		0%	1.51	20-24	15	23	5		

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0295	154	D2	Spit 2	10-20	Chert	proximal fragment		0%	0.44	5-9					
04-1-0295	155	D2	Spit 2	10-20	Tuff/IMT	flake		0%	1.07	10-14	14	12	5		
04-1-0295	156	D2	Spit 4	30-40	Tuff/IMT	core	fragment	0%	5.26	15-19					
04-1-0295	157	D3	Spit 1	0-10	Tuff/IMT	flake		0%	3.35	25-29	29	24	4		
04-1-0295	158	D3	Spit 1	0-10	Chert	core		0%	19.15	35-39				yes!	
04-1-0295	159	D3	Spit 1	0-10	Silcrete	flake		0%	1.59	15-19	17	14	5		
04-1-0295	160	D3	Spit 1	0-10	Chert	angular fragment		0%	0.61	10-14					
04-1-0295	161	D3	Spit 1	0-10	Silcrete	core		0%	26.61	50-54					
04-1-0295	162	D3	Spit 1	0-10	Chalcedony	flake		31-69%	10.43	25-29	26	25	12		split pebble
04-1-0295	163	D3	Spit 2	10-20	Silcrete	flake		0%	4.06	25-29	19	29	6		
04-1-0295	164	D3	Spit 2	10-20	Silcrete	flake		0%	6.88	25-29	29	21	8		
04-1-0295	165	D3	Spit 2	10-20	Silcrete	distal fragment		0%	0.38	10-14					
04-1-0295	166	D3	Spit 2	10-20	Silcrete	flake		0%	0.81	10-14	12	12	6		
04-1-0295	167	D3	Spit 3	20-30	Tuff/IMT	flake		0%	2.01	20-24	22	19	4		
04-1-0295	168	D3	Spit 3	20-30	Chalcedony	core	fragment	0%	3.87	15-19					
04-1-0295	169	D4	Spit 1	0-10	Silcrete	flake		0%	0.42	10-14	13	8	4		
04-1-0295	170	D4	Spit 1	0-10	Tuff/IMT	angular fragment		0%	0.74	15-19					
04-1-0295	171	D4	Spit 1	0-10	Silcrete	medial fragment		0%	0.05	10-14					
04-1-0295	172	D5	Spit 4	30-40	Tuff/IMT	angular fragment		0%	1.85	15-19					
04-1-0295	173	D5	Spit 4	30-40	Chalcedony	core		0%	43.04	50-54					
04-1-0235	174	A1	Spit 1	0-10	Tuff/IMT	flake		0%	5.67	25-29	27	22	10		
04-1-0235	175	A1	Spit 2	10-20	Silcrete	flake		0%	0.16	5-9	9	9	2		
04-1-0235	176	A2	Spit 3	20-30	Silcrete	distal fragment		0%	0.20	5-9					
04-1-0235	177	A3	Spit 4	30-40	Silcrete	flake		0%	1.01	15-19	14	17	3		
04-1-0235	178	A5	Spit 1	0-10	Silcrete	distal fragment		0%	0.48	10-14					
04-1-0235	179	A5	Spit 3	20-30	Chalcedony	core		0%	7.90	20-24					
04-1-0235	180	A7	Spit 1	0-10	Silcrete	core	fragment	0%	1.51	15-19					
04-1-0235	181	B1	Spit 1	0-10	Chalcedony	core	fragment	0%	1.84	15-19					
04-1-0235	182	B1	Spit 4	30-40	Chalcedony	angular fragment		0%	0.82	20-24					
04-1-0235	183	B4	Spit 1	0-10	Chert	distal fragment		0%	0.14	10-14					
04-1-0235	184	B4	Spit 1	0-10	Chert	flake		0%	0.45	10-14	14	12	3		
04-1-0235	185	B5	Spit 1	0-10	Chalcedony	angular fragment		0%	1.95	20-24					
04-1-0235	186	B5	Spit 1	0-10	Quartzite	distal fragment		0%	0.59	15-19					
04-1-0235	187	B5	Spit 1	0-10	Chert	angular fragment		0%	0.42	10-14					
04-1-0235	188	B5	Spit 1	0-10	Tuff/IMT	flake		0%	1.13	15-19	19	13	5		
04-1-0235	189	C3	Spit 1	0-10	Chert	flake		0%	8.71	25-29	28	20	12		
04-1-0235	190	C3	Spit 1	0-10	Chert	core		0%	2.24	20-24					
04-1-0235	191	D1	Spit 1	0-10	Quartzite	flake		0%	5.72	35-39	36	18	7		
04-1-0235	192	E2	Spit 1	0-10	Silcrete	flake		0%	8.33	30-34	21	36	10		

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0237	193	A2	Spit 1	0-10	Tuff/IMT	proximal fragment		0%	0.34	15-19					
04-1-0237	194	A2	Spit 2	10-20	Chalcedony	core		0%	8.48	25-29					
04-1-0237	195	A2	Spit 2	10-20	Tuff/IMT	proximal fragment		0%	1.49	15-19					
04-1-0237	196	A2	Spit 2	10-20	Tuff/IMT	core	fragment	0%	2.37	20-24					
04-1-0237	197	A7	Spit 1	0-10	Quartzite	flake		0%	0.67	15-19	12	18	3		
04-1-0237	198	A7	Spit 1	0-10	Silcrete	distal fragment		0%	0.29	5-9					
04-1-0237	199	A7	Spit 3	20-30	Tuff/IMT	core	fragment	0%	1.29	15-19					
04-1-0237	200	A14	Spit 1	0-10	Silcrete	angular fragment		0%	0.43	10-14					
04-1-0237	201	A14	Spit 1	0-10	Tuff/IMT	angular fragment		0%	0.42	10-14					
04-1-0237	202	A14	Spit 2	10-20	Tuff/IMT	core	fragment	0%	9.21	25-29					
04-1-0237	203	A15	Spit 1	0-10	Chalcedony	flake		0%	2.52	15-19	18	18	7		
04-1-0237	204	B6	Spit 1	0-10	Silcrete	medial fragment		0%	0.53	10-14					
04-1-0237	205	B6	Spit 1	0-10	Silcrete	flake		0%	0.51	15-19	19	9	4		
04-1-0237	206	D1	Spit 2	10-20	Chalcedony	angular fragment		0%	0.27	10-14					
04-1-0237	207	D3	Spit 1	0-10	Silcrete	flake		0%	18.39	45-49	46	25	13		
04-1-0239	208	A9	Spit 2	10-20	Chalcedony	medial fragment		0%	0.44	10-14					
04-1-0239	209	A13	Spit 2	10-20	Chalcedony	flake		31-69%	5.85	25-29	27	17	10		split cobble
04-1-0239	210	A13	Spit 2	10-20	Chalcedony	core		0%	7.95	20-24					
04-1-0239	211	A13	Spit 2	10-20	Chalcedony	angular fragment		0%	1.68	15-19					
04-1-0239	212	A14	Spit 1	0-10	Chert	flake		0%	1.88	20-24	24	16	4		
04-1-0239	213	A14	Spit 3	20-30	Silcrete	distal fragment		0%	0.38	10-14					
04-1-0239	214	A14	Spit 3	20-30	Silcrete	angular fragment		0%	1.05	15-19					
04-1-0239	215	A15	Spit 1	0-10	Tuff/IMT	core		0%	2.70	15-19					
04-1-0239	216	A15	Spit 2	10-20	Tuff/IMT	proximal fragment		0%	0.28	5-9					
04-1-0239	217	A16	Spit 2	10-20	Chalcedony	flake		0%	0.29	15-19	15	9	3		
04-1-0239	218	A17	Spit 2	10-20	Chert	core		0%	8.21	20-24					blade core
04-1-0239	219	A17	Spit 2	10-20	Silcrete	medial fragment		0%	1.15	10-14					
04-1-0239	220	B1	Spit 2	10-20	Silcrete	flake	backed	0%	0.72	20-24	24	7	4	yes	backed blade
04-1-0239	221	C4	Spit 2	10-20	Silcrete	flake		0%	6.60	20-24	22	22	8		core rejuvenation flake
04-1-0239	222	C4	Spit 2	10-20	Silcrete	flake		0%	1.45	15-19	18	14	5		
04-1-0239	223	D5	Spit 2	10-20	Tuff/IMT	core		0%	8.05	25-29					
04-1-0239	224	D5	Spit 2	10-20	Silcrete	core		0%	32.01	40-44					
04-1-0239	225	D7	Spit 2	10-20	Silcrete	distal fragment		0%	0.45	15-19					
04-1-0239	226	D7	Spit 1	0-10	Chalcedony	angular fragment		1-30%	1.22	10-14					
04-1-0239	227	D8	Spit 1	0-10	Chalcedony	flake		0%	0.67	20-24	23	10	2		
04-1-0239	228	D8	Spit 1	0-10	Chalcedony	angular fragment		0%	1.56	15-19					
04-1-0239	229	D8	Spit 1	0-10	Silcrete	distal fragment		0%	0.39	10-14					
04-1-0239	230	D8	Spit 1	0-10	Silcrete	angular fragment		0%	0.32	5-9					
04-1-0239	231	D8	Spit 2	10-20	Silcrete	medial fragment		0%	0.97	15-19					

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0239	232	D11	Spit 1	0-10	Chert	flake		0%	5.16	30-34	32	17	8		
04-1-0239	233	D11	Spit 1	0-10	Quartzite	medial fragment		0%	1.19	15-19					
04-1-0239	234	D11	Spit 1	0-10	Chert	angular fragment		0%	1.13	15-19					
04-1-0239	235	D11	Spit 1	0-10	FGS		groundstone fragment	0%	28.01	60-64					
04-1-0239	236	D11	Spit 1	0-10	FGS	core		0%	269.13						
04-1-0254	237	C8	Spit 1	0-10	Silcrete	flake		0%	8.81	40-44	27	40	8		
04-1-0254	238	C8	Spit 1	0-10	Silcrete	core fragment		0%	5.09	20-24					
04-1-0254	239	C8	Spit 2	10-20	Silcrete	flake		0%	0.36	10-14	14	8	3		
04-1-0254	240	C8	Spit 2	10-20	Tuff/IMT	angular fragment		0%	0.46	10-14					
04-1-0254	241	C10	Spit 2	10-20	Chalcedony	flake		1-30%	3.56	20-24	21	21	7		
04-1-0254	242	C10	Spit 2	10-20	Chert	flake		0%	0.38	10-14	12	14	2		
04-1-0254	243	D1	Spit 1	0-10	Chalcedony	core	fragment	0%	2.71	15-19					
04-1-0254	244	D1	Spit 1	0-10	FGS		groundstone fragment	0%	418.01	95-99				yes (maybe)	Broken groundstone tool, possible axe blank
04-1-0254	245	D1	Spit 3	20-30	Silcrete	flake		0%	0.12	10-14	11	7	2		
04-1-0254	246	D2	Spit 1	0-10	Quartzite	flake	retouched	0%	10.49	40-44	43	26	8		
04-1-0254	247	D2	Spit 1	0-10	Silcrete	flake		0%	12.13	40-44	40	23	16		
04-1-0254	248	D2	Spit 1	0-10	Chalcedony	flake		0%	0.62	10-14	14	11	4		
04-1-0254	249	D2	Spit 1	0-10	Quartzite	distal fragment		0%	0.65	10-14					
04-1-0254	250	D2	Spit 1	0-10	Chert	flake		0%	0.12	5-9	7	9	3		
04-1-0254	251	D2	Spit 2	10-20	Silcrete	flake		0%	3.60	25-29	29	23	4	yes	
04-1-0254	252	D2	Spit 2	10-20	Chalcedony	flake		0%	8.21	25-29	28	25	12		core rejuvenation flake
04-1-0254	253	D2	Spit 2	10-20	Silcrete	flake		0%	2.39	15-19	19	17	5		
04-1-0254	254	D2	Spit 2	10-20	Chalcedony	proximal fragment		0%	1.48	15-19					
04-1-0254	255	D2	Spit 2	10-20	Silcrete	core	fragment	0%	2.28	20-24					
04-1-0254	256	D2	Spit 3	20-30	Chalcedony	flake		0%	0.79	20-24	21	9	4		
04-1-0254	257	D2	Spit 3	20-30	Chalcedony	flake		0%	0.87	15-19	17	12	5		
04-1-0254	258	D2	Spit 3	20-30	Tuff/IMT	flake		0%	0.27	10-14	10	14	2		
04-1-0254	259	D2	Spit 3	20-30	Tuff/IMT	flake		0%	0.12	5-9	7	9	2		
04-1-0254	260	D2	Spit 3	20-30	Tuff/IMT	proximal fragment		0%	0.10	5-9					
04-1-0254	261	D3	Spit 1	0-10	Silcrete	angular fragment		0%	2.09	15-19					
04-1-0254	262	D1	Spit 2	10-20	Chert	angular fragment		0%	0.13	5-9					
04-1-0254	263	D3	Spit 2	10-20	Chalcedony	flake		31-69%	1.31	20-24	21	20	3		
04-1-0254	264	D3	Spit 2	10-20	Silcrete	proximal fragment		0%	1.75	15-19					
04-1-0254	265	D3	Spit 2	10-20	Chert	angular fragment		0%	1.46	10-14					
04-1-0254	266	D4	Spit 2	10-20	Chalcedony	flake		0%	3.93	35-39	39	22	3	yes	
04-1-0254	267	D4	Spit 2	10-20	Chert	flake		0%	2.77	20-24	17	24	8		
04-1-0254	268	D4	Spit 2	10-20	Chert	core		0%	12.88	35-39					

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0254	269	D4	Spit 2	10-20	Quartzite	flake		0%	31.61	45-49	45	49	16	yes	
04-1-0254	270	D4	Spit 2	10-20	Chert	flake		0%	1.04	15-19	14	18	4		
04-1-0254	271	D4	Spit 2	10-20	chalcedony	flake		0%	0.29	15-19	16	10	2		
04-1-0254	272	D4	Spit 2	10-20	Silcrete	flake		0%	0.52	10-14	12	13	4		
04-1-0254	273	D4	Spit 2	10-20	Silcrete	distal fragment		0%	0.09	10-14					
04-1-0254	274	D5	Spit 1	0-10	Chalcedony	proximal fragment		0%	2.75	20-24					
04-1-0254	275	D3	Spit 1	0-10	Chalcedony	angular fragment		0%	12.58	25-29					
04-1-0254	276	D3	Spit 1	0-10	Tuff/IMT	flake		0%	0.64	10-14	14	10	5		
04-1-0254	277	D3	Spit 1	0-10	Silcrete	angular fragment		0%	0.82	15-19					
04-1-0254	278	D3	Spit 1	0-10	Tuff/IMT	core	fragment	0%	1.86	15-19					
04-1-0254	279	D3	Spit 1	0-10	Chalcedony	angular fragment		0%	0.67	15-19					
04-1-0254	280	D3	Spit 1	0-10	Tuff/IMT	medial fragment		0%	0.14	10-14					
04-1-0254	281	D6	Spit 2	10-20	MGS		hammerstone	>70%							
04-1-0254	282	D4	Spit 3	20-30	Tuff/IMT	flake		0%	2.15	20-24	24	18	6		
04-1-0254	283	D7	Spit 2	10-20	Tuff/IMT	proximal fragment		0%	0.69	20-24					
04-1-0254	284	D8	Spit 2	10-20	Chert	distal fragment		0%	0.13	5-9					
04-1-0254	285	D9	Spit 2	10-20	Chalcedony	angular fragment		0%	0.40	5-9					
04-1-0254	286	D9	Spit 2	10-20	Silcrete	distal fragment		0%	0.44	15-19					
04-1-0254	287	D9	Spit 2	10-20	Silcrete	flake		0%	16.83	40-44	43	30	15		
04-1-0254	288	D9	Spit 3	20-30	Silcrete	flake		0%	0.36	10-14	11	10	4		
04-1-0254	289	D10	Spit 1	0-10	Silcrete	flake		0%	2.29	20-24	24	12	4		
04-1-0254	290	D10	Spit 2	10-20	Chalcedony	angular fragment		0%	0.27	5-9					
04-1-0254	291	D13	Spit 1	0-10	Chert	angular fragment		0%	5.79	25-29					
04-1-0254	292	E2	Spit 1	0-10	Silcrete	angular fragment		0%	1.93	15-19					
04-1-0254	293	E4	Spit 2	10-20	Silcrete	flake		0%	9.18	30-34	34	22	12	yes	super fine grain silcrete
04-1-0254	294	A1	Spit 1	0-10	Silcrete	flake		0%	1.13	15-19	18	18	4		
04-1-0254	295	A1	Spit 1	0-10	Silcrete	core	fragment	0%	3.01	15-19					
04-1-0254	296	A2	Spit 2	10-20	Chert	angular fragment		0%	8.01	20-24					
04-1-0254	297	B1	Spit 1	0-10	Chalcedony	flake		0%	1.01	20-24	22	15	3		
04-1-0254	298	B1	Spit 1	0-10	Silcrete	medial fragment		0%	1.29	15-19					
04-1-0254	299	B1	Spit 1	0-10	Silcrete	flake		0%	0.72	10-14	14	12	3		
04-1-0254	300	B1	Spit 1	0-10	Silcrete	proximal fragment		0%	1.93	15-19					
04-1-0254	301	B3	Spit 2	10-20	Quartzite	flake		0%	3.15	25-29	28	15	5		
04-1-0254	302	B3	Spit 2	10-20	Chert	flake		0%	0.41	10-14	14	6	3		
04-1-0254	303	B3	Spit 2	10-20	Silcrete	proximal fragment		0%	0.14	5-9					
04-1-0254	304	B3	Spit 2	10-20	Tuff/IMT	angular fragment		0%	0.21	5-9					
04-1-0254	305	B4	Spit 3	15-19	Quartzite	angular fragment		0%	1.01	15-19					
04-1-0254	306	B4	Spit 3	20-30	Tuff/IMT	flake		0%	0.17	5-9	9	9	3		
04-1-0254	307	B8	Spit 1	0-10	Tuff/IMT	flake		0%	3.45	25-29	25	19	5		

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0254	308	B11	Spit 1	0-10	Quartzite	flake		0%	2.21	25-29	25	14	5		
04-1-0254	309	B12	Spit 2	10-20	Chert	flake		0%	6.67	30-34	27	31	9		
04-1-0254	310	B13	Spit 1	0-10	Chalcedony	proximal fragment		0%	2.21	15-19					
04-1-0254	311	C1	Spit 1	0-10	Chalcedony	core	fragment	0%	7.17	25-29					
04-1-0254	312	C1	Spit 1	0-10	Tuff/IMT	flake		0%	1.93	20-24	22	20	4		
04-1-0254	313	C1	Spit 1	0-10	Chalcedony	flake		0%	1.13	15-19	17	14	5		
04-1-0254	314	C3	Spit 2	10-20	Chert	flake		0%	0.52	15-19	18	9	2		
04-1-0254	315	C3	Spit 2	10-20	Silcrete	flake		0%	0.27	10-14	8	12	2		
04-1-0254	316	C3	Spit 2	10-20	Silcrete	angular fragment		0%	1.56	15-19					
04-1-0254	317	C3	Spit 2	10-20	Chalcedony	flake		0%	0.07	5-9	8	6	2		
04-1-0254	318	C3	Spit 2	10-20	Tuff/IMT	proximal fragment		0%	0.46	10-14					
04-1-0254	319	C4	Spit 2	10-20	chalcedony	flake		0%	1.75	15-19	17	19	5		
04-1-0254	320	C4	Spit 2	10-20	Silcrete	flake		0%	2.01	20-24	22	20	5		
04-1-0254	321	C4	Spit 2	10-20	Tuff/IMT	flake		0%	0.11	5-9	8	5	2		
04-1-0254	322	C4	Spit 2	10-20	Silcrete	flake		0%	0.08	5-9	7	7	2		
04-1-0254	323	C4	Spit 1	0-10	Silcrete	flake		0%	42.67	55-59	41	57	16		
04-1-0254	324	C4	Spit 3	20-30	Quartzite	flake		0%	4.87	20-24	19	24	11		
04-1-0254	325	C4	Spit 3	20-30	Silcrete	angular fragment		0%	2.64	15-19					
04-1-0254	326	C5	Spit 2	10-20	Chalcedony	flake		0%	5.22	25-29	24	28	5		
04-1-0254	327	C5	Spit 2	10-20	Quartzite	distal fragment		0%	0.79	10-14					
04-1-0254	328	C5	Spit 3	20-30	Chalcedony	flake		0%	2.44	15-19	19	17	7		
04-1-0254	329	C5	Spit 3	20-30	Silcrete	proximal fragment		0%	1.18	20-24					
04-1-0254	330	C5	Spit 3	20-30	Tuff/IMT	flake		0%	0.15	5-9	9	7	2		
04-1-0254	331	C5	Spit 3	20-30	Tuff/IMT	proximal fragment		0%	0.29	10-14					
04-1-0254	332	C7	Spit 2	10-20	Tuff/IMT	flake		0%	3.01	25-29	26	17	9		
04-1-0254	333	C7	Spit 2	10-20	Tuff/IMT	proximal fragment		0%	3.51	25-29					
04-1-0254	334	C7	Spit 2	10-20	Tuff/IMT	flake		0%	1.24	15-19	19	15	4		
04-1-0254	335	C7	Spit 3	20-30	Tuff/IMT	flake		0%	0.63	10-14	10	14	4		
04-1-0254	336	C7	Spit 3	20-30	Chalcedony	angular fragment		0%	0.51	10-14					
04-1-0254	337	C8	Spit 2	10-20	Silcrete	core		0%	35.63	35-39					
04-1-0254	338	C8	Spit 2	10-20	Chalcedony	core	fragment	0%	3.67	15-19					
04-1-0254	339	C11	Spit 1	0-10	Tuff/IMT	flake		0%	0.88	10-14	14	13	2		
04-1-0254	340	C12	Spit 1	0-10	Tuff/IMT	flake		0%	3.07	25-29	29	21	4		
04-1-0254	341	E1	Spit 2	10-20	Silcrete	flake		0%	7.69	35-39	38	20	11		
04-1-0254	342	E1	Spit 2	10-20	Chalcedony	angular fragment		0%	1.15	15-19					
04-1-0254	343	E2	Spit 3	20-30	FGS	flake		0%	9.28	35-39	26	38	14		
04-1-0254	344	E4	Spit 3	20-30	Silcrete	flake		0%	0.24	10-13	13	12	1		
04-1-0254	345	E3	Spit 4	30-40	Tuff/IMT	flake		0%	0.20	10-14	14	8	2		
04-1-0254	346	E5	Spit 3	20-30	Silcrete	flake		0%	0.26	10-14	10	11	2		

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0254	347	E7	Spit 1	0-10	Silcrete	flake		0%	2.68	20-24	24	19	5		
04-1-0254	348	E6	Spit 1	0-10	MGS		hammerstone	0%	479.43	95-99					
04-1-0280	349	A4	Spit 2	10-20	Chalcedony	core		0%							
04-1-0280	350	A6	Spit 4	30-40	FGS	angular fragment		0%	7.07	20-24					
04-1-0280	351	A6	Spit 6	50-60	Chalcedony	angular fragment		0%	0.24	5-9					
04-1-0280	352	A6	Spit 6	50-60	FGS	angular fragment		0%	0.67	10-14					
04-1-0280	353	B1	Spit 1	0-10	Chalcedony	core		0%	5.79	20-24					
04-1-0280	354	B1	Spit 1	0-10	Silcrete	medial fragment		0%	1.28	15-19					
04-1-0280	355	B1	Spit 3	20-30	Quartzite	flake		0%	1.52	20-24	24	14	4		
04-1-0280	356	B1	Spit 3	20-30	Quartzite	angular fragment		0%	9.88	30-34					
04-1-0280	357	B1	Spit 4	30-40	FGS		hammerstone	0%	204.01	95-99					
04-1-0280	358	B1	Spit 5	40-50	Chalcedony	flake		0%	0.47	15-19	15	11	3		
04-1-0280	359	B1	Spit 5	40-50	FGS	flake		0%	0.61	10-14	11	14	3	yes	fine grained green stone
04-1-0280	360	B1	Spit 6	50-60	Tuff/IMT	flake		0%	0.07	5-9	6	8	2		
04-1-0280	361	B2	Spit 2	10-20	FGS	flake		0%	2.46	20-24	24	15	5		
04-1-0280	362	B2	Spit 3	20-30	Tuff/IMT	flake		0%	4.92	35-39	26	38	6		
04-1-0280	363	B2	Spit 3	20-30	Tuff/IMT	flake		0%	1.53	15-19	15	19	5		
04-1-0280	364	B7	Spit 2	10-20	Chalcedony	angular fragment		0%	1.51	10-14					
04-1-0280	365	B11	Spit 3	20-30	Chalcedony	angular fragment		0%	0.67	10-14					
04-1-0280	366	C1	Spit 1	0-10	Chalcedony	flake		0%	1.07	15-19	14	19	3		
04-1-0280	367	C1	Spit 1	0-10	Quartzite	flake		0%	2.20	25-29	19	27	4		
04-1-0280	368	C1	Spit 1	0-10	FGS	core	fragment	0%	22.32	40-44					
04-1-0280	369	C2	Spit 2	10-20	Silcrete	angular fragment		0%	10.54	30-34					
04-1-0280	370	C3	Spit 1	0-10	Silcrete	angular fragment		0%	0.98	15-19					
04-1-0280	371	C3	Spit 2	10-20	chalcedony	flake		0%	0.68	15-19	17	15	4		
04-1-0280	372	D2	Spit 1	0-10	Tuff/IMT	flake		0%	0.35	15-19	16	13	3		
04-1-0280	373	D2	Spit 2	10-20	Chalcedony	flake		0%	1.50	25-29	25	11	5		
04-1-0280	374	D2	Spit 2	10-20	Tuff	angular fragment		0%	0.26	10-14					
04-1-0280	375	D2	Spit 3	20-30	Chalcedony	flake		0%	4.81	20-24	23	23	9		
04-1-0280	376	D4	Spit 3	20-30	Chalcedony	angular fragment		0%	3.35	20-24					
04-1-0280	377	D4	Spit 3	20-30	Chalcedony	core		0%	16.76	20-24					
04-1-0280	378	D4	Spit 1	0-10	FGS	flake		0%	1.35	15-19	16	16	5		
04-1-0280	379	D4	Spit 1	0-10	Chalcedony	core		31-69%	41.21	35-39					
04-1-0280	380	E4	Spit 5	40-50	Tuff/IMT	flake		0%	0.31	10-14	14	8	3		
04-1-0280	381	F1	Spit 1	0-10	Chalcedony	flake		0%	1.86	20-24	15	22	5		
04-1-0280	382	F2	Spit 1	0-10	Tuff/IMT	angular fragment		0%	2.06	15-19					
04-1-0280	383	F2	Spit 1	0-10	Tuff/IMT	angular fragment		0%	0.91	10-14					
04-1-0280	384	G1	Spit 1	0-10	Tuff/IMT	angular fragment		0%	1.93	15-19					
04-1-0280	385	G1	Spit 4	30-40	Tuff/IMT	core		0%	16.01	30-34				yes	blade core

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0288	386	H1	Spit 2	10-20	Chalcedony	flake		0%	0.41	15-19	16	13	3		
04-1-0288	387	H2	Spit 2	10-20	Chert	flake		0%	10.19	35-38	38	18	8	yes	
04-1-0288	388	H2	Spit 2	10-20	Chalcedony	flake		0%	0.69	15-19	16	13	4		
04-1-0288	389	H2	Spit 1	0-10	Tuff/IMT	core		0%	23.12	45-49					
04-1-0288	390	H3	Spit 2	10-20	Quartzite	flake		0%	1.13	15-19	18	13	3		
04-1-0288	391	H4	Spit 1	0-10	FGS	proximal fragment		0%	1.04	15-19					
04-1-0288	392	H4	Spit 1	0-10	Tuff/IMT	core	fragment	0%	0.54	10-14					
04-1-0288	393	H4	Spit 2	10-20	Chalcedony	flake		0%	1.65	20-24	21	17	5		
04-1-0288	394	H5	Spit 1	0-10	FGS	flake		0%	4.46	30-34	33	25	5		
04-1-0288	395	H5	Spit 1	0-10	Tuff/IMT	core	fragment	0%	10.41	30-34					
04-1-0288	396	J1	Spit 1	0-10	Chalcedony	medial fragment		0%	3.37	20-24					
04-1-0288	397	J1	Spit 1	0-10	Chalcedony	flake		0%	0.52	10-14	13	14	4		
04-1-0288	398	J2	Spit 1	0-10	FGS	angular fragment		0%	0.47	10-14					
04-1-0288	399	J2	Spit 1	0-10	Chalcedony	distal fragment		0%	0.46	10-14					
04-1-0288	400	J3	Spit 1	0-10	Chalcedony	flake		0%	1.01	15-19	18	14	4		
04-1-0288	401	J3	Spit 1	0-10	Silcrete	flake		0%	1.63	20-24	16	20	4		
04-1-0288	402	J4	Spit 1	0-10	Tuff/IMT	flake		0%	2.84	20-24	20	13	8		
04-1-0288	403	K1	Spit 1	0-10	Chert	proximal fragment		0%	0.53	10-14					
04-1-0288	404	K2	Spit 2	10-20	Chert	flake		0%	16.91	64-69	65	27	9		
04-1-0288	405	K2	Spit 2	10-20	Tuff/IMT	angular fragment		0%	0.43	10-14					
04-1-0288	406	K3	Spit 1	0-10	FGS	flake		0%	2.41	25-29	27	7	6		
04-1-0288	407	K5	Spit 1	0-10	Silcrete	core		0%	9.58	25-29					
04-1-0288	408	L1	Spit 2	10-20	Chert	flake		0%	0.51	15-19	16	14	3		
04-1-0288	409	L1	Spit 2	10-20	FGS	angular fragment		0%	1.08	10-14					
04-1-0288	410	L3	Spit 1	0-10	Silcrete	flake		0%	0.83	20-24	18	21	4		
04-1-0288	411	L3	Spit 1	0-10	Chalcedony	flake		0%	2.70	20-24	18	23	6		
04-1-0288	412	L5	Spit 1	0-10	Chalcedony	angular fragment		0%	0.71	10-14					
04-1-0288	413	A1	Spit 1	0-10	Quartzite	flake		0%	12.45	40-44	41	28	8		
04-1-0288	414	A1	Spit 1	0-10	Chalcedony	flake		0%	5.05	35-39	39	11	9		
04-1-0288	415	A1	Spit 1	0-10	Chalcedony	flake		0%	18.93	40-44	23	44	15		
04-1-0288	416	A2	Spit 1	0-10	Chalcedony	core		0%	31.99	55-59					
04-1-0288	417	A3	Spit 1	0-10	Silcrete	flake		0%	1.35	15-19					
04-1-0288	418	A3	Spit 1	0-10	Chalcedony	angular fragment		1-30%	8.48	25-29					
04-1-0288	419	A3	Spit 1	0-10	Chalcedony	core		1-30%	25.28	35-39				yes	
04-1-0288	420	A4	Spit 2	10-20	FGS	core		0%	18.16	40-44					
04-1-0288	421	A6	Spit 3	20-30	Chalcedony	flake		0%	0.84	15-19	19	10	4		
04-1-0288	422	A7	Spit 1	0-10	Chert	flake		0%	1.52	20-24	17	20	3		
04-1-0288	423	A7	Spit 1	0-10	Tuff/IMT	flake		0%	1.91	15-19	19	13	8		
04-1-0288	424	A8	Spit 1	0-10	Chalcedony	flake		0%	4.72	25-29	26	28	6	yes	

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0288	425	A8	Spit 1	0-10	Chalcedony	flake		0%	2.08	25-29	26	16	5		
04-1-0288	426	A8	Spit 1	0-10	Chalcedony	proximal fragment		0%	1.37	15-19					
04-1-0288	427	A8	Spit 1	0-10	Chalcedony	distal fragment		0%	0.38	10-14					
04-1-0288	428	A9	Spit 1	0-10	Silcrete	angular fragment		0%	0.44	15-19					
04-1-0288	429	A9	Spit 2	10-20	Chert	angular fragment		0%	0.27	10-14					
04-1-0288	430	A10	Spit 1	0-10	Chalcedony	flake		0%	7.25	30-34	20	32	11		
04-1-0288	431	A10	Spit 2	10-20	Silcrete	proximal fragment		0%	3.43	25-29					
04-1-0288	432	A10	Spit 2	10-20	Silcrete	flake		0%	1.43	15-19	19	15	6		
04-1-0288	433	A10	Spit 2	10-20	Chalcedony	angular fragment		0%	0.55	10-14					
04-1-0288	434	A11	Spit 1	0-10	FGS	core		0%	17.95	35-39					
04-1-0288	435	A12	Spit 2	10-20	Silcrete	angular fragment		0%	1.06	15-19					
04-1-0288	436	A12	Spit 2	10-20	Tuff/IMT	flake		0%	0.45	10-14	11	8	6		
04-1-0288	437	B3	Spit 2	10-20	Tuff/IMT	flake		0%	1.66	20-24	19	21	4		
04-1-0288	438	B4	Spit 2	10-20	FGS	flake		0%	1.86	20-24	21	16	4		
04-1-0288	439	B4	Spit 2	10-20	Silcrete	flake		0%	0.83	15-19	11	17	4		
04-1-0288	440	B6	Spit 1	0-10	FGS	flake		0%	2.09	15-19	17	17	7		
04-1-0288	441	B6	Spit 1	0-10	Tuff/IMT	proximal fragment		0%	1.01	15-19					
04-1-0288	442	B6	Spit 1	0-10	Chalcedony	angular fragment		31-69%	1.54	20-24					
04-1-0288	443	B6	Spit 2	10-20	Tuff/IMT	flake		0%	1.56	20-24	21	22	6		
04-1-0288	444	B8	Spit 1	0-10	Chalcedony	angular fragment		0%	0.55	15-19					
04-1-0288	445	B11	Spit 2	10-20	Chalcedony	flake		0%	0.13	5-9	8	6	2		
04-1-0288	446	B11	Spit 1	0-10	Chalcedony	flake		0%	0.69	15-19	19	11	4		
04-1-0288	447	B11	Spit 1	0-10	Chalcedony	angular fragment		0%	0.31	10-14					
04-1-0288	448	C1	Spit 1	0-10	MGS	core		>70%	165.54	90-94					
04-1-0288	449	C1	Spit 2	10-20	Chalcedony	angular fragment		0%	0.46	10-14					
04-1-0288	450	C3	Spit 2	10-20	Chalcedony	angular fragment		0%	0.27	5-9					
04-1-0288	451	C4	Spit 1	0-10	Tuff/IMT	core		0%	3.31	15-19					
04-1-0288	452	C4	Spit 1	0-10	Chalcedony	angular fragment		1-30%	1.07	10-14					
04-1-0288	453	C4	Spit 2	10-20	Tuff/IMT	angular fragment		0%	1.86	15-19					
04-1-0288	454	C6	Spit 1	0-10	Tuff/IMT	core		0%	17.79	40-44				yes	
04-1-0288	455	C7	Spit 2	10-20	Chalcedony	core		1-30%	56.97	70-74					
04-1-0288	456	C11	Spit 1	0-10	Silcrete	flake		0%	6.08	40-44	42	23	6		
04-1-0288	457	C11	Spit 1	0-10	Chalcedony	flake		0%	2.45	30-34	31	13	6		
04-1-0288	458	C11	Spit 1	0-10	Silcrete	angular fragment		0%	2.08	25-29					
04-1-0288	459	C11	Spit 2	10-20	Tuff/IMT	flake		1-30%	1.95	20-24	23	15	6		
04-1-0288	460	C11	Spit 2	10-20	Chalcedony	angular fragment		0%	1.13	15-19					
04-1-0288	461	C11	Spit 2	10-20	Chalcedony	flake		0%	0.37	15-19	15	12	2		
04-1-0288	462	C11	Spit 2	10-20	Tuff/IMT	proximal fragment		0%	0.21	10-14					
04-1-0288	463	C12	Spit 2	10-20	Chert	flake		0%	1.82	20-24	22	17	4		

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0288	464	C12	Spit 2	10-20	Chalcedony	flake		0%	3.01	30-34	32	13	7		
04-1-0288	465	C13	Spit 1	0-10	Chalcedony	angular fragment		0%	0.41	10-14					
04-1-0288	466	D1	Spit 2	10-20	Chalcedony	angular fragment		0%	4.45	25-29					
04-1-0288	467	D1	Spit 1	0-10	Chert	flake		0%	0.42	15-19	18	12	2		
04-1-0288	468	D1	Spit 1	0-10	FGS	core		0%	119.38	70-74				yes	
04-1-0288	469	D2	Spit 1	0-10	Quartzite	flake		0%	4.01	25-29	29	22	5		
04-1-0288	470	D2	Spit 1	0-10	chalcedony	flake		0%	0.56	15-19	15	17	3		
04-1-0288	471	D2	Spit 2	10-20	chalcedony	flake		0%	11.85	30-34	29	32	7		
04-1-0288	472	D2	Spit 2	10-20	chalcedony	flake		0%	2.91	20-24	20	24	5		
04-1-0288	473	D2	Spit 2	10-20	FGS	flake		0%	1.75	30-34	34	31	11		
04-1-0288	474	D2	Spit 2	10-20	Tuff/IMT	angular fragment	split cobble	0%	26.58	44-49					
04-1-0288	475	D3	Spit 2	10-20	Chalcedony	flake		0%	0.23	10-14	13	9	2		
04-1-0288	476	D3	Spit 2	10-20	Silcrete	flake		0%	0.81	10-14	14	14	4		
04-1-0288	477	D4	Spit 3	20-30	Chalcedony	flake		0%	0.68	20-24	24	8	3		
04-1-0288	478	D10	Spit 1	0-10	Chalcedony	flake		0%	9.58	30-34	34	23	11		
04-1-0288	479	D10	Spit 1	0-10	Tuff/IMT	flake		0%	1.04	20-24	22	8	5		
04-1-0288	480	D10	Spit 2	10-20	Chalcedony	flake		0%	4.85	30-34	33	21	10		
04-1-0288	481	D10	Spit 2	10-20	Quartzite	flake		0%	2.57	25-29	27	17	6		
04-1-0288	482	D10	Spit 2	10-20	Chalcedony	proximal fragment		0%	0.96	15-19					
04-1-0288	483	E2	Spit 1	0-10	Tuff/IMT	flake		0%	1.27	20-24	21	13	4		
04-1-0288	484	E2	Spit 1	0-10	Chalcedony	medial fragment		0%	1.05	20-24					
04-1-0288	485	E2	Spit 2	10-20	Chalcedony	flake		0%	33.08	65-69	65	37	15	yes	
04-1-0288	486	E4	Spit 3	20-30	Tuff/IMT	medial fragment		0%	0.25	5-9					
04-1-0288	487	E6	Spit 3	20-30	Silcrete	medial fragment		0%	0.46	15-19					
04-1-0288	488	E6	Spit 3	20-30	Silcrete	angular fragment		0%	0.32	5-9					
04-1-0288	489	E7	Spit 1	0-10	FGS	flake		0%	0.45	10-14	14	9	2		
04-1-0288	490	F2	Spit 1	0-10	Silcrete	proximal fragment		0%	1.50	15-19					
04-1-0288	491	F3	Spit 1	0-10	Chalcedony	flake		0%	9.08	35-39	38	20	12		
04-1-0288	492	F3	Spit 1	0-10	Chert	flake		0%	0.59	15-19	17	13	3		
04-1-0288	493	F4	Spit 2	10-20	Chert	angular fragment		0%	0.48	10-14					
04-1-0288	494	F4	Spit 2	10-20	Tuff/IMT	proximal fragment		0%	0.85	10-14					
04-1-0288	495	G1	Spit 2	10-20	Chalcedony	flake		0%	3.47	20-24	18	21	7		
04-1-0288	496	G5	Spit 1	0-10	Silcrete	flake		0%	0.33	10-14	13	9	3		
04-1-0288	497	G6	Spit 1	0-10	Tuff/IMT	flake		0%	0.47	15-19	19	10	3		
04-1-0288	498	G6	Spit 1	0-10	Quartzite	flake		0%	0.68	10-14	13	12	3		
04-1-0288	499	H2	Spit 2	10-20	Tuff/IMT	flake		0%	0.38	10-14	12	10	3		
04-1-0288	500	H2	Spit 2	10-20	Chalcedony	angular fragment		0%	0.25	10-14					
04-1-0288	501	H2	Spit 2	10-20	Chalcedony	angular fragment		0%	0.23	10-14					
04-1-0288	502	H2	Spit 2	10-20	Silcrete	angular fragment		0%	3.49	20-24					

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0288	503	H3	Spit 1	0-10	Chalcedony	core		0%	21.52	30-34					
04-1-0288	504	E3	Spit 3	20-30	Silcrete	flake		0%	3.45	20-24	23	17	8		
04-1-0288	505	E3	Spit 3	20-30	MGS		groundstone								
04-1-0288	506	A2	Spit 2	10-20	Silcrete	core		0%	3.91	15-19					
04-1-0288	507	A5	Spit 1	0-10	Silcrete	flake		0%	8.49	40-44	24	44	9		
04-1-0288	508	A5	Spit 1	0-10	Chalcedony	angular fragment		0%	1.69	10-14					
04-1-0288	509	A5	Spit 2	10-20	Silcrete	flake		0%	3.51	20-24	24	21	8		
04-1-0288	510	A5	Spit 2	10-20	Chalcedony	core		0%	46.01	50-54				yes!	
04-1-0288	511	A5	Spit 2	10-20	FGS	flake		0%	28.62	45-49	38	46	17		
04-1-0288	512	A5	Spit 2	10-20	FGS	flake		0%	15.36	35-39	31	36	9		
04-1-0288	513	A5	Spit 2	10-20	Chalcedony	flake		0%	2.47	25-29	28	16	8		
04-1-0288	514	A5	Spit 2	10-20	Chert	angular fragment		0%	1.84	20-24					
04-1-0288	515	A6	Spit 2	10-20	Silcrete	flake		0%	5.39	40-44	44	40	22		
04-1-0288	516	A6	Spit 2	10-20	Silcrete	angular fragment		0%	0.93	20-24					
04-1-0288	517	A5(b)	Spit 1	0-10	Chalcedony	flake		0%	2.58	20-24	24	21	4		
04-1-0288	518	A5(c)	Spit 1	0-10	Chalcedony	flake		0%	2.22	25-29	26	18	3		
04-1-0288	519	A5(c)	Spit 1	0-10	Chalcedony	proximal fragment		0%	0.68	15-19					
04-1-0288	520	A5(c)	Spit 2	10-20	FGS	flake		0%	1.24	22-24	12	22	5		
04-1-0288	521	A5(c)	Spit 2	10-20	Silcrete	angular fragment		0%	1.28	10-14					
04-1-0288	522	A5(d)	Spit 2	10-20	Silcrete	flake		0%	4.64	25-29	25	28	5		
04-1-0288	523	A5(d)	Spit 2	10-20	Chalcedony	flake		1-30%	5.15	25-29	27	23	10		
04-1-0288	524	A5(d)	Spit 2	10-20	Chalcedony	angular fragment		0%	4.72	20-24					
04-1-0288	525	A5(d)	Spit 2	10-20	Chalcedony	angular fragment		0%	3.43	20-24					
04-1-0288	526	A5(d)	Spit 2	10-20	Silcrete	flake		0%	4.86	25-29	27	19	10		
04-1-0288	527	A5(d)	Spit 2	10-20	Chalcedony	flake		0%	14.12	30-34	34	28	12		
04-1-0288	528	A5(d)	Spit 3	20-30	Tuff/IMT	flake		0%	1.21	15-19	16	16	5		
04-1-0288	529	B1	Spit 1	0-10	Silcrete	flake		0%	0.84	10-14	14	14	6		
04-1-0288	530	B2	Spit 2	10-20	Chert	flake		0%	1.45	15-19	18	12	5		
04-1-0288	531	B2	Spit 2	10-20	Silcrete	flake		0%	0.37	10-14	10	13	3		
04-1-0288	532	B2	Spit 2	10-20	Chert	angular fragment		0%	6.81	20-24					
04-1-0288	533	C5	Spit 1	0-10	Chert	flake		0%	6.88	25-29	29	23	5		green chert
04-1-0288	534	C5	Spit 1	0-10	Chalcedony	flake		0%	2.28	15-19	14	19	9		
04-1-0288	535	C5	Spit 1	0-10	Chert	flake		0%	1.21	30-34	34	11	4		
04-1-0288	536	C5	Spit 1	0-10	FGS	core		0%	8.21	25-29					
04-1-0288	537	C5	Spit 1	0-10	Chalcedony	flake		0%	3.19	20-24	18	24	9		
04-1-0288	538	C5	Spit 2	10-20	Silcrete	flake		0%	3.28	25-29	29	22	4		
04-1-0288	539	C5	Spit 2	10-20	Chalcedony	flake		0%	2.68	20-24	22	18	5		
04-1-0288	540	C5	Spit 2	10-20	Tuff/IMT	core	fragment	0%	2.42	20-24					
04-1-0288	541	C5	Spit 2	10-20	Chalcedony	flake		0%	0.93	15-19	15	19	3		

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0288	542	C5	Spit 2	10-20	Chalcedony	angular fragment		0%	1.85	15-19					
04-1-0288	543	C5	Spit 2	10-20	Chalcedony	angular fragment		0%	1.15	10-14					
04-1-0288	544	C5	Spit 2	10-20	Silcrete	proximal fragment		0%	0.51	10-14					
04-1-0288	545	C5	Spit 2	10-20	Chalcedony	angular fragment		0%	1.69	15-19					
04-1-0288	546	C5	Spit 2	10-20	Chalcedony	angular fragment		0%	0.38	5-9					
04-1-0288	547	C5(a)	Spit 2	10-20	Chalcedony	proximal fragment		0%	0.44	10-14					
04-1-0288	548	C5(a)	Spit 2	10-20	Chert	flake		0%	0.42	10-14	14	10	3		
04-1-0288	549	C5(a)	Spit 2	10-20	Chalcedony	flake		0%	0.27	10-14	12	10	2		
04-1-0288	550	C5(a)	Spit 2	10-20	Chert	flake		0%	0.11	10-14	13	8	2		
04-1-0288	551	C5(a)	Spit 2	10-20	Chert	flake		0%	0.13	5-9	8	9	2		
04-1-0288	552	C5(a)	Spit 2	10-20	Chalcedony	angular fragment		0%	3.93	35-39					
04-1-0288	553	C5(a)	Spit 2	10-20	Silcrete	flake		0%	1.17	10-14	14	14	7		
04-1-0288	554	C5(a)	Spit 2	10-20	Chalcedony	flake		0%	1.86	15-19	14	15	7		
04-1-0288	555	C5(a)	Spit 3	20-30	Chalcedony	flake		0%	0.96	15-19	15	19	3		
04-1-0288	556	C5(a)	Spit 3	20-30	Chalcedony	distal fragment		0%	0.73	15-19					
04-1-0288	557	C5(a)	Spit 3	20-30	Chalcedony	angular fragment		0%	0.52	15-19					
04-1-0288	558	C5(b)	Spit 2	10-20	Chalcedony	flake		0%	3.52	30-34	21	34	4		
04-1-0288	559	C5(b)	Spit 2	10-20	Chalcedony	core	fragment	0%	5.04	20-24					
04-1-0288	560	C5(b)	Spit 2	10-20	Chalcedony	flake		0%	1.88	15-19	19	13	6		
04-1-0288	561	C5(b)	Spit 2	10-20	Chalcedony	angular fragment		0%	1.88	20-24					
04-1-0288	562	C5(b)	Spit 2	10-20	Chalcedony	proximal fragment		0%	0.74	15-19					
04-1-0288	563	C5(b)	Spit 2	10-20	Tuff/IMT	flake		0%	0.38	10-14	14	10	3		
04-1-0288	564	C5(b)	Spit 2	10-20	Chalcedony	angular fragment		0%	1.52	15-19					
04-1-0288	565	C5(b)	Spit 2	10-20	Tuff/IMT	flake		0%	5.36	25-29	23	26	12		
04-1-0288	566	C5(b)	Spit 2	10-20	Tuff/IMT	angular fragment		0%	0.73	15-19					
04-1-0288	567	C5(b)	Spit 2	10-20	Chalcedony	flake		0%	0.42	10-14	10	14	4		
04-1-0288	568	C5(b)	Spit 2	10-20	Chalcedony	angular fragment		0%	0.39	10-14					
04-1-0288	569	C5(b)	Spit 2	10-20	Tuff/IMT	proximal fragment		0%	1.01	15-19					
04-1-0288	570	C5(b)	Spit 2	10-20	Tuff/IMT	flake		0%	0.44	10-14	14	11	3		
04-1-0288	571	C5(b)	Spit 2	10-20	Tuff/IMT	core	unifacial	0%	94.56	65-69				yes	
04-1-0288	572	C5(b)	Spit 3	20-30	chalcedony	angular fragment		0%	0.38	15-19					
04-1-0288	573	C5(b)	Spit 3	20-30	Chert	distal fragment		0%	0.14	5-9					
04-1-0288	574	C5(c)	Spit 2	10-20	Chalcedony	flake		0%	11.19	35-39	24	36	11		
04-1-0288	575	C5(c)	Spit 2	10-20	Silcrete	flake		0%	0.15	5-9	8	7	2		
04-1-0288	576	C5(c)	Spit 2	10-20	Chalcedony	flake		0%	0.61	10-14	14	11	4		
04-1-0288	577	C5(c)	Spit 3	20-30	Tuff/IMT	flake		0%	0.75	15-19	12	18	4		
04-1-0288	578	D6	Spit 2	10-20	Chalcedony	angular fragment		0%	1.78	15-19					
04-1-0288	579	D6	Spit 3	20-30	Silcrete	angular fragment		0%	0.23	10-14					
04-1-0288	580	D10	Spit 3	20-30	Chert	proximal fragment		0%	0.84	10-14					

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0288	581	M1	Spit 2	10-20	Chalcedony	angular fragment		0%	1.51	15-19					
04-1-0288	582	M1	Spit 2	10-20	Chalcedony	core		0%	27.17	40-44					
04-1-0288	583	F1	Spit 1	0-10	MGS		possible anvil								
04-1-0292	584	A3	Spit 1	0-10	Chalcedony	core		1-30%	24.16	30-34					
04-1-0292	585	A3	Spit 1	0-10	Chert	flake		0%	23.01	40-44	40	31	19		
04-1-0292	586	A5	Spit 3	20-30	Chalcedony	angular fragment		0%	1.62	15-19					
04-1-0292	587	A6	Spit 1	0-10	Chalcedony	core	fragment	0%	10.71	25-29					
04-1-0292	588	B7	Spit 1	0-10	Silcrete	flake		0%	3.61	30-34	32	25	6		
04-1-0292	589	B7	Spit 2	10-20	Quartzite	medial fragment		0%	2.68	15-19					
04-1-0290	0	0		0		0									
04-1-0289	590	B2	Spit 1	0-10	FGS	core		0%	76.01	65-69					
04-1-0294	591	A4	Spit 2	10-20	Silcrete	flake		0%	41.91	50-54	51	47	12		
04-1-0294	592	B2	Spit 2	10-20	Chalcedony	angular fragment		0%	1.91	10-14					
04-1-0294	593	C1	Spit 1	0-10	Tuff/IMT	flake		0%	0.89	15-19	19	15	4		
04-1-0239	594	A1	Spit 1	0-10	Chalcedony	angular fragment		0%	3.97	20-24					
04-1-0239	595	A3	Spit 3	20-30	Silcrete	angular fragment		0%	9.07	25-29					
04-1-0239	596	A3	Spit 1	0-10	Silcrete	flake		0%	1.03	10-14	14	14	3		
04-1-0239	597	A5	Spit 1	0-10	Silcrete	flake		0%	4.26	25-29	29	21	7		
04-1-0240	598	A1	Spit 3	20-30	Chalcedony	flake		0%	0.28	10-14	14	9	2		
04-1-0240	599	A1	Spit 3	20-30	Tuff/IMT	flake		0%	3.62	20-24	21	23	8		
04-1-0240	600	A1	Spit 4	30-40	FGS	flake		0%	1.21	20-24	24	16	3		
04-1-0240	601	A1	Spit 4	30-40	Tuff/IMT	flake		0%	0.61	10-14	14	12	3		
04-1-0240	602	A1	Spit 4	30-40	Silcrete	angular fragment		0%	3.01	25-29					
04-1-0240	603	A1	Spit 4	30-40	Tuff/IMT	proximal fragment		0%	3.73	20-24					
04-1-0240	604	A3	Spit 4	30-40	Silcrete	flake		0%	7.45	25-29	28	26	9	yes	
04-1-0240	605	A4	Spit 2	10-20	Chalcedony	angular fragment		0%	1.34	10-14					
04-1-0240	606	A4	Spit 1	0-10	Chalcedony	angular fragment		1-30%	10.23	15-19					crystal
04-1-0240	607	A5	Spit 3	20-30	Tuff/IMT	core	fragment								
04-1-0240	608	B1	Spit 2	20-30	Silcrete	flake		0%	2.07	15-19	15	19	6		
04-1-0238	609	A1	Spit 1	0-10	Chalcedony	flake		0%	0.98	15-19	18	8	5		
04-1-0238	610	A1	Spit 2	10-20	FGS		groundstone fragment	0%	17.60	40-44					
04-1-0238	611	A1	Spit 2	10-20	FGS	angular fragment		0%	0.88	15-19					
04-1-0238	612	A1	Spit 2	10-20	Chalcedony	core	fragment	0%	2.03	15-19					
04-1-0238	613	A1	Spit 2	10-20	Chalcedony	flake		0%	1.78	25-29	26	14	5		
04-1-0238	614	A1	Spit 2	10-20	Chalcedony	core	fragment	0%	1.73	15-19					
04-1-0238	615	A1	Spit 2	10-20	Silcrete	angular fragment		0%	0.81	15-19					
04-1-0238	616	A1	Spit 2	10-20	Silcrete	angular fragment		0%	1.06	15-19					
04-1-0238	617	A1(b)	Spit 2	10-20	Chalcedony	flake		0%	1.36	20-24	24	13	3		

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0238	618	A1(b)	Spit 2	10-20	Silcrete	core	fragment	0%	24.70	30-34					
04-1-0238	619	A1(c)	Spit 2	10-20	Silcrete	angular fragment		0%	4.88	20-24					
04-1-0238	620	A1(c)	Spit 2	10-20	Silcrete	flake		0%	7.54	35-39	38	18	8		
04-1-0238	621	A1(c)	Spit 2	10-20	Tuff/IMT	angular fragment		0%	1.37	10-14					
04-1-0238	622	A1(c)	Spit 2	10-20	Silcrete	distal fragment		0%	0.58	10-14					
04-1-0238	623	A1(d)	Spit 1	0-10	Chalcedony	core	fragment	0%	8.43	20-24					
04-1-0238	624	A1(d)	Spit 1	0-10	FGS	distal fragment		0%	1.15	15-19					
04-1-0238	625	A2	Spit 3	20-30	Chalcedony	core		0%	4.88	15-19				yes	
04-1-0238	626	A3	Spit 1	0-10	Silcrete	flake		1-30%	29.69	35-39	28	39	18		
04-1-0238	627	A4	Spit 2	10-20	Silcrete	distal fragment		0%	0.36	15-19					
04-1-0238	628	A4	Spit 2	10-20	Chalcedony	angular fragment		0%	1.97	15-19					
04-1-0238	629	A5	Spit 1	0-10	Silcrete	flake		0%	22.91	45-49	28	47	20		
04-1-0238	630	A6	Spit 1	0-10	Silcrete	flake		0%	2.24	20-24	21	17	6		
04-1-0238	631	A8	Spit 1	0-10	Silcrete	flake		0%	1.01	15-19	19	14	3		
04-1-0238	632	A8	Spit 1	0-10	Silcrete	angular fragment		0%	0.91	15-19					
04-1-0238	633	A8	Spit 1	0-10	Tuff	flake		0%	1.56	15-19	14	19	5		
04-1-0238	634	A8	Spit 2	10-20	Quartzite	flake		0%	16.35	50-54	53	30	11		
04-1-0238	635	A8	Spit 2	10-20	Silcrete	flake		0%	1.21	20-24	23	10	6		
04-1-0238	636	A9	Spit 1	0-10	Chalcedony	flake		0%	2.16	10-14	14	14	8		
04-1-0238	637	B2	Spit 1	0-10	Silcrete	angular fragment		0%	6.92	20-24					
04-1-0238	638	B1	Spit 2	10-20	Chalcedony	flake		0%	3.50	25-29	27	16	8		
04-1-0238	639	B3	Spit 1	0-10	Silcrete	angular fragment		0%	0.31	10-14					
04-1-0238	640	B3	Spit 1	0-10	Chalcedony	proximal fragment		0%	0.55	10-14					
04-1-0238	641	C1	Spit 2	10-20	Silcrete	flake		0%	0.90	15-19	13	19	4		
04-1-0238	642	C1	Spit 2	10-20	Chert	flake		0%	0.81	15-19	18	13	3		
04-1-0238	643	C1	Spit 2	10-20	Chert	proximal fragment		0%	0.22	5-9					
04-1-0238	644	C1	Spit 2	10-20	Chert	flake		0%	0.13	5-9	6	8	2		
04-1-0238	645	C2	Spit 1	0-10	Chalcedony	flake		0%	0.86	15-19	17	11	4		
04-1-0238	646	C2	Spit 1	0-10	FGS	core		0%	207.47	70-74					large fine grained weathered broken cobble with some possible negative scars.
04-1-0238	647	C3	Spit 2	10-20	Silcrete	flake		0%	1.52	20-24	17	23	4		
04-1-0238	648	D2	Spit 2	10-20	FGS	proximal fragment		0%	7.11	25-29					
04-1-0291	649	B1	Spit 2	10-20	Tuff/IMT	proximal fragment		0%	1.01	15-19					
04-1-0291	650	C1	Spit 3	20-30	Silcrete	flake		0%	5.44	25-29	29	22	6		
04-1-0291	651	C1	Spit 3	20-30	Silcrete	core	fragment	0%	11.05	30-34					
04-1-0291	652	D4	Spit 2	10-20	Tuff/IMT	angular fragment		0%	6.51	20-24					
04-1-0291	653	E2	Spit 2	10-20	Chalcedony	flake		0%	1.87	15-19	17	18	6		
04-1-0291	654	E3	Spit 4	30-40	Tuff/IMT	flake		0%	2.23	20-24	24	23	4		

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0291	655	E3	Spit 4	30-40	Chalcedony	flake		0%	1.08	20-24	21	14	3		
04-1-0291	656	E3	Spit 4	30-40	Silcrete	medial fragment		0%	1.46	15-19					
04-1-0291	657	E4	Spit 2	10-20	Tuff/IMT	flake		0%	0.87	15-19	13	20	5		
04-1-0291	658	E4	Spit 2	10-20	Silcrete	proximal fragment		0%	3.73	15-19					
04-1-0291	659	E4	Spit 2	10-20	Silcrete	angular fragment		0%	1.04	10-14					
04-1-0291	660	E5	Spit 1	0-10	Tuff/IMT	flake		0%	5.18	35-39	36	24	6		
04-1-0291	661	E5	Spit 1	0-10	FGS	core		0%	121.12	40-44					
04-1-0291	662	E5	Spit 3	20-30	Tuff/IMT	angular fragment		0%	5.12	25-29					
04-1-0291	663	E5	Spit 3	20-30	Silcrete	flake		0%	0.76	15-19	16	14	4		
04-1-0291	664	E5	Spit 3	20-30	Chalcedony	flake		0%	1.46	15-19	17	17	6		
04-1-0291	665	E5	Spit 3	20-30	FGS	angular fragment		0%	2.55	15-19					
04-1-0291	666	E5	Spit 3	20-30	Chalcedony	angular fragment		0%	0.95	10-14					
04-1-0291	667	E6	Spit 1	0-10	Chalcedony	flake		0%	1.38	20-24	24	10	5		
04-1-0291	668	E6	Spit 1	0-10	Chalcedony	core	fragment	0%	10.64	30-34					
04-1-0291	669	E7	Spit 2	10-20	Silcrete	core	fragment	0%	6.94	20-24					
04-1-0291	670	E7	Spit 3	20-30	chalcedony	flake		0%	1.88	20-24	21	20	5		
04-1-0291	671	E5	Spit 2	10-20	chalcedony	angular fragment		0%	2.04	20-24					
04-1-0291	672	E5	Spit 2	10-20	Tuff/IMT	core	fragment	0%	8.46	25-29					
04-1-0291	673	E5	Spit 2	10-20	Tuff/IMT	flake		0%	12.33	30-34	31	20	11		
04-1-0264	674	A1	Spit 2	10-20	Tuff/IMT	flake		0%	2.93	25-29	29	19	6		
04-1-0264	675	A1	Spit 2	10-20	Chalcedony	core		0%	4.97	20-24					
04-1-0264	676	A1	Spit 3	20-30	Chalcedony	angular fragment		0%	2.85	20-24					
04-1-0264	677	A2	Spit 1	0-10	Chalcedony	flake		0%	1.01	15-19	16	19	3		
04-1-0264	678	A2	Spit 1	0-10	Tuff/IMT	flake		0%	4.32	20-24	19	24	6		
04-1-0264	679	A2	Spit 2	10-20	Silcrete	flake		0%	1.24	15-19	16	17	5		
04-1-0264	680	A3	Spit 2	10-20	Chert	flake		0%	0.77	20-24	21	13	3	yes	
04-1-0264	681	A3	Spit 2	10-20	Silcrete	proximal fragment		0%	3.30	25-29					
04-1-0264	682	A3	Spit 2	10-20	Chalcedony	angular fragment		0%	5.15	25-29					
04-1-0264	683	A3	Spit 2	10-20	Chalcedony	core		0%	12.95	25-29					
04-1-0264	684	A3	Spit 2	10-20	Silcrete	flake		0%	2.18	20-24	24	20	3		
04-1-0264	685	A3	Spit 2	10-20	Chalcedony	angular fragment		0%	0.42	10-14					
04-1-0264	686	A3	Spit 3	20-30	Silcrete	flake		0%	1.73	10-14	12	11	4		
04-1-0264	687	A4	Spit 1	0-10	Chert	flake		0%	0.75	15-19	15	19	2		
04-1-0264	688	A4	Spit 1	0-10	Silcrete	flake		0%	0.95	15-19	16	18	3		
04-1-0264	689	A4	Spit 1	0-10	Chert	angular fragment		0%	0.88	10-14					
04-1-0264	690	A4	Spit 1	0-10	Silcrete	flake		0%	0.28	10-14	14	11	2		
04-1-0264	691	A4	Spit 2	10-20	Chert	medial fragment		0%	1.58	10-14					
04-1-0264	692	A5	Spit 3	20-30	Chalcedony	flake	retouched	1-30%	41.19	55-59	48	56	17	yes!	
04-1-0264	693	A5	Spit 3	20-30	Silcrete	flake		0%	5.42	35-39	37	19	8		

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0264	694	A5	Spit 3	20-30	Chalcedony	angular fragment		0%	1.03	15-19					
04-1-0264	695	A5	Spit 1	0-10	Chalcedony	distal fragment		0%	2.73	10-14					
04-1-0264	696	A5	Spit 2	10-20	Silcrete	flake		0%	8.26	25-29	27	28	8		
04-1-0264	697	A5	Spit 2	10-20	Silcrete	flake		0%	2.71	20-24	22	18	5		
04-1-0264	698	A5	Spit 2	10-20	FGS	flake		0%	9.18	30-34	34	23	10		
04-1-0264	699	A5	Spit 2	10-20	Chalcedony	angular fragment		0%	0.96	10-14					
04-1-0264	700	A6	Spit 1	0-10	Tuff/IMT	medial fragment		0%	1.33	15-19					
04-1-0264	701	A6	Spit 2	10-20	Tuff/IMT	core		0%	71.25	40-44					
04-1-0264	702	A6	Spit 3	20-30	Chalcedony	flake		0%	0.71	15-19	13	16	3		
04-1-0264	703	B1	Spit 1	0-10	Chalcedony	flake		1-30%	1.73	20-24	22	14	7		
04-1-0264	704	B1	Spit 2	10-20	Moonstone	angular fragment		0%	2.59	20-24					
04-1-0264	705	B1	Spit 2	10-20	Chalcedony	core		31-69%	6.04	15-19					pebble core
04-1-0264	706	B1	Spit 2	10-20	Silcrete	flake		0%	0.68	10-14	11	10	4		
04-1-0264	707	B1	Spit 2	10-20	Silcrete	flake		0%	0.58	10-14	11	13	3		
04-1-0264	708	B1	Spit 2	10-20	Chalcedony	flake		0%	1.01	15-19	9	18	5		
04-1-0264	709	B1a	Spit 1	0-10	Silcrete	flake		0%	8.90	25-29	28	21	10		
04-1-0264	710	B1a	Spit 1	0-10	Silcrete	flake		0%	1.26	15-19	19	12	3		
04-1-0264	711	B1a	Spit 3	20-30	Silcrete	flake		0%	6.53	35-39	36	25	7		
04-1-0264	712	B1a	Spit 3	20-30	Chalcedony	angular fragment		0%	1.01	10-14					
04-1-0264	713	B1b	Spit 1	0-10	Chalcedony	flake		1-30%	24.07	35-39	32	36	20		
04-1-0264	714	B1b	Spit 1	0-10	Chalcedony	flake		0%	0.34	10-14	9	14	2		
04-1-0264	715	B1b	Spit 1	0-10	Silcrete	flake		0%	154.65	60-64	61	57	25		
04-1-0264	716	B1b	Spit 2	10-20	Silcrete	core		0%	40.78	50-54					
04-1-0264	717	B1b	Spit 2	10-20	Silcrete	flake		0%	7.28	30-34	33	29	5		
04-1-0264	718	B1b	Spit 2	10-20	Silcrete	flake		0%	0.89	15-19	19	11	3		
04-1-0264	719	B1b	Spit 2	10-20	Chalcedony	medial fragment		0%	0.66	10-14					
04-1-0264	720	B1b	Spit 3	20-30	Chalcedony	angular fragment		0%	2.18	15-19					
04-1-0264	721	B1b	Spit 3	20-30	Chalcedony	angular fragment		0%	1.43	15-19					
04-1-0264	722	B1b	Spit 3	20-30	Silcrete	flake		0%	0.91	15-19	15	15	4		
04-1-0264	723	B1c	Spit 1	0-10	Silcrete	medial fragment		0%	1.77	15-19					
04-1-0264	724	B1c	Spit 1	0-10	Silcrete	flake		0%	3.70	25-29	24	28	4		
04-1-0264	725	B1c	Spit 1	0-10	Silcrete	flake		0%	0.20	5-9	8	6	2		
04-1-0264	726	B1c	Spit 1	0-10	Chalcedony	flake		0%	0.40	10-14	14	8	4		
04-1-0264	727	B1c	Spit 2	10-20	Chalcedony	core	fragment	0%	3.63	15-19					
04-1-0264	728	B1c	Spit 2	10-20	Chalcedony	proximal fragment		0%	1.95	15-19					
04-1-0264	729	B1c	Spit 3	20-30	Silcrete	flake		0%	0.78	20-24	21	9	5		
04-1-0264	730	B2	Spit 1	0-10	Chert	distal fragment		0%	3.01	25-29					
04-1-0264	731	B2	Spit 1	0-10	Silcrete	flake		0%	0.45	10-14	14	10	3		
04-1-0264	732	B2	Spit 1	0-10	Silcrete	flake		0%	0.91	15-19	14	19	3		

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0264	733	B2	Spit 1	0-10	Chalcedony	flake		0%	6.68	20-24	20	13	3		
04-1-0264	734	B2	Spit 1	0-10	Tuff/IMT	flake		0%	0.89	15-19	12	18	7		
04-1-0264	735	B2	Spit 1	0-10	Tuff/IMT	core		31-69%	9.12	20-24					pebble core
04-1-0264	736	B2	Spit 2	10-20	Silcrete	flake		0%	6.75	25-29	20	28	10		
04-1-0264	737	B2	Spit 2	10-20	Silcrete	flake		0%	1.01	20-24	23	12	4		
04-1-0264	738	B2	Spit 2	10-20	Chalcedony	core	fragment	0%	2.91	10-14					
04-1-0264	739	B2	Spit 2	10-20	Silcrete	flake		0%	1.86	20-24	17	24	4		
04-1-0264	740	B2	Spit 2	10-20	Tuff/IMT	flake		0%	1.06	15-19	17	16	5		
04-1-0264	741	B2	Spit 2	10-20	Chert	flake		0%	0.31	10-14	14	10	2		
04-1-0264	742	B2	Spit 2	10-20	Chalcedony	angular fragment		0%	1.04	10-14					
04-1-0264	743	B2	Spit 3	20-30	Tuff/IMT	flake		0%	2.74	20-24	24	15	5		
04-1-0264	744	B2	Spit 3	20-30	Silcrete	flake		0%	0.79	15-19	19	12	4		
04-1-0264	745	B2	Spit 3	20-30	Chalcedony	angular fragment		0%	0.48	10-14					
04-1-0264	746	B2	Spit 4	30-40	Tuff/IMT	medial fragment		0%	0.33	10-14					
04-1-0264	747	B3	Spit 3	20-30	Chert	distal fragment		0%	0.68	20-24					
04-1-0264	748	B3	Spit 3	20-30	Silcrete	flake		0%	2.37	20-24	23	18	7		
04-1-0264	749	B3	Spit 3	20-30	Chert	flake		0%	0.51	10-14	13	10	3		
04-1-0264	750	B3	Spit 3	20-30	Chalcedony	angular fragment		0%	0.23	10-14					
04-1-0264	751	B3	Spit 3	20-30	Chalcedony	core	fragment	31-69%	6.74	30-34					
04-1-0264	752	B3	Spit 2	10-20	Silcrete	flake		0%	2.16	20-24	18	22	4		
04-1-0264	753	B3	Spit 2	10-20	Silcrete	flake		0%	5.13	30-34	34	22	8		
04-1-0264	754	B3	Spit 2	10-20	Silcrete	flake		0%	0.81	15-19	14	19	3		
04-1-0264	755	B3	Spit 2	10-20	Silcrete	flake		0%	1.41	15-19	18	15	6		
04-1-0264	756	B3	Spit 2	10-20	Silcrete	proximal fragment		0%	21.97	50-54					
04-1-0264	757	B3	Spit 2	10-20	Chalcedony	angular fragment		0%	3.13	20-24					
04-1-0264	758	B3	Spit 2	10-20	Silcrete	core		0%	24.08	35-39					
04-1-0264	759	B3	Spit 2	10-20	Chalcedony	angular fragment		0%	3.09	20-24					
04-1-0264	760	B3	Spit 2	10-20	Chert	proximal fragment		0%	1.68	15-19					
04-1-0264	761	B3	Spit 4	30-40	Chert	flake		0%	1.69	15-19	14	16	5		
04-1-0264	762	B4	Spit 1	0-10	Chalcedony	medial fragment		0%	11.01	30-34					
04-1-0264	763	B4	Spit 1	0-10	Chert	angular fragment		0%	3.54	15-19					
04-1-0264	764	B4	Spit 1	0-10	Chert	flake		0%	1.79	20-24	20	12	7		
04-1-0264	765	B4	Spit 1	0-10	Chert	flake		0%	0.16	5-9	9	6	2		
04-1-0264	766	B4	Spit 1	0-10	Chert	proximal fragment		0%	0.27	5-9					
04-1-0264	767	B4	Spit 1	0-10	Chert	flake		0%	0.12	5-9	9	7	2		
04-1-0264	768	B4	Spit 1	0-10	Silcrete	proximal fragment		0%	0.46	5-9					
04-1-0264	769	B4	Spit 1	0-10	Chert	proximal fragment		0%	0.21	5-9	8	7	3		
04-1-0264	770	B4	Spit 2	10-20	chalcedony	angular fragment		0%	1.12	15-19					

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0264	771	B4	Spit 2	10-20	chalcedony	flake		0%	2.89	20-24	19	24	5		
04-1-0264	772	B4	Spit 3	20-30	Silcrete	flake		0%	18.09	45-49	45	36	8		
04-1-0264	773	B4	Spit 3	20-30	Chert	flake		0%	0.49	10-14	13	15	3		
04-1-0264	774	B4	Spit 3	20-30	Silcrete	proximal fragment		0%	0.58	10-14					
04-1-0264	775	B4	Spit 3	20-30	Chert	medial fragment		0%	1.25	15-19					
04-1-0264	776	B4	Spit 4	30-40	Tuff/IMT	distal fragment		0%	0.16	10-14					
04-1-0264	777	B5	Spit 1	0-10	Tuff/IMT	flake		0%	4.12	25-29	27	22	7		
04-1-0264	778	B5	Spit 2	10-20	Silcrete	flake		0%	1.37	25-29	29	9	4		
04-1-0264	779	B5	Spit 2	10-20	Tuff/IMT	flake		0%	1.51	15-19	19	14	6		
04-1-0264	780	B6	Spit 1	0-10	Silcrete	flake		0%	1.75	20-24	14	21	5		
04-1-0264	781	B6	Spit 1	0-10	Silcrete	flake		0%	18.46	55-59	57	25	14		
04-1-0264	782	B6	Spit 2	10-20	Silcrete	core	fragment	1-30%	31.16	35-39					
04-1-0264	783	B6	Spit 2	10-20	Tuff/IMT	core		0%	71.67	45-49					
04-1-0264	784	B6	Spit 3	20-30	Silcrete	flake		0%	0.38	15-19	16	9	2		
04-1-0264	785	C1	Spit 1	0-10	Silcrete	proximal fragment		0%	0.51	10-14					
04-1-0264	786	C1	Spit 3	20-30	Silcrete	proximal fragment		0%	4.65	20-24					
04-1-0264	787	C1	Spit 3	20-30	Silcrete	flake		0%	1.07	20-24	21	13	4		
04-1-0264	788	C1	Spit 3	20-30	Silcrete	medial fragment		0%	0.86	15-19					
04-1-0264	789	C1	Spit 4	30-40	Tuff	flake		0%	2.01	15-19	18	17	7		
04-1-0264	790	C1	Spit 4	30-40	Silcrete	flake		0%	2.03	15-19	19	13	5		
04-1-0264	791	C1	Spit 4	30-40	Silcrete	angular fragment		0%	2.14	15-19					
04-1-0264	792	C1	Spit 5	40-50	Tuff/IMT	flake		0%	2.78	25-29	29	16	8		
04-1-0264	793	C2	Spit 1	0-10	Silcrete	flake		0%	12.28	45-49	48	27	9		
04-1-0264	794	C2	Spit 1	0-10	Tuff/IMT	proximal fragment		0%	0.64	10-14					
04-1-0264	795	C2	Spit 1	0-10	Tuff/IMT	flake		0%	0.32	10-14	14	12	3		
04-1-0264	796	C2	Spit 1	0-10	Silcrete	flake		0%	1.36	15-19	14	18	4		
04-1-0264	797	C2	Spit 1	0-10	Chalcedony	flake		1-30%	7.79	20-24	19	24	12		
04-1-0264	798	C2	Spit 1	0-10	Chert	core	fragment	0%	1.95	15-19					
04-1-0264	799	C2	Spit 1	0-10	Chalcedony	core	bipolar	0%	1.61	15-19					
04-1-0264	800	C2	Spit 2	10-20	Silcrete	proximal fragment		0%	0.47	5-9					
04-1-0264	801	C2	Spit 2	10-20	Chalcedony	angular fragment		0%	2.96	20-24					
04-1-0264	802	C2	Spit 2	10-20	Chalcedony	core	fragment	0%	4.08	15-19					
04-1-0264	803	C2	Spit 2	10-20	Chalcedony	flake		0%	0.85	10-14	12	13	5		
04-1-0264	804	C2	Spit 2	10-20	Chalcedony	angular fragment		0%	2.62	15-19					
04-1-0264	805	C3	Spit 1	0-10	Chalcedony	core	bipolar	0%	3.08	25-29					
04-1-0264	806	C3	Spit 1	0-10	Silcrete	proximal fragment		0%	2.62	25-29					
04-1-0264	807	C3	Spit 1	0-10	Chert	core	fragment	0%	2.10	15-19					
04-1-0264	808	C3	Spit 1	0-10	Silcrete	proximal fragment		0%	1.13	10-14					
04-1-0264	809	C3	Spit 1	0-10	Chert	angular fragment		0%	0.87	10-14					

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0264	810	C3	Spit 1	0-10	Tuff/IMT	medial fragment		0%	0.48	10-14					
04-1-0264	811	C3	Spit 1	0-10	Chalcedony	flake		0%	2.55	25-29	25	11	7		
04-1-0264	812	C3	Spit 1	0-10	Chalcedony	core		0%	193.03	55-59					
04-1-0264	813	C3	Spit 2	10-20	Tuff/IMT	flake		0%	0.87	15-19	12	16	6		
04-1-0264	814	C3	Spit 2	10-20	Chalcedony	flake		1-30%	1.01	15-19	18	8	5		
04-1-0264	815	C3	Spit 2	10-20	Silcrete	flake		0%	1.52	15-19					
04-1-0264	816	C3	Spit 3	20-30	Chert	flake		0%	0.53	10-14	13	13	3		
04-1-0264	817	C3	Spit 3	20-30	Chert	flake		0%	0.61	15-19	13	19	3		
04-1-0264	818	C4	Spit 1	0-10	Chert	flake		0%	3.51	20-24	21	24	8		
04-1-0264	819	C4	Spit 1	0-10	Tuff/IMT	flake		0%	1.78	15-19	16	14	6		
04-1-0264	820	C4	Spit 2	10-20	FGS	core		0%	18.42	40-44					
04-1-0264	821	C4	Spit 2	10-20	Silcrete	core		0%	116.64	65-69					
04-1-0264	822	C4	Spit 3	20-30	Chert	flake		0%	0.76	15-19	19	12	4		
04-1-0264	823	C4	Spit 3	20-30	Chalcedony	flake		0%	4.01	20-24	22	20	8		
04-1-0264	824	C4a	Spit 1	0-10	Silcrete	flake		0%	1.04	15-19	19	13	4		
04-1-0264	825	C4a	Spit 1	0-10	Tuff/IMT	angular fragment		0%	1.36						
04-1-0264	826	C4a	Spit 1	0-10	Silcrete	flake		0%	1.51	15-19	17	12	7		
04-1-0264	827	C4a	Spit 1	0-10	Silcrete	proximal fragment		0%	4.47	20-24					
04-1-0264	828	C4a	Spit 1	0-10	FGS	angular fragment		0%	8.09	25-29					
04-1-0264	829	C4a	Spit 2	10-20	Tuff/IMT	angular fragment		0%	0.76	10-14					
04-1-0264	830	C4a	Spit 3	20-30	Tuff/IMT	angular fragment		0%	1.84	15-19					
04-1-0264	831	C4a	Spit 5	40-50	Tuff/IMT	proximal fragment		0%	0.89	10-14					
04-1-0264	832	C4a	Spit 5	40-50	Tuff/IMT	medial fragment		0%	0.53	10-14					
04-1-0264	833	C5	Spit 1	0-10	Chalcedony	core		0%	25.54	30-34					
04-1-0264	834	C5	Spit 2	10-20	Silcrete	flake		0%	4.39	20-24	21	24	7		
04-1-0264	835	C5	Spit 2	10-20	Chalcedony	angular fragment		0%	2.73	15-19					
04-1-0264	836	C5	Spit 2	10-20	Chalcedony	medial fragment		0%	0.29	10-14					
04-1-0264	837	C5	Spit 2	10-20	Tuff/IMT	proximal fragment		0%	0.44	10-14					
04-1-0264	838	C6	Spit 2	10-20	Chalcedony	flake		0%	0.70	15-19	9	19	5		
04-1-0264	839	C6	Spit 2	10-20	Chalcedony	flake		0%	4.30	20-24	22	22	8		
04-1-0264	840	C6	Spit 2	10-20	Tuff/IMT	medial fragment		0%	0.78	15-19					
04-1-0264	841	C6	Spit 2	10-20	Chalcedony	core		0%	48.36	50-54					
04-1-0264	842	D1	Spit 1	0-10	Silcrete	flake		0%	4.06	25-29	27	17	9		
04-1-0264	843	D1	Spit 1	0-10	Chalcedony	angular fragment		1-30%	2.18	15-19					
04-1-0264	844	D1	Spit 2	10-20	Chalcedony	flake		0%	1.17	15-19	13	16	6		
04-1-0264	845	D1	Spit 2	10-20	Silcrete	flake		0%	0.47	10-14	13	12	2		
04-1-0264	846	D1	Spit 2	10-20	Chalcedony	flake		0%	0.27	10-14	14	7	2		
04-1-0264	847	D2	Spit 1	0-10	Silcrete	flake		0%	12.21	30-34	22	33	12		
04-1-0264	848	D2	Spit 3	20-30	Tuff/IMT	proximal fragment		0%	0.27	10-14					

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0264	849	D2	Spit 3	20-30	Chalcedony	proximal fragment		0%	0.32	10-14					
04-1-0264	850	D2	Spit 3	20-30	Chalcedony	flake		0%	4.08	20-24	21	18	10		
04-1-0264	851	D2	Spit 3	20-30	Tuff/IMT	medial fragment		0%	0.44	10-14					
04-1-0264	852	D2	Spit 2	10-20	Silcrete	flake		0%	5.52	25-29	29	16	8		
04-1-0264	853	D2	Spit 2	10-20	Tuff/IMT	proximal fragment		0%	1.67	15-19					
04-1-0264	854	D2	Spit 2	10-20	Tuff/IMT	angular fragment		0%	0.76	10-14					
04-1-0264	855	D3	Spit 1	0-10	Silcrete	flake		0%	9.70	30-34	28	32	10		
04-1-0264	856	D3	Spit 2	10-20	Chert	flake		0%	0.44	15-19	10	19	2		
04-1-0264	857	D3	Spit 2	10-20	Silcrete	proximal fragment		0%	1.14	15-19					
04-1-0264	858	D3	Spit 2	10-20	Tuff/IMT	flake		0%	1.45	15-19	19	15	4		
04-1-0264	859	D3	Spit 2	10-20	Chalcedony	flake		0%	0.34	5-9	6	8	2		
04-1-0264	860	D3	Spit 2	10-20	Silcrete	flake		0%	7.26	35-39	22	39	12		
04-1-0264	861	D4	Spit 1	0-10	Chalcedony	angular fragment		0%	0.70	15-19					
04-1-0264	862	D4	Spit 1	0-10	Silcrete	flake		0%	1.32	15-19	17	11	7		
04-1-0264	863	D4	Spit 2	10-20	Chert	medial fragment		0%	1.50	15-19					
04-1-0264	864	D4	Spit 2	10-20	chalcedony	flake		0%	0.82	10-14	13	13	4		
04-1-0264	865	D4	Spit 2	10-20	chalcedony	medial fragment		0%	0.44	10-14					
04-1-0264	866	D4	Spit 2	10-20	chalcedony	proximal fragment		0%	0.81	15-19					
04-1-0264	867	D4	Spit 3	20-30	chalcedony	flake		0%	1.11	15-19	18	13	5		
04-1-0264	868	D4	Spit 3	20-30	Tuff/IMT	angular fragment		0%	0.74	15-19					
04-1-0264	869	D6	Spit 2	10-20	Chert	flake		0%	13.14	25-29	29	26	16		
04-1-0264	870	D6	Spit 2	10-20	Silcrete	flake		0%	2.38	20-24	21	18	8		
04-1-0264	871	D6	Spit 3	20-30	chalcedony	core		0%	36.69	40-44					
04-1-0264	872	D6	Spit 4	30-40	chalcedony	medial fragment		0%	1.50	15-19					
04-1-0264	873	D6	Spit 4	30-40	chalcedony	angular fragment		0%	1.57	15-19					
04-1-0264	874	D6	Spit 4	30-40	Silcrete	flake		0%	0.32	10-14	12	14	3		
04-1-0264	875	D7	Spit 1	0-10	Silcrete	proximal fragment		0%	0.38	10-14					
04-1-0264	876	D7	Spit 1	0-10	Chert	angular fragment		0%	1.28	10-14					
04-1-0264	877	D7	Spit 1	0-10	Silcrete	angular fragment		0%	0.38	5-9					
04-1-0264	878	E3	Spit 1	0-10	Silcrete	flake		0%	12.41	30-34	34	29	12		
04-1-0264	879	E3	Spit 2	10-20	Chalcedony	proximal fragment		0%	1.20	10-14					
04-1-0264	880	E3	Spit 2	10-20	Chalcedony	angular fragment		0%	0.77	15-19					
04-1-0264	881	E4	Spit 2	10-20	Silcrete	flake		0%	0.42	10-14	9	14	4		
04-1-0264	882	E5	Spit 2	10-20	Silcrete	flake		0%	0.49	20-24	21	6	4		
04-1-0264	883	E5	Spit 2	10-20	Chalcedony	medial fragment		0%	0.66	10-14					
04-1-0296	884	A2	Spit 2	10-20	Silcrete	flake		0%	0.66	10-14	14	14	3		
04-1-0296	885	A2	Spit 2	10-20	Tuff/IMT	angular fragment		0%	1.15	15-19					
04-1-0296	886	A4	Spit 1	0-10	Silcrete	flake		0%	4.61	25-29	27	21	6		
04-1-0296	887	A4	Spit 2	10-20	Silcrete	flake		0%	1.69	20-24	21	14	5		

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0296	888	A4	Spit 2	10-20	Silcrete	flake		0%	0.51	10-14	14	12	3		
04-1-0296	889	A6	Spit 4	30-40	Tuff	flake		0%	1.75	15-19	17	14	8		
04-1-0296	890	A7	Spit 1	0-10	Silcrete	flake		0%	1.11	20-24	22	15	4		
04-1-0296	891	A7	Spit 1	0-10	Silcrete	flake		0%	7.42	30-34	34	24	8		
04-1-0296	892	A7	Spit 3	20-30	Chalcedony	flake		0%	0.63	10-14	14	11	3		
04-1-0296	893	B1	Spit 1	0-10	Silcrete	angular fragment		0%	5.31	30-34					
04-1-0296	894	B1	Spit 1	0-10	Chalcedony	angular fragment		0%	1.21	15-19					
04-1-0296	895	B1	Spit 3	20-30	Chalcedony	angular fragment		0%	1.91	15-19					
04-1-0296	896	B2	Spit 1	0-10	Chalcedony	proximal fragment		0%	7.52	25-29					
04-1-0296	897	B2	Spit 1	0-10	Chalcedony	core	fragment	0%	7.79	20-24					
04-1-0296	898	B2	Spit 3	20-30	Chalcedony	angular fragment		0%	4.06	15-19					
04-1-0296	899	B4	Spit 1	0-10	Chert	flake		0%	0.21	5-9	9	6	3		
04-1-0296	900	B4	Spit 2	10-20	Silcrete	flake		0%	1.77	20-24	21	13	7		
04-1-0296	901	B4	Spit 2	10-20	Silcrete	flake		0%	0.31	5-9	8	6	2		
04-1-0296	902	B4	Spit 3	20-30	Chalcedony	flake		0%	0.55	10-14	14	12	3		
04-1-0296	903	B4	Spit 4	30-40	Tuff/IMT	angular fragment		0%	0.25	5-9					
04-1-0296	904	B6	Spit 1	0-10	Chalcedony	core	fragment	0%	5.26	30-34					
04-1-0296	905	B6	Spit 1	0-10	Silcrete	flake		0%	5.42	25-29	29	20	7		
04-1-0296	906	B6	Spit 3	20-30	Silcrete	flake		0%	1.35	15-19	17	14	5		
04-1-0296	907	B6	Spit 3	20-30	Chalcedony	angular fragment		0%	1.35	15-19					
04-1-0296	908	B6	Spit 3	20-30	Silcrete	flake		0%	0.32	5-9	8	6	3		
04-1-0296	909	B7	Spit 2	10-20	Silcrete	flake		0%	2.36	25-29	28	16	5		
04-1-0296	910	B7	Spit 2	10-20	Silcrete	flake		0%	2.74	20-24	24	13	9		
04-1-0296	911	B7	Spit 3	20-30	Chalcedony	proximal fragment		0%	1.32	15-19					
04-1-0296	912	B7	Spit 3	20-30	Chalcedony	core	fragment	0%	1.88	15-19					
04-1-0296	913	B8	Spit 1	0-10	Silcrete	flake		0%	1.52	20-24	22	12	6		
04-1-0296	914	B8	Spit 3	20-30	Chalcedony	distal fragment		0%	0.25	5-9					
04-1-0296	915	B8	Spit 4	30-40	Silcrete	flake		0%	2.25	15-19	17	18	7		
04-1-0296	916	B8	Spit 5	40-50	Tuff/IMT	core	fragment	0%	1.70	15-19					
04-1-0296	917	B9	Spit 1	0-10	Silcrete	flake		0%	4.97	30-34	34	26	5		
04-1-0296	918	B9	Spit 1	0-10	Silcrete	flake		0%	2.97	20-24	22	24	5		
04-1-0296	919	B9	Spit 2	10-20	Silcrete	flake		0%	1.45	20-24	17	23	5		
04-1-0296	920	B9	Spit 2	10-20	Silcrete	flake		0%	2.46	20-24	21	17	6		
04-1-0296	921	B9	Spit 2	10-20	Silcrete	core		0%	203.31	70-74					
04-1-0296	922	B9	Spit 3	20-30	Silcrete	flake		0%	1.30	20-24	23	14	5		
04-1-0296	923	B9	Spit 3	20-30	Silcrete	flake		0%	4.47	20-24	19	24	9		
04-1-0296	924	B9	Spit 3	20-30	Silcrete	angular fragment		0%	1.40	15-19					
04-1-0296	925	B9	Spit 3	20-30	Silcrete	angular fragment		0%	3.46	15-19					
04-1-0296	926	B9	Spit 3	20-30	Silcrete	medial fragment		0%	1.08	15-19					

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0296	927	B9b	Spit 1	0-10	Chalcedony	angular fragment		0%	2.31	15-19					
04-1-0296	928	B9b	Spit 2	10-20	FGS	flake		0%	102.70	90-94	91	47	20		
04-1-0296	929	B9b	Spit 2	10-20	Silcrete	core		0%	54.41	40-44					
04-1-0296	930	B9b	Spit 2	10-20	Silcrete	core		0%	135.04	55-59					
04-1-0296	931	B9b	Spit 3	20-30	Chalcedony	flake		0%	17.36	35-39	26	37	20		
04-1-0296	932	B9b	Spit 3	20-30	Silcrete	angular fragment		0%	3.01	15-19					
04-1-0296	933	B9b	Spit 3	20-30	Chert	angular fragment		0%	1.43	15-19					
04-1-0296	934	B9b	Spit 4	30-40	Silcrete	flake		0%	2.74	40-44	40	9	6		
04-1-0296	935	B9b	Spit 4	30-40	Silcrete	flake		0%	2.28	15-19	17	14	6		
04-1-0296	936	B9b	Spit 4	30-40	Chalcedony	flake		0%	0.42	10-14	13	14	3		
04-1-0296	937	B9c	Spit 2	10-20	Silcrete	flake		0%	4.43	25-29	21	29	8		
04-1-0296	938	B9c	Spit 2	10-20	Chalcedony	flake		0%	1.24	20-24	21	10	6		
04-1-0296	939	B9c	Spit 2	10-20	Silcrete	flake		0%	4.01	25-29	29	25	7		
04-1-0296	940	B9c	Spit 3	20-30	Silcrete	angular fragment		0%	4.01	15-19					
04-1-0296	941	B9c	Spit 4	30-40	Chert	flake		0%	2.81	25-29	26	18	6		
04-1-0296	942	B9c	Spit 4	30-40	Chalcedony	angular fragment		0%	1.92	15-19					
04-1-0296	943	B9c	Spit 4	30-40	Chert	core		0%	45.79	40-44				yes	
04-1-0296	944	B9d	Spit 3	20-30	Chalcedony	flake		0%	0.52	10-14	13	13	3		
04-1-0296	945	B10	Spit 1	0-10	Chalcedony	flake		0%	1.71	20-24	24	13	6		
04-1-0296	946	B10	Spit 2	10-20	Silcrete	flake		0%	4.08	20-24	23	23	7		
04-1-0296	947	B10	Spit 2	10-20	Chalcedony	flake		0%	0.10	5-9	8	5	2		
04-1-0296	948	B10	Spit 4	30-40	Chalcedony	angular fragment		0%	1.76	20-24					
04-1-0296	949	B11	Spit 2	10-20	Silcrete	angular fragment		0%	0.62	10-14					
04-1-0296	950	B12	Spit 1	0-10	Silcrete	flake		0%	10.09	30-34	31	25	12		
04-1-0296	951	C2	Spit 2	10-20	Silcrete	proximal fragment		0%	1.94	15-19					
04-1-0296	952	C3	Spit 1	0-10	Chert	flake		0%	0.37	15-19	10	15	3		
04-1-0296	953	C3	Spit 1	0-10	FGS		hammerstone	0%	123.24	55-59					
04-1-0296	954	C4	Spit 1	0-10	Silcrete	flake		0%	1.61	15-19	18	16	4		
04-1-0296	955	C4	Spit 1	0-10	Silcrete	medial fragment		0%	0.38	5-9					
04-1-0296	956	C5	Spit 1	0-10	Chalcedony	flake		0%	0.32	5-9	9	5	3		
04-1-0296	957	C5	Spit 1	0-10	Silcrete	angular fragment		0%	2.25	15-19					
04-1-0296	958	C5	Spit 1	0-10	Chert	core		0%	38.46	45-49					
04-1-0296	959	C5	Spit 2	10-20	Silcrete	flake		0%	2.03	20-24	21	18	4		
04-1-0296	960	C5	Spit 2	10-20	Chert	proximal fragment		0%	0.37	10-14					
04-1-0296	961	C5	Spit 2	10-20	Chert	flake		0%	5.28	15-19	18	18	14		
04-1-0296	962	C5	Spit 3	20-30	Chert	core		0%	7.92	25-29					
04-1-0296	963	C6	Spit 1	0-10	chalcedony	flake		0%	1.01	10-14	12	14	4		
04-1-0296	964	C6	Spit 1	0-10	Silcrete	flake		0%	1.09	15-19	19	14	4		
04-1-0296	965	C6	Spit 3	20-30	chalcedony	flake		0%	4.17	25-29	26	17	7		

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0296	966	C12	Spit 1	0-10	Chert	flake		0%	12.12	25-29	29	24	13		
04-1-0296	967	C8	Spit 4	30-40	Chert	proximal fragment		0%	2.28	15-19					
04-1-0281	968	A1	Spit 2	10-20	chalcedony	core	fragment	0%	17.87	45-49					
04-1-0281	969	A1	Spit 2	10-20	Silcrete	proximal fragment		0%	1.11	10-14					
04-1-0281	970	A1	Spit 2	10-20	Silcrete	flake		0%	1.52	15-19	19	12	5		
04-1-0281	971	A1	Spit 2	10-20	chalcedony	flake		0%	0.31	15-19	9	19	2		
04-1-0281	972	A1	Spit 2	10-20	Chert	flake		0%	0.18	10-14	13	6	2		
04-1-0281	973	A2	Spit 2	10-20	chalcedony	flake		0%	0.69	15-19	19	9	3		
04-1-0281	974	A2	Spit 2	10-20	Chert	flake		0%	1.77	20-24	22	19	4	yes	green chert
04-1-0281	975	A2	Spit 2	10-20	Chalcedony	flake		0%	8.01	25-29	21	21	11		banded
04-1-0281	976	A2	Spit 2	10-20	Silcrete	core	fragment	0%	6.47	45-49					
04-1-0281	977	A2	Spit 2	10-20	Silcrete	proximal fragment		0%	0.29	5-9					
04-1-0281	978	A2	Spit 2	10-20	Silcrete	angular fragment		0%	2.14	20-24					
04-1-0281	979	A2	Spit 2	10-20	Chalcedony	flake		0%	0.37	10-14	14	7	4		
04-1-0281	980	A3	Spit 3	20-30	Chert	flake		31-69%	5.87	25-29	27	13	13		
04-1-0281	981	A3	Spit 5	40-50	Chalcedony	flake		0%	1.45	20-24	14	22	5		
04-1-0281	982	A3	Spit 6	50-60	Silcrete	flake		0%	1.47	20-24	20	14	5		
04-1-0281	983	A3	Spit 6	50-60	Tuff/IMT	medial fragment		0%	0.48	15-19					
04-1-0281	984	A4	Spit 1	0-10	Chalcedony	proximal fragment		0%	0.74	10-14					
04-1-0281	985	A4	Spit 1	0-10	Tuff/IMT	medial fragment		0%	0.33	10-14					
04-1-0281	986	A4	Spit 3	20-30	Silcrete	flake		0%	20.01	45-49	37	47	13		
04-1-0281	987	A4	Spit 3	20-30	Silcrete	angular fragment		0%	1.41	15-19					
04-1-0281	988	A4	Spit 3	20-30	Silcrete	flake		0%	28.61	50-54	52	31	11		
04-1-0281	989	B1	Spit 2	10-20	Chalcedony	flake		0%	1.06	20-24	23	18	3		
04-1-0281	990	B1	Spit 2	10-20	Tuff/IMT	flake		0%	2.16	20-24	22	16	6		
04-1-0281	991	B1	Spit 5	40-50	Chert	core		0%	22.48	25-29					
04-1-0281	992	B2	Spit 1	0-10	Silcrete	flake		0%	65.47	65-69	68	43	21		
04-1-0281	993	B2	Spit 3	20-30	Chert	flake		0%	1.01	15-19	12	18	5		
04-1-0281	994	B2	Spit 3	20-30	Silcrete	flake		0%	0.27	15-19	15	7	2		
04-1-0281	995	B2	Spit 3	20-30	Chert	flake		0%	0.91	15-19	17	19	4		
04-1-0281	996	B2	Spit 4	30-40	Chalcedony	flake		0%	1.61	25-29	29	15	3		
04-1-0281	997	B2	Spit 5	40-50	Chalcedony	flake		0%	2.03	20-24	21	16	4		
04-1-0281	998	B2	Spit 5	40-50	Chalcedony	flake		0%	4.11	30-34	23	14	9		
04-1-0281	999	B3	Spit 1	0-10	Chalcedony	core	bipolar	0%	1.81	15-19					
04-1-0281	1000	B3	Spit 1	0-10	Chalcedony	angular fragment		0%	0.66	5-9					
04-1-0281	1001	B3	Spit 2	10-20	Chalcedony	angular fragment		0%	2.66	20-24					
04-1-0281	1002	B3	Spit 2	10-20	Chalcedony	angular fragment		0%	0.59	10-14					
04-1-0281	1003	B3	Spit 3	20-30	Chert	flake		0%	23.43	45-49	31	47	10		
04-1-0281	1004	B3	Spit 3	20-30	Chalcedony	flake		0%	0.51	15-19	11	18	3		

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0281	1005	B3	Spit 3	20-30	Chalcedony	angular fragment		0%	0.55	10-14					
04-1-0281	1006	B3	Spit 3	20-30	Chalcedony	flake		0%	0.08	10-14	8	11	2		
04-1-0281	1007	B3	Spit 4	30-40	FGS	flake		0%	2.85	20-24	23	17	7		
04-1-0281	1008	B3	Spit 4	30-40	Chalcedony	angular fragment		0%	2.29	15-19					
04-1-0281	1009	B3	Spit 5	40-50	Tuff/IMT	medial fragment		0%	0.33	10-14					
04-1-0281	1010	B4	Spit 2	10-20	Silcrete	flake		0%	34.73	50-54	53	37	13		
04-1-0281	1011	B4	Spit 2	10-20	Silcrete	flake		0%	0.72	15-19	16	16	2		
04-1-0281	1012	B4	Spit 2	10-20	Silcrete	core		0%	112.58	70-74					
04-1-0281	1013	B4	Spit 3	20-30	Chert	proximal fragment		0%	1.22	15-19					
04-1-0281	1014	B4	Spit 3	20-30	Silcrete	flake		0%	2.57	20-24	16	24	7		
04-1-0281	1015	B4	Spit 3	20-30	Chalcedony	flake		0%	1.01	15-19	12	18	5		
04-1-0281	1016	B4	Spit 4	30-40	Tuff/IMT	flake		0%	3.93	25-29	28	14	10		
04-1-0281	1017	B4	Spit 4	30-40	Chalcedony	distal fragment		0%	0.21	10-14					
04-1-0281	1018	C1	Spit 3	20-30	Chert	angular fragment		0%	0.28	10-14					
04-1-0281	1019	C3	Spit 1	0-10	Silcrete	flake		0%	12.52	40-44	39	41	11		
04-1-0281	1020	C3	Spit 1	0-10	Chalcedony	flake		0%	0.25	10-14	13	6	3		
04-1-0281	1021	C3	Spit 1	0-10	Chert	angular fragment		0%	1.46	10-14					
04-1-0281	1022	C3	Spit 1	0-10	Chalcedony	angular fragment		0%	0.83	10-14					
04-1-0281	1023	C3	Spit 3	20-30	FGS	proximal fragment		0%	1.29	15-19					
04-1-0281	1024	C3	Spit 3	20-30	Chalcedony	angular fragment		0%	0.67	5-9					
04-1-0281	1025	C3	Spit 3	20-30	Silcrete	flake		0%	0.53	15-19	17	10	4		
04-1-0281	1026	C3	Spit 3	20-30	FGS	flake		0%	3.13	24-29	25	11	8		
04-1-0281	1027	C4	Spit 2	10-20	Silcrete	flake		0%	6.01	30-34	31	26	6		
04-1-0281	1028	C4	Spit 2	10-20	Tuff/IMT	angular fragment		0%	0.57	15-19					
04-1-0281	1029	C4	Spit 4	30-40	Silcrete	flake		0%	1.01	15-19	16	19	2		
04-1-0281	1030	C4	Spit 4	30-40	Tuff/IMT	medial fragment		0%	0.27	10-14					
04-1-0281	1031	C5	Spit 1	0-10	Chalcedony	flake		0%	9.01	35-39	38	23	11		
04-1-0281	1032	C5	Spit 4	30-40	Tuff/IMT	flake		0%	0.46	10-14	12	14	3		
04-1-0281	1033	C5	Spit 4	30-40	Chalcedony	flake		0%	0.33	15-19	17	8	3		
04-1-0281	1034	C5	Spit 4	30-40	Chalcedony	flake		0%	1.93	15-19	18	16	7		
04-1-0281	1035	D1	Spit 2	10-20	Chalcedony	flake		0%	4.04	20-24	20	16	8		
04-1-0281	1036	D2	Spit 3	20-30	Silcrete	flake		0%	8.81	30-34	34	21	9		
04-1-0281	1037	D3	Spit 3	20-30	Chert	flake		0%	1.37	20-24	21	16	5		
04-1-0281	1038	D2	Spit 4	30-40	Silcrete	distal fragment		0%	0.87	15-19					
04-1-0281	1039	E1	Spit 2	10-20	Silcrete	core	fragment	0%	4.81	20-24					
04-1-0281	1040	E2	Spit 2	10-20	Chalcedony	flake		0%	5.61	25-29	27	23	11		
04-1-0281	1041	E2	Spit 2	10-20	Silcrete	flake		0%	1.01	15-19	14	18	4		
04-1-0281	1042	E2	Spit 2	10-20	Chert	flake		0%	1.32	20-24	24	13	4		
04-1-0281	1043	E2	Spit 2	10-20	Chert	flake		0%	1.31	15-19	18	12	7		

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0281	1044	E2	Spit 3	20-30	Chert	flake		0%	3.47	25-29	14	26	9		
04-1-0281	1045	E2	Spit 3	20-30	Chert	proximal fragment		0%	1.16	25-29					
04-1-0281	1046	E2	Spit 3	20-30	Chert	flake		0%	0.25	15-19	16	13	1		
04-1-0281	1047	E2	Spit 4	30-40	Silcrete	flake		0%	9.04	40-44	20	40	9		
04-1-0281	1048	E2	Spit 5	40-50	Silcrete	flake		0%	0.55	15-19	18	11	3		
04-1-0281	1049	E2	Spit 5	40-50	Silcrete	flake		0%	0.18	5-9	8	8	2		
04-1-0281	1050	E3	Spit 3	20-30	Silcrete	flake		0%	0.85	15-19	17	12	5		
04-1-0281	1051	E3	Spit 3	20-30	Silcrete	flake		0%	0.74	20-24	24	7	5		
04-1-0281	1052	F1	Spit 1	0-10	Silcrete	proximal fragment		0%	0.94	10-14					
04-1-0281	1053	F1	Spit 3	20-30	Chert	angular fragment		0%	4.25	25-29					
04-1-0281	1054	F2	Spit 3	20-30	Silcrete	flake		0%	38.63	50-54	54	42	14		
04-1-0281	1055	F2	Spit 3	20-30	Silcrete	flake		0%	2.49	20-24	24	15	6		
04-1-0281	1056	F3	Spit 1	0-10	Silcrete	flake		0%	1.15	15-19	19	14	3		
04-1-0281	1057	F3	Spit 3	20-30	Chalcedony	flake		0%	1.86	15-19	19	10	4		
04-1-0281	1058	F3	Spit 4	30-40	Silcrete	flake		0%	6.66	35-39	37	21	9		
04-1-0281	1059	F3	Spit 4	30-40	Silcrete	flake		0%	3.86	30-34	30	22	6		
04-1-0281	1060	G2	Spit 1	0-10	chalcedony	core		0%	35.61	40-44					
04-1-0281	1061	G2	Spit 1	0-10	chalcedony	angular fragment		0%	3.81	20-24					
04-1-0281	1062	G2	Spit 1	0-10	chalcedony	flake		0%	1.07	15-19	19	10	6		
04-1-0281	1063	G2	Spit 1	0-10	chalcedony	angular fragment		31-69%	6.14	25-29					
04-1-0281	1064	G2	Spit 2	10-20	chalcedony	flake		0%	0.36	10-14	14	7	3		
04-1-0281	1065	G2	Spit 2	10-20	chalcedony	angular fragment		0%	0.55	10-14					
04-1-0281	1066	G3	Spit 3	20-30	chalcedony	flake		0%	4.86	20-24	24	23	7		
04-1-0281	1067	G4	Spit 4	30-40	Tuff/IMT	flake		0%	0.53	15-19	14	18	2		
04-1-0281	1068	G4	Spit 4	30-40	FGS	flake		0%	10.84	40-44	43	22	12		
04-1-0281	1069	G4	Spit 4	30-40	Tuff/IMT	core		0%	5.61	25-29					
04-1-0281	1070	H2	Spit 1	0-10	chalcedony	core	fragment	0%	3.27	15-19					
04-1-0281	1071	H3	Spit 2	10-20	Silcrete	angular fragment		0%	1.19	15-19					
04-1-0281	1072	H3	Spit 2	10-20	chalcedony	flake		0%	0.23	10-14	9	11	2		
04-1-0281	1073	H3	Spit 2	10-20	chalcedony	medial fragment		0%	0.16	5-9					
04-1-0281	1074	H3	Spit 2	10-20	Tuff/IMT	flake		0%	16.82	40-44	36	40	19		
04-1-0281	1075	H3	Spit 3	20-30	Chalcedony	angular fragment		0%	5.22	25-29					
04-1-0281	1076	H3	Spit 3	20-30	Chalcedony	angular fragment		0%	2.62	20-24					
04-1-0281	1077	H3	Spit 3	20-30	Chalcedony	core		0%	17.27	45-49					
04-1-0281	1078	H3	Spit 3	20-30	Silcrete	core		0%	104.01	60-64					
04-1-0281	1079	J1	Spit 2	10-20	Chert	flake		0%	4.01	25-29	27	19	7		
04-1-0281	1080	J1	Spit 2	10-20	Chalcedony	flake		0%	0.69	10-14	10	14	4		
04-1-0281	1081	K1	Spit 3	20-30	Silcrete	flake		0%	7.71	30-34	21	32	9		
04-1-0281	1082	K2	Spit 1	0-10	Chalcedony	proximal fragment		0%	1.79	15-19					

© ECO LOGICAL AUSTRALIA PTY LTD

Site name	Artefact ID	Test Square Number	Spit/ Bulk	Depth (cm)	Raw Material Type	Reduction Type	Tool Type / Core Type	Cortex %	Weight (g)	Size Range mm	Percussion L mm	Width mm	Thickness mm	Photo Log	Comments
04-1-0281	1083	L2	Spit 1	0-10	Chalcedony	flake		0%	13.77	35-39	36	25	22		
04-1-0281	1084	L2	Spit 2	10-20	Chalcedony	flake		0%	0.29	15-19	16	8	3		
04-1-0281	1085	L2	Spit 2	10-20	Chalcedony	flake		0%	0.53	15-19	17	14	2		
04-1-0281	1086	L2	Spit 2	10-20	Chalcedony	flake		0%	0.66	20-24	21	8	4		
04-1-0281	1087	M3	Spit 2	10-20	Chalcedony	flake		0%	3.52	30-34	34	23	3		
04-1-0281	1088	M3	Spit 2	10-20	Chalcedony	core	fragment	0%	4.21	30-34					
04-1-0281	1089	N2	Spit 2	10-20	FGS	flake		0%	8.75	40-44	22	42	11		
04-1-0281	1090	N2	Spit 2	10-20	Silcrete	flake		0%	9.06	30-34					
04-1-0281	1091	N3	Spit 2	10-20	Chalcedony	core		1-30%	8.39	20-24				yes	
04-1-0281	1092	N3	Spit 2	10-20	Chalcedony	flake		0%	14.96	35-39	35	20	12		
04-1-0281	1093	N3	Spit 2	10-20	Chalcedony	flake		0%	2.10	25-29	28	15	7		
04-1-0281	1094	N3	Spit 2	10-20	Chalcedony	angular fragment		0%	0.89	10-14					
04-1-0281	1095	P2	Spit 2	10-20	FGS	flake		0%	10.08	45-49	46	35	7		
04-1-0281	1096	P2	Spit 2	10-20	FGS	flake		0%	3.68	25-29	20	29	6		
04-1-0281	1097	P3	Spit 2	10-20	Tuff/IMT	flake		0%	6.25	30-34	30	20	11		
04-1-0281	1098	P3	Spit 2	10-20	FGS	flake		0%	5.54	25-29	29	21	9		
04-1-0281	1099	P4	Spit 3	20-30	Chalcedony	flake		0%	0.34	10-14	14	9	3		
04-1-0281	1100	Q1	Spit 1	0-10	Chalcedony	angular fragment		0%	0.43	15-19					
04-1-0281	1101	Q1	Spit 3	20-30	Chalcedony	angular fragment		0%	1.47	15-19					
04-1-0281	1102	Q3	Spit 1	0-10	Chalcedony	flake		0%	2.55	20-24	24	15	8		
04-1-0281	1103	Q3	Spit 1	0-10	Silcrete	flake		0%	0.77	15-19	11	17	3		
04-1-0281	1104	Q3	Spit 1	0-10	Silcrete	medial fragment		0%	0.46	10-14					
04-1-0281	1105	Q4	Spit 1	0-10	Chalcedony	angular fragment		0%	2.27	20-24					
04-1-0281	1106	Q4	Spit 2	10-20	Chalcedony	core	fragment	0%	1.49	15-19					
04-1-0281	1107	Q4	Spit 2	10-20	Silcrete	medial fragment		0%	2.37	20-24					
04-1-0281	1108	R4	Spit 1	0-10	Chert	flake		0%	0.65	15-19	15	13	3		
04-1-0281	1109	R4	Spit 2	10-20	Silcrete	flake		0%	10.61	40-44	43	23	10		
04-1-0281	1110	R4	Spit 2	10-20	Silcrete	angular fragment		0%	0.44	10-14					
04-1-0292	1111	B5	Spit 1	0-10	FGS		hand axe	31-69%	-	110-114				yes!!	
04-1-0280	1112	A6	Spit 4	30-40	FGS		hand axe	31-69%	391.66	95-99					
04-1-0296	1113	B9c	Spit 4	30-40	Tuff/IMT	core		0%	31.01	45-49					
04-1-0296	1114	B9c	Spit 4	30-40	Silcrete	flake		0%	4.40	25-29	29	21	7		
04-1-0296	1115	B9c	Spit 4	30-40	Silcrete	flake		0%	4.21	20-24	22	24	7		
04-1-0296	1116	B6	Spit 2	10-20	Silcrete	flake		0%	3.76	35-39	22	37	3		

© ECO LOGICAL AUSTRALIA PTY LTD

Appendix D : Previously unidentified sites recorded during ELA 2020 fieldwork

D1 04-1-0301 (CHD-AS1)

NSW GOVERNMENT Office of Environment & Heritage

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0301 **Date recorded:** 27-10-2020

Site Location Information

Site name: CHD-AS1

Easting: 529983 **Northing:** 6848369 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 10

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Mr.	Beebe	Tyler

Organisation: Eco Logical Pty Ltd

Address: Level1, 101 Sussex St Sydney 2000

Phone: 0285368650 **E-mail:** tylerb@ecoaus.com.au

Site Context Information

Land Form Pattern: Steep Hills **Land Use:** Pastoral/Grazing

Land Form Unit: Slope **Vegetation:** Open Woodland

Distance to Water (m): 50 **Primary Report:** Aboriginal Cultural Heritage Management Plan: Clarrie Hall Dam

How to get to the site: The site is accessed via Billabong Farm (currently owned by Tweed Shire Council) off of Doon Doon Rd, in Doon Doon NSW

Other site information:

1

Site location map

Site contents information

open/closed site: Open **Site condition:** Erosion

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
1.	Artefact	7	1	1				

Description:

1 silcrete core, 2 silcrete flakes, 1 Chalcedony Flake, 1 Chalcedony core, 2 chert flakes

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
2.								

Description:

2

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
3.							

Description:

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
4.							

Description:

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
5.							

Description:

Other Site Info:

Site plan

3

Site photographs

Description: artefact scatter

Description: artefact scatter

Description: site is located in tree top of slope

Description: site location

Site restrictions

Do you want to Restrict this site?: ☐

Restriction type: Gender ☐ General ☐ Location ☐

Why is this site restricted?:

Further information contact

Title ☐ Surname ☐ First name ☐

Organisation:

Address:

Phone: ☐ E-mail: ☐

4

D2 04-1-0302 (CHD-1)

NSW GOVERNMENT Office of Environment & Heritage

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0302 **Date recorded:** 27-10-2020

Site Location Information

Site name: CHD-1

Easting: 528954 **Northing:** 6850193 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 10

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Mr.	Beebe	Tyler

Organisation: Eco Logical Pty Ltd

Address: Level1, 101 Sussex St Sydney 2000

Phone: 0285368650 **E-mail:** tylerb@ecoaus.com.au

Site Context Information

Land Form Pattern: Steep Hills **Land Use:** Pastoral/Grazing

Land Form Unit: Slope **Vegetation:** Open Woodland

Distance to Water (m): 100 **Primary Report:** Aboriginal Cultural Heritage Management Plan: Clarrie Hall Dam

How to get to the site: The site is located off a farm track at 145 Commissioners Creek Rd, Doon Doon NSW

Other site information:

1

Site location map

Site contents information

open/closed site: Open **Site condition:** Erosion

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
1. Artefact	1	1	1				

Description:

Hand Axe

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
2.							

Description:

2

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
3.							

Description:

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
4.							

Description:

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
5.							

Description:

Other Site Info:

Site plan

3

Site photographs

Description: hand axe

Description: hand axe

Description: Hand axe

Description: location

Site restrictions

Do you want to Restrict this site?: ☐

Restriction type: Gender ☐ General ☐ Location ☐

Why is this site restricted?:

Further information contact

Title ☐ Surname ☐ First name ☐

Organisation:

Address:

Phone: ☐ E-mail: ☐

4

D3 04-1-0303 (CHD-ST2)

NSW GOVERNMENT Office of Environment & Heritage

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0303 **Date recorded:** 30-11-2020

Site Location Information

Site name: CHD_ST2

Easting: 529419 **Northing:** 6851590 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Norfolk	Jennifer

Organisation:

Address: 101 Sussex Street, Sydney NSW 2000

Phone: 0466312832 **E-mail:** jennifer.norfolk@ecoaus.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Semirural

Land Form Unit: Crest **Vegetation:** Open Forest

Distance to Water (m): 20 **Primary Report:**

How to get to the site: Centre of Clarrie Hall Dam, north of Crams Farm recreation area, access by boat only

Other site information:

1

Site location map

Figure 1: Location of Scar Tree CHD_ST2 at Clarrie Hall Dam

Site contents information

open/closed site: Open **Site condition:** Good

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
1. Modified Tree	1	130	35	17	15	Elongated	Other

Description:

Pink Mahogany, dead, also had lightening scars.

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
2.							

Description:

2

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

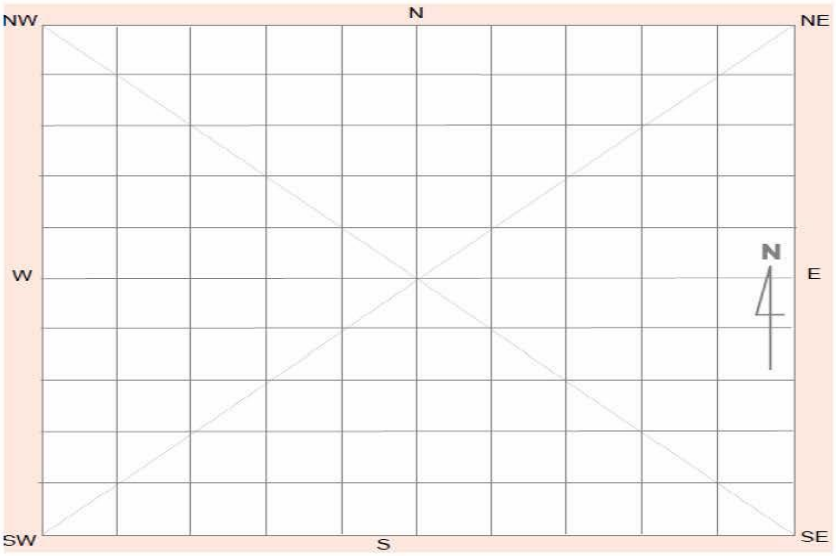
Description:

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



3

Site photographs

Description: Location of scar at base of tree

Description: Close up of scar

Description: measurement of scar

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title Surname First name

Organisation:

Address:

Phone: E-mail:

4

Appendix E : Navin Officer Heritage Consultants 2018 ACHA

Proposed Raising of Clarrie Hall Dam, Murwillumbah NSW

Archaeological Assessment and Aboriginal Cultural Heritage Assessment

June 2018

Navin Officer

heritage consultants Pty Ltd

acn: 092 901 605

Number 4
Kingston Warehouse
71 Leichhardt St.
Kingston ACT 2604

www.nohc.com.au

ph 02 6282 9415
fx 02 6282 9416

Appendix B
Legislative context

EMM
creating opportunities

B.1 Commonwealth

B.1.1 Aboriginal and Torres Strait Islander Heritage Protection Act 1984

The *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* preserves and protect areas (especially sacred or intangible sites) and places of particular significance to Aboriginal people from damage or destruction. Steps necessary for the protection of a threatened place are outlined in a gazetted Ministerial Declaration (Sections 9 and 10) and which can result in a cessation of any development activity.

In addition, the Act also protects objects by Declaration, notably Aboriginal skeletal remains (Section 12). This can be applied at a State level where a State is unwilling or unable to provide such protection.

B.1.2 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* provides for protection of natural and cultural heritage places. The Act establishes a National Heritage List (NHL) and a Commonwealth Heritage List (CHL) upon which places of natural or cultural significance can be listed. Sites at a national level and can be in public or private ownership. The CHL is limited to places owned by the Commonwealth, and most frequently encompass Department of Defence sites. Sites and places listed on the NHL are considered to be of State and local heritage value, even if they are not listed or documented as such at a State level.

The values of sites and places on the NHL/CHL are protected under the EPBC Act. The Act requires that the Minister administering the Act assess any action which has, will have, or is likely to have, a significant impact on the heritage values. Where relevant, a referral is made to the relevant Commonwealth Department, and either approval, approval with controls, or rejection of the proposed action is determined.

B.1.3 Native Title Act 1993

The *Native Title Act 1993* provides recognition and protection for native title. The Act establishes the managing body, National Native Title Tribunal, who administers native title claims to rights and interests over lands and waters by Aboriginal people. It also administers the future act processes that allow proponents to identify and manage potential native title issues for a given activity on a site where a claim has yet to be made or finalised.

In addition, the Act provides for Indigenous Land Use Agreements (ILUA), which is an agreement between a native title group and others about the use and management of land and waters. ILUAs were introduced as a result of amendments to the Act in 1998. They allow people to negotiate flexible and bipartisan agreements to suit their particular circumstances often circumventing lengthy timeframes associated with the native title process. An ILUA can be negotiated over areas where native title has, or has not yet, been determined. They can be part of a broader determination or settled separately.

B.2 State

B.2.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) is the over-arching Act that dictates the nature of assessment and management of the environment during a development project, and within which heritage forms a component. requires that environmental and heritage impacts are considered by consent authorities prior to granting development approvals.

The Act has two main approval pathways within which heritage needs to be considered. Generally for smaller scale (either financially or spatially), Parts 4 (Division 4.1) and 5 (Division 5.1) of the Act are implemented. Part 4 requires that a proponent submits a Development Application (DA) to local council for a given development, and within this document a consideration of Aboriginal and historical heritage is required. The specific nature of the assessment is usually determined at a pre-DA meeting with the council, and in relation to the relevant heritage Acts. Where Aboriginal heritage is identified as an issue, the DA may become Integrated Development, whereby the State government is also required to review and provide comments on the DA prior to its issue. Part 5 of the Act is a similar process, but only relates to approvals developed and issued by State government departments. Each State government department has their own internal approach to considering environmental issues, but ultimately must develop a Review of Environmental Factors (REF), which is comparable to a DA, and which requires consideration and management of heritage. Similarly, where heritage is identified as an issue, liaison with relevant State consent authorities and approvals under other Acts may still be required.

The other approval pathway relates to State Significant Development and/or Infrastructure (Parts 4.7 and 5.2, respectively). These processes require an Environmental Impact Statement (EIS) to be developed for a project and assessed currently by the Department of Planning, Industry and Environment. Importantly, the SSD and SSI processes turns off a number of pieces of other legislation, including parts of the *National Parks and Wildlife Act 1974*. In the case of Aboriginal heritage, both the assessment and approval for harm are dictated by the Secretary's Environmental Assessment Requirements (SEARs) outlining the contents and scope of the EIS, and the Project Approval that dictates controls on how a development should proceed.

B.2.2 National Parks and Wildlife Act 1974

The National Parks and Wildlife Act 1974 (NPW Act) provides protection for Aboriginal objects and places across NSW:

- An Aboriginal object is defined as: *Any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction and includes Aboriginal remains.*

- An Aboriginal place is: Any place declared to be an Aboriginal place under Section 84. This is a very specific piece of legislation that provides process and management of Aboriginal sites of cultural, but not necessarily scientific, values. They are commonly, but not always associated with intangible values.

- Any place declared to be an Aboriginal place by the Minister for the Environment, under Section 84 of the Act.

It is an offence to disturb Aboriginal objects or places without an Aboriginal Heritage Impact Permit (AHIP), which is outlined in Section 90 of the Act. Currently, such permits can be sought from the Chief Executive of the NSW Department of Premier and Cabinet (DPC), with the recent relocation of the Office of Environment and Heritage.

To obtain an AHIP, certain assessment and documentation (outlined in this report) must be provided to DPC for their consideration. Once satisfied, they may endorse an AHIP to harm cultural heritage either conditionally or unconditionally. They can also refuse an application as outlined in Section 90C of the Act, and which can be appealed in accordance with Section 90L.

B.2.3 Aboriginal Land Rights Act 1983

The *Aboriginal Land Rights Act 1983* provides process and protocols for the transfer of vacant Crown land ownership to a Local Aboriginal Land Council, where the land is not for an essential purpose or for residential land. These lands are then managed and maintained by the Local Aboriginal Land Council.

For the purposes of this report, the Act is primarily important to inform relevant Aboriginal communities for consultation and where Crown land forms part of the development area may require additional liaison with the LALC as a potential, or existing, landowner.

Appendix C
Aboriginal community consultation

EMM
creating opportunities

C.1 Consultation Log

Aboriginal Consultation Requirements for Proponents **(DECCW 2010)***

ABORIGINAL COMMUNICATIONS LOG

Project Name: Clarrie Hall Dam Raising | **Project #: E230038**

DATE	OUTGOING / INCOMING	ORGANISATION	CONTACT MADE BY	CONTACT TO	CONTACT TYPE	COMMENTS
10-Feb-23	Outgoing	All RAPs	Alan Williams		Email/Post	Distributed a project update with EMM recently joining the project.
12-Feb-23	Incoming		Paul Buxton	Alan Williams	Email	Confirmed receipt
13-Feb-23	Outgoing	Tweed Aboriginal Co-operative Society Limited.	Alan Williams	Nicole Rotumah	Email	Following clarification by NR of the correct address details for the organisation, AW resent the letter advising of EMM's recent involvement
3-Mar-23	Outgoing	Tweed Byron LALC	Alan Williams	Maurice Gannon	Phone	Discuss the gap analysis with MG and sought outstanding concerns. These included a need for further justitfication of the feasibility of the project, and more consideration of the rockshelter sites. Was advised the gender specific site was outside of the footprint and did not require consideration
3-Mar-23	Outgoing		Alan Williams	Jackie MacDonald	Phone	Discuss the gap analysis with JM and sought outstanding concerns. These included a need for further survey due to ineffectiveness of the original works, and more consideration of the rockshelter sites, with a strong desire for protection.
3-Mar-23	Outgoing		Alan Williams	Paul Buxton	Phone	Discuss the gap analysis with PB and sought outstanding concerns. These included a need for further investigations of the sites with high density cultural materials, and more consideration of the rockshelter sites, with a strong desire for protection.
3-Mar-23	Outgoing	Tweed Aboriginal Co-operative Society Limited.	Alan Williams	Nicole Rotumah	Phone	Left a message. Email providing updated information received.
18-May-23	Outgoing	All RAPs	Alan Williams	-	Email	Advised that we would be re-initiating the consultation due to gaps in the previous documentation
18-May-23	Outgoing	Heritage NSW	Alan Williams	-	Email	Distributed a request to provide information on Aboriginal inidviduals and organisatons known to work in the region
18-May-23	Outgoing	Tweed Shire Council	Alan Williams	Tim Appo	Email	Distributed a request to provide information on Aboriginal inidviduals and organisatons known to work in the region
18-May-23	Outgoing	NTSCorp	Alan Williams	-	Email	Distributed a request to provide information on Aboriginal inidviduals and organisatons known to work in the region
18-May-23	Outgoing	Native Title Tribunal	Alan Williams	-	Email	Distributed a request to provide information on Aboriginal inidviduals and organisatons known to work in the region
18-May-23	Outgoing	North Coast Local Land Services	Alan Williams	Leonie Williamson	Email	Distributed a request to provide information on Aboriginal inidviduals and organisatons known to work in the region
18-May-23	Outgoing	Tweed Byron LALC	Alan Williams	Maurice Gannon	Email	Distributed a request to provide information on Aboriginal inidviduals and organisatons known to work in the region
18-May-23	Outgoing	Office of the Registrar	Alan Williams	-	Email	Distributed a request to provide information on Aboriginal inidviduals and organisatons known to work in the region
19-May-23	Incoming	Office of the Registrar	Brandan Smith	Alan Williams	Email	Advised that the Tweed Byron LALC was the most suitable organisation to liase with
19-May-23	Incoming	Native Title Tribunal	-	Alan Williams	Email	Provided a breakdown of Lot/DP ownership, and identified that the Tweed River Bundjalung People (NC2020/002) applicant was relevant to the project area.
19-May-23	Incoming	North Coast Local Land Services	Leonie Williamson	Alan Williams	Email	Provided a list of four Aboriginal individuals and organisations relevant to the project area.
19-May-23	Incoming	Tweed Shire Council	Tim Appo	Alan Williams	Email	Advised we should speak to the Tweed Aboriginal Advisory Committee hosted by the Council. AW sought further information on being able to attend.
20-May-23	Incoming	Jackie McDonald	Jackie McDonald	Alan Williams	Email	Sought to re-register in the project following update of the need to re-advertise, etc.
20-May-23	Incoming	Jason McDonald	Jason McDonald	Alan Williams	Email	Via Jackie McDonald, sought to re-register in the project following update of the need to re-advertise, etc.
21-May-23	Incoming	Paul Buxton	Paul Buxton	Alan Williams	Email	Sought to re-register in the project following update of the need to re-advertise, etc.
24-May-23	Incoming	Heritage NSW	Barry Gunther	Alan Williams	Email	Provided a list of >10 organisations for the Tweed Shire LGA with which to consult
26-May-23	Incoming	NTSCorp	Ashwyn Sormus	Alan Williams	Email	Distributed the request onto an undefined number of Aboriginal organisations to seek their interest.
26-May-23	Incoming	Jason McDonald	Jason McDonald	Alan Williams	Email	Sought to re-register in the project following update of the need to re-advertise, etc.
Notification						
31-May-23	Outgoing	All identified stakeholders	Alan Williams, Mikhaila Chap	-	Email/Post	Distribued notification letter and sought interest in being consulted.
31-May-23	Outgoing	Scott Monaghan	Mikhaila Chaplin	Scott Monaghan	Phone	Call to confirm contact details in order to send notification letter and sought interest in being consulted. Number was not connected and was unable to be reached.
31-May-23	Outgoing	Banjalang Aboriginal Corporartion	Mikhaila Chaplin	Simone Barker	Phone	Call to confirm contact details in order to send notification letter and sought interest in being consulted. No Answer
31-May-23	Outgoing	Bundjalung Elders Council Aboriginal Corporation	Mikhaila Chaplin	Bertha Kapeen	Phone	Call to confirm contact details in order to send notification letter and sought interest in being consulted. Phone number change/ disconnected and was unable to be reached.
31-May-23	Outgoing	Burabi Aboriginal Corporation	Mikhaila Chaplin	Louis/Lois Cook	Phone	Call to confirm contact details in order to send notification letter and sought interest in being consulted. No answer. Voicemail left on mobile number.
31-May-23	Outgoing	Canowindrra Tweed Byron Aged and Disabled Aboriginal Corporation	Mikhaila Chaplin	Veronese Burgess	Phone	Call to confirm contact details in order to send notification letter and sought interest in being consulted. No answer. Voicemail left on mobile number.
31-May-23	Outgoing	Durahrwa Training and Development Aboriginal Corporation	Mikhaila Chaplin	Andrew	Phone	Call to confirm contact details in order to send notification letter and sought interest in being consulted. Phone number change/ disconnected and was unable to be reached.
31-May-23	Outgoing	Minjungbal Cultural Museum	Mikhaila Chaplin		Phone	Call to confirm contact details in order to send notification letter and sought interest in being consulted. Email address received
31-May-23	Incoming	Canowindrra Tweed Byron Aged and Disabled Aboriginal Corporation	Veronese Burgess	Mikhaila Chaplin	Phone	Veronese returning call and provided new email address.
31-May-23	Outgoing	Marcus Ferguson, Knowledge Holder and Advisor	Mikhaila Chaplin	Marcus Feguson	Phone	Call to confirm contact details in order to send notification letter and sought interest in being consulted. Marcus said he is quite busy currently and decided not to register.
31-May-23	Incoming	Rachael Cavanagh	Rachael Cavanagh	Alan Williams and Mikhaila Chaplin	Email	Confirmation of registration

31-May-23	Incoming	AT Gomilaroi Cultural Consultancy	Aaron Talbott and Natalene Mercy	Alan Williams and Mikhaila Chaplin	Email	Confirmation of registration
31-May-23	Incoming	Tweed Byron Local Aboriginal Land Council	Warren	Alan Williams	Email	Confirmation of registration
1-Jun-23	Incoming		Arabella Douglas	Alan Williams	Email	Confirmation of registration
4-Jul-23	Outgoing	Heritage NSW	Alan Williams	-	Email	Distributed list of registered Aboriginal parties and notification paperwork
4-Jul-23	Outgoing	Tweed Byron LALC	Alan Williams	Maurice Gannon	Email	Distributed list of registered Aboriginal parties and notification paperwork
Methodology						
18-Jul-23	Outgoing	All RAPs	Alan Williams	-	Email	Distributed project information and our propsed assessment methodology to all participants for review and comment
31-Jul-23	Outgoing	Tweed Byron LALC, Jackie McDonald, Jason MacDonald, Paul Buxton, Tweed Aboriginal Cooperative Society	Alan Williams	-	Email	Distributed invitation to participate Aboriginal participants for the cultural values mapping study.
1/Aug/23	Outgoing	Tweed Byron LALC, Jackie McDonald, Jason MacDonald, Paul Buxton, Tweed Aboriginal Cooperative Society	Phil Clarke	-	Email	Provided an email introducing himself and seeking availability for cultural values mapping study.
1-Aug-23	Incoming	Jackie McDonald	Jackie McDonald	Alan Williams	Email	Provided a positive response to the cultural values mapping activities
1-Aug-23	Incoming	Paul Buxton	Paul Buxton	Alan Williams	Email	Indicated interest in being involved in the cultural values mapping activities
3-Aug-23	Outgoing	Tweed Byron LALC, Jackie McDonald, Paul Buxton	Alan Williams	-	Email	Outlined the rockshelter management, and sought availaiblity to visit the sites with the surveyor in August.
15/Aug/23	Outgoing	Tweed Byron LALC, Jackie McDonald, Jason MacDonald, Paul Buxton, Tweed Aboriginal Cooperative Society	Alan Williams	-	Fieldwork	Undertook an inspection and definition of the rockshelter sites to furhter understand their potential management options
8/Sep/23	Outgoing	Jackie McDonald, Paul Buxton, Jason McDonald	Georgia Burnett	-	Email	Enquired about availability to undertake cultural values mapping activities on w/c 25 September 2023. JM replied with availbility on 25 September 2023.
8/Sep/23	Outgoing	Tweed Byron LALC	Georgia Burnett	Warren Phillips	Email	Enquired about availability to undertake cultural values mapping activities on w/c 25 September 2023.
11/Sep/23	Outgoing	Tweed Byron LALC	Georgia Burnett	Warren Phillips	Phone	Followed up above, left voice message.
12/Sep/23	Outgoing	Tweed Byron LALC	Warren Phillips	Georgia Burnett	Phone	Called to discuss timing and availability - confirmed 26 September for meeting.
12/Sep/23	Outgoing	Tweed Byron LALC, Jackie McDonald, Jason MacDonald, Paul Buxton, Tweed Aboriginal Cooperative Society	Alan Williams	-	Email	Provided a summary of the rockshelter data with a few options for future management at the site and in the broader region for subsequent discussion
30/Oct/23	Outgoing	Tweed Byron LALC, Jackie McDonald, Jason MacDonald, Paul Buxton, Tweed Aboriginal Cooperative Society	Alan Williams	-	Email	Distributed preferred rockshelter management options following discussions with the stakeholders during the cultural values investigations.
Cultural values mapping						
25-26 Sept 23	Outgoing	Tweed Byron LALC, Jackie McDonald, Paul Buxton	Alan Williams, Georgia Burnett, Phil Clarke	-	Fieldwork	Undertook cultural values fieldwork with participants, including Jackie McDonald, Paul Buxton and Kyle Slabb
Field Survey						
14/Dec/23	Outgoing	Tweed Byron LALC, Jackie McDonald, Paul Buxton	Mikhaila Chaplin, Georgia Burnett	Tweed Byron LALC, Jackie McDonald, Paul Buxton	Email	Invitation letter and detail on the upcoming field survey (17-18 Jan 2024)
14/Dec/23	Incoming	Jackie McDonald	Jackie McDonald	Mikhaila Chaplin, Georgia Burnett	Email	Confirmed attendence for upcoming survey
14/Dec/23	Incoming	Paul Buxton	Paul Buxton	Mikhaila Chaplin, Georgia Burnett	Email	Confirmed attendence for upcoming survey
14/Dec/23	Incoming	Tweed Byron LALC	Warren Phillips	Mikhaila Chaplin, Georgia Burnett	Email	Confirmed attendence for upcoming survey
Reporting and other interactions						
18/Jan/24	Outgoing	All RAPs	Alan Williams	-	Email	Provided a brief project update on where the project was up to and next steps.
25/Jan/24	Outgoing	All RAPs	Alan Williams	-	Email	Outlined that DPHI was in the region in a couple of weeks and sought interest to meet with them to discuss the project.
26/Jan/24	Incoming	-	Jackie McDonald	Alan Williams	Email	Expressed an interest in meeting with DPHI
27/Jan/24	Incoming	-	Arabella Douglas	Alan Williams	Email	Expressed an interest in meeting with DPHI and sought the inclusion of Rachel Kavanagh and Letitia Kelly as part of her connections.
8/May/24	Outgoing	All RAPs	Mikhaila Chaplin	All RAPs	Email	Provided a brief project update on where the ACHA is at and should be ready for RAP review in the next month.
17/Jul/24	Outgoing	All RAPs	Georgia Burnett	All RAPs	Email	Distributed draft ACHA for review and comment, closing 15 July 2024. Offered an Aboriginal focus group meeting to discuss the report in mid July
24/Jun/24	Incoming	Arabella Douglas	Arabella Douglas	Georgia Burnett	Email	Could not access the link to the report. AW resent shortly after via another sharedrive system
18/Jun/24	Incoming		Jackie McDonald	Georgia Burnett	Email	Sought hard copy of report. GB arranged delivery.
19/Jun/24	Incoming		Paul Buxton	Georgia Burnett	Email	Sought hard copy of report. GB arranged delivery.
25/Jun/24	Outgoing	All RAPs	Georgia Burnett	All RAPs	Email	Reminder for ACHA review.
26/Jun/24	Incoming	Tweed Byron LALC	Warren Phillips	Georgia Burnett	Email	Sought three hard copies of report. GB arranged delivery.
26/Jun/24	Outgoing	Tweed Byron LALC, Jackie McDonald, Paul Buxton	Georgia Burnett	Tweed Byron LALC, Jackie McDonald, Paul Buxton	Email	Sought interest in meeting to discuss report findings w/c 15 July.
26/Jun/24	Incoming	Tweed Byron LALC	Warren Phillips	Georgia Burnett	Phone	Called to discuss report access. Provided contact details for Kyle Slabb to distribute the report.
26/Jun/24	Outgoing	All RAPs	Georgia Burnett	All RAPs	Email	Issued new link for ACHA download.
26/Jun/24	Outgoing		Georgia Burnett	Kyle Slabb	Email	Issued new link for ACHA download.

11/Jul/24	Incoming	Tweed Byron LALC	Maurice Gannon	Alan Williams	Email	Provided an extensive series of comments on the report, including ongoing questions about the need for the Project, and that the Project has signficant cutltural heritage while acknowledging this was in part due to having been so heavily investigated compared to other parts of the Tweed Valley. AW provided a brief note of thanks and indicated a discussion of the points with him at a meeting proposed for the coming week
11/Jul/24	Outgoing		Georgia Burnett	Kyle Slabb	Email	Sought interest in meeting to discuss report findings on 15 July.
12/Jul/24	Outgoing	Tweed Byron LALC, Jackie McDonald, Paul Buxton	Georgia Burnett	Tweed Byron LALC, Jackie McDonald, Paul Buxton	Phone	Called to confirm meeting on 15 July.
12/Jul/24	Outgoing	All RAPs	Georgia Burnett	All RAPs	Email	Reminder for ACHA review. Extended comment period to 19 July due to meetings on 15 July and NAIDOC week.
15/Jul/24	Outgoing	Tweed Byron LALC, Jackie McDonald, Paul Buxton	Alan Williams, Georgia Burnett	Maurice Gannon, Jackie McDonald, Paul Buxton	Meeting	Met to discuss the report and its contents. See meeting minutes for further details
23/Jul/24	Outgoing	Tweed Byron LALC, Jackie McDonald, Paul Buxton	Alan Williams	Maurice Gannon, Jackie McDonald, Paul Buxton	Email	Distributed meeting minutes.

Appendix D
AHIMS data

EMM
creating opportunities

D.1.1 AHIMS database search

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : E230038

Client Service ID : 840897

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
04-1-0009	Midginbill DD1; BMP-05-0029	AGD	56	529560	6848460	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Mr.H Sullivan,Mr.Ian Fox					**Permits**		
04-1-0010	Midginbill DD2; BMP-05-0030	AGD	56	529860	6848550	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Mr.H Sullivan,Mr.Ian Fox					**Permits**		
04-1-0011	Midginbill DD3; BMP-050031	AGD	56	529820	6848740	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Mr.H Sullivan,Mr.Ian Fox					**Permits**		
04-1-0012	Midginbill DD4	AGD	56	529470	6850770	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Mary Dallas Consulting Archaeologists (MDCA),Mr.Ian Fox					**Permits**		
04-1-0013	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Closed site	Valid			
	Contact	**Recorders**	Mary Dallas Consulting Archaeologists (MDCA),Mr.Ian Fox					**Permits**	2412,2484	
04-1-0014	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Closed site	Valid			
	Contact	**Recorders**	Mary Dallas Consulting Archaeologists (MDCA),Mr.Ian Fox					**Permits**		
04-1-0015	Byill Range DD7; BMP-05-0037	AGD	56	529510	6850870	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Mr.H Sullivan,Mr.Ian Fox					**Permits**		
04-1-0016	Midjinbill; BMP-05-0038	AGD	56	529690	6850590	Open site	Valid	Grinding Groove : -	Axe Grinding Groove	
	Contact	**Recorders**	H Sullivan,Mr.Ian Fox					**Permits**		
04-1-0019	Nullum State Forest Midginbill	AGD	56	534300	6849400	Closed site	Valid	Art (Pigment or Engraved) : -, Artefact : -	Shelter with Art,Shelter with Deposit	
	Contact	**Recorders**	Mr.R McKinney					**Permits**		
04-1-0025	Mt Misery Byrrill, BMP-05-0070	AGD	56	529300	6852100	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	Mr.Adrian Piper,Mr.Ian Fox					**Permits**		
04-1-0026	Mt Misery Byrrill	AGD	56	529900	6852800	Open site	Valid	Modified Tree (Carved or Scarred) : -	Scarred Tree	
	Contact	**Recorders**	Mr.Adrian Piper					**Permits**		
04-1-0027	Mt Misery; Byrrill; BMP-05-0072	AGD	56	529900	6852800	Open site	Valid	Artefact : -, Modified Tree (Carved or Scarred) : 1	Open Camp Site	
	Contact	**Recorders**	Mr.Adrian Piper,Mr.Ian Fox					**Permits**		
04-1-0046	Middle Ridge 4-1,BMP-05-0093	AGD	56	535400	6848990	Open site	Valid	Artefact : -	Open Camp Site	
	Contact	**Recorders**	R Hall,Mr.Ian Fox					**Permits**		
04-1-0078	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			
	Contact Searle	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0001	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			

Report generated by AHIMS Web Service on 17/11/2023 for Mikhaila Chaplin for the following area at Lat, Long From : -28.4978, 153.2414 - Lat, Long To : -28.4224, 153.365. Number of Aboriginal sites and Aboriginal objects found is 107

This information is not guaranteed to be free from error omission. Heritage NSW and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
	Contact Mr.Des Williams	**Recorders**	Isabel McBryde,M.J Martyn,Rankin,Mr.Ian Fox					**Permits**		
04-1-0117	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			
	Contact Searle	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0118	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			
	Contact Searle	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0119	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			
	Contact Searle	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0120	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			
	Contact Searle	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0121	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			
	Contact Searle	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0089	Byrrill Ridge BMP-05-0034	AGD	56	527900	6850500	Open site	Valid	Habitation Structure : -, Aboriginal Resource and Gathering : -		
	Contact Searle	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0090	Clarrie Hall Dam BMP-05-0036	AGD	56	530300	6850850	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact Searle	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0113	Gilwah Road BMP-05-0088	AGD	56	533100	6849950	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact Searle	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0114	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			
	Contact Searle	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0115	Nilla Nilla Road BMP-05-0090	AGD	56	531500	6850350	Open site	Valid	Stone Arrangement : -		
	Contact Searle	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0116	Nilla Nilla road 2 BMP-05-0091	AGD	56	532000	6850350	Open site	Valid	Shell : -		
	Contact Searle	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0129	Clarrie Hall Dam BMP-05-0111	AGD	56	528700	6853500	Open site	Valid	Artefact : -		
	Contact Searle	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0130	Clarrie Halll Dam 2 BMP-05-0112	AGD	56	528750	6849900	Open site	Valid	Artefact : -		
	Contact Searle	**Recorders**	Mr.Ian Fox					**Permits**		

Report generated by AHIMS Web Service on 17/11/2023 for Mikhaila Chaplin for the following area at Lat, Long From : -28.4978, 153.2414 - Lat, Long To : -28.4224, 153.365. Number of Aboriginal sites and Aboriginal objects found is 107

This information is not guaranteed to be free from error omission. Heritage NSW and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
04-1-0131	Byrrill Ridge BMP-05-0113	AGD	56	527750	6849500	Open site	Valid	Modified Tree (Carved or Scarred) : -, Aboriginal Resource and Gathering : -, Habitation Structure : -		
	Contact Searle	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0160	Rock Face Rd Scarred Tree-Mt Jerusalem NP	GDA	56	533179	6849191	Open site	Valid	Artefact : -, Modified Tree (Carved or Scarred) : -		
	Contact Mr.Ashley Moran	**Recorders**	Mr.Ashley Moran					**Permits**		
04-1-0212	Mt. Terragon 3 Tweed ACH Story Place	GDA	56	524466	6853050	Open site	Valid	Aboriginal Ceremony and Dreaming : -		
	Contact	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0188	Rockface Road Tweed ACH Artefact	GDA	56	532368	6849559	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0194	Byrrill Ridge 4 Tweed ACH Artefacts	GDA	56	528978	6850447	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0222	Mt. Terragon 1 Tweed ACH Stone Arrangement	GDA	56	526059	6854174	Open site	Valid	Stone Arrangement : -		
	Contact	**Recorders**	Mr.Ian Fox					**Permits**		
04-1-0229	CHD-A50	GDA	56	528686	6850493	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Navin Officer Heritage Consultants Pty I					**Permits**		
04-1-0230	CHD-A52	GDA	56	528887	6850483	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0231	CHD A51	GDA	56	529048	6850447	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0232	CHD-A31	GDA	56	528569	6852189	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0233	CHD-A32	GDA	56	528201	6851993	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0234	CHD-A33	GDA	56	528468	6851873	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0235	CHD-A30	GDA	56	528571	6852048	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0236	CHD-A34	GDA	56	528710	6851683	Open site	Valid	Artefact : -		

Report generated by AHIMS Web Service on 17/11/2023 for Mikhaila Chaplin for the following area at Lat, Long From : -28.4978, 153.2414 - Lat, Long To : -28.4224, 153.365. Number of Aboriginal sites and Aboriginal objects found is 107

This information is not guaranteed to be free from error omission. Heritage NSW and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0237	CHD-A35	GDA	56	528951	6851747	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0238	CHD-A36	GDA	56	529337	6852037	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0239	CHD-A37	GDA	56	529127	6851364	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0240	CHD-A38	GDA	56	529469	6851173	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0241	CHD-A39	GDA	56	529270	6851100	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0242	CHD-A40	GDA	56	529074	6851103	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0243	CHD-A41	GDA	56	529006	6850910	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0244	CHD-A42	GDA	56	528999	6850748	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0245	CHD-A43	GDA	56	528715	6850723	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0246	CHD-A44	GDA	56	528762	6850920	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0247	CHD-A46	GDA	56	528767	6851036	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0248	CHD-A47	GDA	56	528779	6850657	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0249	CHD A48	GDA	56	528999	6850748	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0250	CHD-A45	GDA	56	528790	6850991	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		

This information is not guaranteed to be free from error omission. Heritage NSW and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
04-1-0251	CHD-A53	GDA	56	528876	6850364	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					Permits		
04-1-0252	CHD-A29	GDA	56	530208	6849906	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					Permits		
04-1-0253	CHD-A28	GDA	56	529965	6849999	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					Permits		
04-1-0254	CHD-A27	GDA	56	529724	6850649	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					Permits		
04-1-0255	CHD-A26	GDA	56	529653	6849971	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					Permits		
04-1-0256	CHD-A25	GDA	56	529583	6850209	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					Permits		
04-1-0257	CHD-A24	GDA	56	530402	6848008	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					Permits		
04-1-0258	CHD-A23	GDA	56	529799	6848261	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					Permits		
04-1-0259	CHD-A22	GDA	56	529744	6848075	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					Permits		
04-1-0260	CHD-A21	GDA	56	529712	6848071	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					Permits		
04-1-0261	CHD-A20	GDA	56	529742	6848117	Open site	Valid	Grinding Groove : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					Permits		
04-1-0262	CHD-A19	GDA	56	529525	6848279	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					Permits		
04-1-0263	CHD-A18	GDA	56	529487	6848386	Open site	Valid	Artefact : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					Permits		
04-1-0264	CHD-A17	GDA	56	529657	6848588	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					Permits		
04-1-0265	CHD-A16	GDA	56	529007	6848166	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					Permits		

This information is not guaranteed to be free from error omission. Heritage NSW and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : E230038

Client Service ID : 840897

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
04-1-0266	CHD-A15	GDA	56	529055	6848121	Open site	Valid	Artefact : -		
Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi						Permits		
04-1-0267	CHD-A14	GDA	56	529314	6848218	Open site	Valid	Artefact : -		
Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi						Permits		
04-1-0268	CHD-A13	GDA	56	529683	6849555	Open site	Valid	Artefact : -		
Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi						Permits		
04-1-0269	CHD-A12	GDA	56	529741	6849545	Open site	Valid	Artefact : -		
Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi						Permits		
04-1-0270	CHD-A11	GDA	56	529994	6849137	Open site	Valid	Artefact : -		
Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi						Permits		
04-1-0271	CHD-A10	GDA	56	529778	6849122	Open site	Valid	Artefact : -		
Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi						Permits		
04-1-0272	CHD-A9	GDA	56	529324	6848931	Open site	Valid	Artefact : -		
Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi						Permits		
04-1-0273	CHD-A8	GDA	56	529026	6849156	Open site	Valid	Artefact : -		
Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi						Permits		
04-1-0274	CHD-A7	GDA	56	529003	6849231	Open site	Valid	Artefact : -		
Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi						Permits		
04-1-0275	CHD-A6	GDA	56	529198	6849745	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi						Permits		
04-1-0276	CHD-A5	GDA	56	529025	6849594	Open site	Valid	Artefact : -		
Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi						Permits		
04-1-0277	CHD-A4	GDA	56	528959	6849895	Open site	Valid	Artefact : -		
Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi						Permits		
04-1-0278	CHD-A3	GDA	56	529413	6849013	Open site	Valid	Artefact : -		
Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi						Permits		
04-1-0279	CHD-A2	GDA	56	528864	6850079	Open site	Valid	Artefact : -		
Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi						Permits		
04-1-0280	CHD-A1	GDA	56	529470	6850714	Open site	Valid	Artefact : -		
Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi						Permits		
04-1-0281	CHD-A55	GDA	56	529637	6851540	Open site	Valid	Artefact : -		
Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi						Permits		
04-1-0282	CHD-A54	GDA	56	529734	6848091	Open site	Valid	Artefact : -		
Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi						Permits		
04-1-0283	CHD A57	GDA	56	529992	6849201	Open site	Valid	Grinding Groove : -		

Report generated by AHIMS Web Service on 17/11/2023 for Mikhaila Chaplin for the following area at Lat, Long From : -28.4978, 153.2414 - Lat, Long To : -28.4224, 153.365. Number of Aboriginal sites and Aboriginal objects found is 107

This information is not guaranteed to be free from error omission. Heritage NSW and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : E230038

Client Service ID : 840897

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0298	Restriction applied. Please contact ahims@environment.nsw.gov.au.					Open site	Valid			
	Contact Mr.Des Williams	**Recorders**	Mr.Adrian Cressey					**Permits**		
04-1-0286	CHD-RS1	GDA	56	530514	6850995	Closed site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0287	CHD-PAD10	GDA	56	529933	6849118	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0288	CHD-PAD9	GDA	56	529149	6851055	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0289	CHD-PAD8	GDA	56	529339	6852422	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0290	CHD-PAD7	GDA	56	530326	6851194	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0291	CHD-PAD6	GDA	56	530007	6851148	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0292	CHD-PAD5	GDA	56	529903	6850812	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0293	CHD-PAD3	GDA	56	529635	6848425	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0294	CHD-PAD4	GDA	56	529952	6848500	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		

Report generated by AHIMS Web Service on 17/11/2023 for Mikhaila Chaplin for the following area at Lat, Long From : -28.4978, 153.2414 - Lat, Long To : -28.4224, 153.365. Number of Aboriginal sites and Aboriginal objects found is 107

This information is not guaranteed to be free from error omission. Heritage NSW and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : E230038

Client Service ID : 840897

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
04-1-0295	CHD-PAD2	GDA	56	529689	6848763	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0296	CHD PAD1	GDA	56	529193	6850030	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0297	CHD-A49	GDA	56	528815	6850404	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0284	CHD-G1	GDA	56	529116	6849526	Open site	Valid	Stone Quarry : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0285	CHD-ST1	GDA	56	529760	6854393	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	**Recorders**	Navin Officer Heritage Consultants Pty Ltd,Miss.Jasmine Fenyvesi					**Permits**		
04-1-0303	CHD_ST2	GDA	56	529419	6851590	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	Contact	**Recorders**	Eco Logical Australia Pty Ltd - Sydney - Individual users,Ms.Jennifer Norfolk					**Permits**		
04-1-0301	CHD-AS1	GDA	56	529983	6848369	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Eco Logical Australia Pty Ltd - Sydney - Individual users,Mr.Tyler (Virtus) Beebe					**Permits**		
04-1-0302	CHD-1	GDA	56	528954	6850193	Open site	Valid	Artefact : -		
	Contact	**Recorders**	Eco Logical Australia Pty Ltd - Sydney - Individual users,Mr.Tyler (Virtus) Beebe					**Permits**		

**** Site Status**

Valid - The site has been recorded and accepted onto the system as valid

Destroyed - The site has been completely impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There is nothing left of the site on the ground but proponents should proceed with caution.

Partially Destroyed - The site has been only partially impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There might be parts or sections of the original site still present on the ground

Not a site - The site has been originally entered and accepted onto AHIMS as a valid site but after further investigations it was decided it is NOT an aboriginal site. Impact of this type of site does not require permit but Heritage NSW should be notified

Report generated by AHIMS Web Service on 17/11/2023 for Mikhaila Chaplin for the following area at Lat, Long From : -28.4978, 153.2414 - Lat, Long To : -28.4224, 153.365. Number of Aboriginal sites and Aboriginal objects found is 107

This information is not guaranteed to be free from error omission. Heritage NSW and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

D.1.2 AHIMS site cards

See Report by H Sullivan 4-1-16
H Dallas

04-1-0009

AMG 5295-8480

1. Map Name TWEED HEADS ... BURRINGBAR ... 5. Site No. 4-1-9
2. Scale 1:250,000 ... 1:25,000 ... 6. Site type OPEN
3. Grid ref 6466 4658 ... 2956 4846
4. Site name(s) Nilginbil / D.D.1 ... 7. Classification

8. Air photo ref MURWILLUMBAH 1965 RUN 5 : 5045 & 5046 12/8/71
9. Cadastral Portion No. 12 Parish: GOONINBAR County: ROUS Shire: TWEED
10. Land Status ... 11.

12. Directions for site relocation
Vehicle access to Doon Doon Creek Bridge at Map Ref Burringbar 1:25,000 [2945:4896]
Walk East along Doon Doon Creek until the junction of Doon Doon & Doughboy Creeks. Follow Doon Doon Ck. 100m up from junction Site is on the West bank of Doon Doon Creek - 5m above water, due East of Doon Doon Public Hall.

13. Owner ... 14. Tenant/Manager ...
Address ... Address ...
... ...
Attitude ... Attitude ...

15. Site Description
Scatter of artefacts on the surface of a ploughed field 50X20m. Ploughed section slopes down from South to West at a 30° angle. Some artefacts found in deep furrows running N-S and may have been deposited by water running down furrows.
Soil sandy, light brown
artefacts - 2 flakes
- 1 core with retouch
- 1 horsehoof core (was found on the NE corner-edge of field on unploughed ground)

16. Reasons for investigation Doon Doon Creek Basin Site Survey
17. Condition Disturbed by ploughing & livestock
...
18. Interpretation Scientific Research
19 Visitation Base
20. Recommendations Not Applicable
...

4-1-9

21. **Environmental description of site locality**
WNW edge of field – swampy – part of an old creek bed – lots of bird life including Ibis.
Site 5-10 m on small hill above Doon Doon Creek – extensive clearing for pasture. River bank on Eastern side lined by willow lantana & other.
Area of creek immediately below site – wide body of water, some fast running – large areas of exposed river pebbles in immediate vicinity of site.

22. **Relation to other sites in locality**
Several other sites DD2 & DD3 – of same type on ploughed fields adjacent to Creek Bed within ½ km of each other.

23. **Details of artifact collections**
1. ① Horsehoof core
2. ① core with retouch
3. ② flakes

24. **Is plan or diagram of site attached?** Yes/No

25. **Are annotated photographs attached?** Yes/No **How many?** 2 B/W { ① S. aspect ② Due West to Doon Doon Public Hall

26. **Other additions**
2 Colour. ① S. aspect ② Due East to creek bed.

27. **Importance of site to Aborigines** Unknown

28. **Source of this information** —

29. **Oral sources of information** None.

30. **Written references** None.

31. **Recorded by** H. Sullivan **Filed by** J. E.

Address 2/259 Donnelly St.

Date 19th July. **Date** 12/1/79

4-1-9

OPS01/02-18/08/94

N.P.W.S. NORTHERN REGION ARCHAEOLOGICAL SURVEY
OPEN SITE DESCRIPTION FORM

NPWS SITE NAME:

RECORDER'S REFERENCE: MIDGINBILL DD1

☑ Surface recording ☐ Excavation ☐ Both

ASSOCIATED FEATURE CODES:
SAS/0226

LENGTH: 50 metres
BREADTH: 20 metres
DEPTH: metres

ACCESSION NO: 0/0226
COLLECTOR: L.D.
DATE: 25/8/94 ☐ Entered in site register
☐ Not on site register ☐ New site form completed

INFORMATION SOURCES:
☐ Published literature Lit Sheet Nos: .....
☐ EIA report Report Nos: .....
.....
☐ Other NPWS report Report Nos: .....
☐ Other - unpublished Lit Sheet No: .....
.....
☑ Site card NPWS Site No: 4-1-9
Associated Survey Information Form No: .....

SITE BOUNDARY DEFINITION CRITERIA:
☐ **01** Natural boundary ☐ **02** Decline in artefact density ☑ **03** Visibility ☐ **07** Other .....
☐ **04** Survey area/development impact ☐ **05** Aboriginal testimony ☐ **06** Arbitrary ☐ **08** Not specified

SLOPE: 30° **ASPECT:** S **VISIBILITY:**

TYPE OF GROUNDCOVER:
☐ **01** Leaf litter/bark ☐ **02** Grass ☐ **03** Shrubs ☐ **04** Moss/lichen ☐ **05** Water ☐ **06** Snow
☐ **07** Imported aggregates (eg road gravels, sand, shell, estuarine mud) ☐ **08** Redeposited sediments
☐ **09** Other..... ☐ **10** Unknown

OTHER DETECTION LIMITING FACTORS:
☐ **01** Pebbles/rocks same colour as artefacts ☐ **04** Burning effects mimicking artefacts
☐ **02** Leaf litter/bark having colour/sheen/shape of artefacts ☐ **05** Vegetation
☐ **03** Deep excavation/erosion (ie below archaeological horizon) ☐ **09** Other.....

CONDITION OF SITE:
☐ **01** Good ☐ **02** Fair ☑ **03** Poor ☐ **04** Destroyed ☐ **05** C-to-D issued

RECORDER: H. SULLIVAN **YEAR RECORDED:** 1979

RECORDER BACKGROUND:	EXP	INEXP		EXP	INEXP
☐ **01** Aboriginal community			☐ **02** NPWS archaeologist	☐	☐
☐ **03** NPWS ranger	☐	☐	☐ **04** Other Government	☐	☐
☐ **05** Academic – archaeologist	☐	☐	☐ **06** Academic – other discipline	☐	☐
☐ **07** Student archaeologist	☐	☐	☐ **08** Consultant archaeologist	☐	☐
☐ **09** Amateur/non-professional			☐ **10** Other (please specify)		

PURPOSE OF RECORDING:
☐ **01** Research – NPWS ☐ **02** Research – academic ☐ **03** Research – other ☐ **04** Government EIA
☐ **05** Non-Govt. EIA ☐ **06** Heritage study ☐ **07** Salvage ☐ **08** Record traditional info
☐ **09** Interest ☐ **10** Other (please specify) .....

SITE CONTENTS:
☑ **001** Stone ☐ **002** Bone ☐ **003** Shell ☐ **004** Wood ☐ **005** Plants/seeds
☐ **006** Pollen ☐ **007** Metal ☐ **008** Glass ☐ **009** Clay pipes ☐ **010** Other (please specify)
☐ **011** Charcoal .....
☐ **111** clustered/clumped .....
☐ **112** scattered .....

0

OPS02/02-18/08/94

Recorder's Ref: MIDGINBILL DD1

NPWS Site No: 4-1-9

TOPOSEQUENCE:

☐ **01** Ridge ☐ **02** Crest ☐ **03** Simple slope ☐ **04** Upper slope
☐ **05** Mid slope ☐ **06** Lower slope ☐ **07** Flat ☐ **08** Open depression
☐ **09** Closed depression

WATER SOURCES IN PROXIMITY (Code nearest as 1 and tick others within 1.5km radius):

☐ **01** Waterhole ☐ **02** River ☐ **03** Creek ☐ **04** Spring/seep ☐ **05** Gully
☐ **06** Lake ☐ **07** Lagoon ☐ **08** Swamp ☐ **09** Well ☐ **10** Claypan
☐ **11** Billabong/oxbow ☐ **12** Condensation or dripping water (Relevant to Grinding Grooves only)
☐ **19** Other (please specify) .....

DISTANCE TO NEAREST WATER SOURCE: ☐ **01** Approximate ☐ **02** Measured

STATUS OF WATER SUPPLY:

☐ **01** Permanent ☐ **02** Temporary ☐ **03** Unknown

TYPE OF WATER:

☐ **01** Fresh ☐ **02** Saline ☐ **03** Brackish ☐ **04** Unknown

WATER MOVEMENT:

☐ **01** Still ☐ **02** Flowing

DISTURBANCE FACTORS:

Disturbance/Damage X ☐ **No** ☑ **Yes** (Please fill out the **Full Disturbance Factors Form**)

ARTEFACT SUMMARY:

Artefact Type	Raw Material	Frequency	Proportion
F. flakes		2	
core with retouch		1	
horsehoof core			

N.P.W.S. NORTHERN REGION ARCHAEOLOGICAL SURVEY

DFF01/02-19/07/94

Recorder's Ref: MIDGINBILL DD1

FULL DISTURBANCE FACTORS FORM

NPWS Site No: 4-1-9

	Minor	Moderate	Severe
☐ **A GEOMORPHOLOGICAL DAMAGE**	☐ 1	☐ 2	☐ 3
☐ **A00 Erosion** ☐ **A0** Sheetwash ☐ **A1** Gullying ☐ **A2** Streambank ☐ **A3** Coastal: ☐ **A30** Blowouts ☐ **A31** Dune collapse ☐ **A9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **A01 Aggradation** ☐ **A0** Alluvial ☐ **A1** Colluvial ☐ **A2** Aeolian ☐ **A3** Cavernous	☐ 1	☐ 2	☐ 3
☐ **A02 Weathering** ☐ **A0** Honeycomb ☐ **A1** Granular disintegration ☐ **A2** Micro-spalling/flaking/exfoliation ☐ **A3** Large scale exfoliation	☐ 1	☐ 2	☐ 3
☐ **A03 Natural block collapse** ☐ **A0** Occurred ☐ **A1** Impending	☐ 1	☐ 2	☐ 3
☐ **A04 Subsidence**	☐ 1	☐ 2	☐ 3
☐ **A05 Mineral staining**	☐ 1	☐ 2	☐ 3
☐ **A09 Other** (please specify)	☐ 1	☐ 2	☐ 3
☐ **B WATER DAMAGE** ☐ **B0** Weathering due to surface water flow ☐ **B1** Weathering due to dripping water ☐ **B2** Submerged ☐ **B3** Periodic flooding ☐ **B9** Other (please specify)	☐ 1	☐ 2	☐ 3
☑ **C ANIMAL DAMAGE** ☐ **C0** Pigs ☑ **C1** Cattle ☐ **C2** Macropods ☐ **C3** Brumbies/horses ☐ **C4** Goats ☐ **C5** Sheep ☐ **C6** Wombats ☐ **C7** Rabbits ☐ **C8** Birds ☐ **C9** Other (please specify)	☐ 1	☐ 2	☑ 3
☐ **C0** Rubbing ☐ **C1** Nesting/rooting ☐ **C2** Dust ☑ **C3** Hoof damage ☐ **C4** Horn damage ☐ **C5** Licking ☑ **C6** Urine/droppings ☐ **C7** Artefact displacements/trampling ☐ **C9** Other (please specify)			
☑ **D PASTORAL DAMAGE** ☑ **D0** Ploughing ☐ **D1** Cultivation ☐ **D2** Land clearing ☐ **D3** Water management ☐ **D4** Farm constructions ☐ **D9** Other (please specify)	☐ 1	☐ 2	☑ 3
☐ **E INSECT DAMAGE** ☐ **E0** Wasps ☐ **E1** Termites ☐ **E9** Other (please specify).....	☐ 1	☐ 2	☐ 3
☐ **E0** Nests ☐ **E1** Trails ☐ **E2** Mounds ☐ **E9** Other (please specify).....			
☐ **F HUMAN DAMAGE**	☐ 1	☐ 2	☐ 3
☐ **F00 Extractive industry - mining** ☐ **F0** Augering ☐ **F1** Open cut mining (hard rock) ☐ **F2** Shaft mining (hard rock) ☐ **F3** Soft deposit/alluvial mining: ☐ **F30** Small scale panning ☐ **F31** Dredging ☐ **F4** Infrastructure	☐ 1	☐ 2	☐ 3
☐ **F01 Extractive industry - forestry** ☐ **F0** Logging ☐ **F1** Log dumps ☐ **F2** Roads/trails ☐ **F3** Quarrying ☐ **F4** Other infrastructure	☐ 1	☐ 2	☐ 3

DFF02/02-19/07/94

Recorder's Ref: MIDGINBIL DD1

NPWS Site No: 7-1-9

☐ **F02 Extractive industry - quarrying** ☐ **F0** Prehistoric ☐ **F1** European ☐ **F2** Infrastructure	☐ 1	☐ 2	☐ 3
☐ **F03 Landfill**	☐ 1	☐ 2	☐ 3
☐ **F04 Urban development**	☐ 1	☐ 2	☐ 3
☐ **F05 Infrastructure development**	☐ 1	☐ 2	☐ 3
☐ **F06 Commercial development**	☐ 1	☐ 2	☐ 3
☐ **F07 NPWS** ☐ **F0** Fire trails ☐ **F1** Access trails ☐ **F2** Recreation management (eg. walking tracks) ☐ **F9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **F08 Recreational use** ☐ **F0** Government/private recreation management ☐ **F1** Vehicles ☐ **F9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **F09 Vandalism** ☐ **F0** Historic/contemporary graffiti (initials etc...) ☐ **F1** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **F10 Surveyors' marks**	☐ 1	☐ 2	☐ 3
☐ **F11 Steel axe marks**	☐ 1	☐ 2	☐ 3
☐ **F12 Abrasion/other defacement**	☐ 1	☐ 2	☐ 3
☐ **F13 Dust**	☐ 1	☐ 2	☐ 3
☐ **F14 Deposit or access/slope erosion**	☐ 1	☐ 2	☐ 3
☐ **F15 Artefact displacement**	☐ 1	☐ 2	☐ 3
☐ **F16 Scavenging**	☐ 1	☐ 2	☐ 3
☐ **F17 Shooting**	☐ 1	☐ 2	☐ 3
☐ **F18 Digging**	☐ 1	☐ 2	☐ 3
☐ **F19 Litter**	☐ 1	☐ 2	☐ 3
☐ **F99 Other** (please specify)	☐ 1	☐ 2	☐ 3
☐ **G FIRE DAMAGE** ☐ **G0** Burn/scorch marks ☐ **G1** Smoke damage ☐ **G2** Exfoliation ☐ **G9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **H PLANT DAMAGE** ☐ **H0** Vascular plants ☐ **H1** Lichens ☐ **H2** Algae ☐ **H3** Moss ☐ **H9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **H0** Rubbing ☐ **H1** Overgrowth ☐ **H2** Soil cover ☐ **H3** Roots ☐ **H4** Bark regrowth ☐ **H9** Other (please specify)			
☐ **J FUNGAL DAMAGE** ☐ **J0** Overgrowth	☐ 1	☐ 2	☐ 3
☐ **Z OTHER** (please specify)	☐ 1	☐ 2	☐ 3
NOTES:			

See Report by H Sullivan 4-1-16 M Dallas

04-1-0010

AMG 5296-8480

1. Map Name TWEED HEADS ..... BURRINGAR ..... 5. Site No. 4-1-10
2. Scale ..1:250,000 ....1:25000 ..... 6. Site type OPEN .....
3. Grid ref ...6469..4656... ..29.86.4855 ....
4. Site name(s) Midgimbil ..... / ..D.D.2. ..... 7. Classification .....

8. Air photo ref MURWILLUMBAH 1965 RUN 5 : 5045 & 5046 12/8/71 .....
9. Cadastral Portion No. 32 Parish: TOOLOND County: ROUS Shire Tweed .....
10. Land Status ..... 11. .....

12. Directions for site relocation
Vehicle Acess to Doon Doon Creek Bridge - Map Ref : 1.25,000 [2945: 4896
Walk E. along " " " to junction of Doon Doon & Doughboy Creeks
Follow Doughboy Creek on Right bank (ie land between 2 creeks) - walk along dirt track to top of ridge & then follow cleared area on the left to the site.

13. Owner ..... 14. Tenant/Manager .....
Address ..... Address .....
....
Attitude ..... Attitude .....

15. Site Description
Ploughed field with surface scatter of artefacts. 100 M^2
light brown, sandy soil [would appear to be just ploughing]
artefacts 1. flake found
& 1. core
area of ploughed field closest to Creek only, likely to be underwater

16. Reasons for investigation Doon Doon Dam Site Survey .....
17. Condition ..disturbed by ploughing .....
.....
18. Interpretation ..scientific Research .....
19 Visitation .....occasional .....
20. Recommendations ...None .....
.....

4-1-10

21. Environmental description of site locality
Site: Ploughed field running from Doughboy Creek running N-E
to approx 10m.
Area 60 x 100 M.
Surrounding vegetation - Eucalyptus + lantana.
Creek quite broad at this point - with large areas of river pebbles.

---

22. Relation to other sites in locality
East of Swallow type of site in similar situation on Doon
Doon Creek - DD1 + DD3.

---

23. Details of artifact collections None.

---

24. Is plan or diagram of site attached? Yes/No — 2. B/W { ①. SW to top corner of Ploughed Field (PF) ② NS to side of PF

25. Are annotated photographs attached? Yes/No How many? 2 colour { ① SW to corner PF. ② NW to side of PF

26. Other additions

---

27. Importance of site to Aborigines Unknown

28. Source of this information —

---

29. Oral sources of information None

30. Written references —

---

31. Recorded by H. Sullivan Filed by J. Evans

Address 2/259 Donnelly St.
Armidale.

Date 19th July. Date 12/1/79

4-1-10

OPS01/02-18/08/94

N.P.W.S. NORTHERN REGION ARCHAEOLOGICAL SURVEY
OPEN SITE DESCRIPTION FORM

NPWS SITE NAME:

RECORDER'S REFERENCE: MIDGINBIL DD2

☑ Surface recording ☐ Excavation ☐ Both

ASSOCIATED FEATURE CODES:

SAS/0224

LENGTH: 60 metres

BREADTH: 100 metres

DEPTH: metres

ACCESSION NO: 0/0224

COLLECTOR: L.D.

DATE: 25/8/94 ☐ Entered in site register

☐ Not on site register ☐ New site form completed

INFORMATION SOURCES:

☐ Published literature Lit Sheet Nos: .....

☐ EIA report Report Nos: .....

☐ Other NPWS report Report Nos: .....

☐ Other - unpublished Lit Sheet No: .....

☑ Site card NPWS Site No: 4-1-10

Associated Survey Information Form No: .....

SITE BOUNDARY DEFINITION CRITERIA:

☐ **01** Natural boundary ☐ **02** Decline in artefact density ☑ **03** Visibility ☐ **07** Other .....

☐ **04** Survey area/development impact ☐ **05** Aboriginal testimony ☐ **06** Arbitrary ☐ **08** Not specified

SLOPE: **ASPECT:** **VISIBILITY:**

TYPE OF GROUNDCOVER:

☑ **01** Leaf litter/bark ☐ **02** Grass ☐ **03** Shrubs ☐ **04** Moss/lichen ☐ **05** Water ☐ **06** Snow

☐ **07** Imported aggregates (eg road gravels, sand, shell, estuarine mud) ☐ **08** Redeposited sediments

☐ **09** Other..... ☐ **10** Unknown

OTHER DETECTION LIMITING FACTORS:

☐ **01** Pebbles/rocks same colour as artefacts ☐ **04** Burning effects mimicking artefacts

☐ **02** Leaf litter/bark having colour/sheen/shape of artefacts ☐ **05** Vegetation

☐ **03** Deep excavation/erosion (ie below archaeological horizon) ☐ **09** Other.....

CONDITION OF SITE:

☐ **01** Good ☐ **02** Fair ☐ **03** Poor ☐ **04** Destroyed ☐ **05** C-to-D issued

RECORDER: H. SULLIVAN **YEAR RECORDED:** 1979

RECORDER BACKGROUND:	EXP	INEXP		EXP	INEXP
☐ **01** Aboriginal community			☐ **02** NPWS archaeologist	☐	☐
☐ **03** NPWS ranger	☐	☐	☐ **04** Other Government	☐	☐
☐ **05** Academic – archaeologist	☐	☐	☐ **06** Academic – other discipline	☐	☐
☐ **07** Student archaeologist	☐	☐	☐ **08** Consultant archaeologist	☐	☐
☐ **09** Amateur/non-professional			☐ **10** Other (please specify)		

PURPOSE OF RECORDING:

☐ **01** Research – NPWS ☐ **02** Research – academic ☐ **03** Research – other ☐ **04** Government EIA

☐ **05** Non-Govt. EIA ☐ **06** Heritage study ☐ **07** Salvage ☐ **08** Record traditional info

☐ **09** Interest ☐ **10** Other (please specify) .....

SITE CONTENTS:

☑ **001** Stone ☐ **002** Bone ☐ **003** Shell ☐ **004** Wood ☐ **005** Plants/seeds

☐ **006** Pollen ☐ **007** Metal ☐ **008** Glass ☐ **009** Clay pipes ☐ **010** Other (please specify)

☐ **011** Charcoal .....

☐ **111** clustered/clumped .....

☐ **112** scattered .....

0

OPS02/02-18/08/94

Recorder's Ref: MIDGE BILL DD2

NPWS Site No: 4-1-10

TOPOSEQUENCE:

☐ **01** Ridge ☐ **02** Crest ☐ **03** Simple slope ☐ **04** Upper slope
☐ **05** Mid slope ☐ **06** Lower slope ☐ **07** Flat ☐ **08** Open depression
☐ **09** Closed depression

WATER SOURCES IN PROXIMITY (Code nearest as 1 and tick others within 1.5km radius):

☐ **01** Waterhole ☐ **02** River ☐ **03** Creek ☐ **04** Spring/seep ☐ **05** Gully
☐ **06** Lake ☐ **07** Lagoon ☐ **08** Swamp ☐ **09** Well ☐ **10** Claypan
☐ **11** Billabong/oxbow ☐ **12** Condensation or dripping water (Relevant to Grinding Grooves only)
☐ **19** Other (please specify) .....

DISTANCE TO NEAREST WATER SOURCE: ☐ **01** Approximate ☐ **02** Measured

STATUS OF WATER SUPPLY:

☐ **01** Permanent ☐ **02** Temporary ☐ **03** Unknown

TYPE OF WATER:

☐ **01** Fresh ☐ **02** Saline ☐ **03** Brackish ☐ **04** Unknown

WATER MOVEMENT:

☐ **01** Still ☐ **02** Flowing

DISTURBANCE FACTORS:

Disturbance/Damage **X** ☐ **No** ☑ **Yes** (Please fill out the **Full Disturbance Factors Form**)

ARTEFACT SUMMARY:

Artefact Type	Raw Material	Frequency	Proportion
Flake		1	
core		1	

DFF01/02-19/07/94

N.P.W.S. NORTHERN REGION ARCHAEOLOGICAL SURVEY

Order's Ref: MIDGIN BILL DD2 | FULL DISTURBANCE FACTORS FORM | NPWS Site No: 4-1-10

	Minor	Moderate	Severe
☐ **A GEOMORPHOLOGICAL DAMAGE**	☐ 1	☐ 2	☐ 3
☐ **A00 Erosion** ☐ **A0** Sheetwash ☐ **A1** Gullying ☐ **A2** Streambank ☐ **A3** Coastal: ☐ **A30** Blowouts ☐ **A31** Dune collapse ☐ **A9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **A01 Aggradation** ☐ **A0** Alluvial ☐ **A1** Colluvial ☐ **A2** Aeolian ☐ **A3** Cavernous	☐ 1	☐ 2	☐ 3
☐ **A02 Weathering** ☐ **A0** Honeycomb ☐ **A1** Granular disintegration ☐ **A2** Micro-spalling/flaking/exfoliation ☐ **A3** Large scale exfoliation	☐ 1	☐ 2	☐ 3
☐ **A03 Natural block collapse** ☐ **A0** Occurred ☐ **A1** Impending	☐ 1	☐ 2	☐ 3
☐ **A04 Subsidence**	☐ 1	☐ 2	☐ 3
☐ **A05 Mineral staining**	☐ 1	☐ 2	☐ 3
☐ **A09 Other** (please specify)	☐ 1	☐ 2	☐ 3
☑ **B WATER DAMAGE** ☐ **B0** Weathering due to surface water flow ☐ **B1** Weathering due to dripping water ☑ **B2** Submerged ☐ **B3** Periodic flooding ☐ **B9** Other (please specify)	☑ 1	☐ 2	☐ 3
☐ **C ANIMAL DAMAGE** ☐ **C0** Pigs ☐ **C1** Cattle ☐ **C2** Macropods ☐ **C3** Brumbies/horses ☐ **C4** Goats ☐ **C5** Sheep ☐ **C6** Wombats ☐ **C7** Rabbits ☐ **C8** Birds ☐ **C9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **C0** Rubbing ☐ **C1** Nesting/rooting ☐ **C2** Dust ☐ **C3** Hoof damage ☐ **C4** Horn damage ☐ **C5** Licking ☐ **C6** Urine/droppings ☐ **C7** Artefact displacements/trampling ☐ **C9** Other (please specify)			
☑ **D PASTORAL DAMAGE** ☑ **D0** Ploughing ☐ **D1** Cultivation ☐ **D2** Land clearing ☐ **D3** Water management ☐ **D4** Farm constructions ☐ **D9** Other (please specify)	☐ 1	☐ 2	☑ 3
☐ **E INSECT DAMAGE** ☐ **E0** Wasps ☐ **E1** Termites ☐ **E9** Other (please specify).....	☐ 1	☐ 2	☐ 3
☐ **E0** Nests ☐ **E1** Trails ☐ **E2** Mounds ☐ **E9** Other (please specify).....			
☐ **F HUMAN DAMAGE**	☐ 1	☐ 2	☐ 3
☐ **F00 Extractive industry - mining** ☐ **F0** Augering ☐ **F1** Open cut mining (hard rock) ☐ **F2** Shaft mining (hard rock) ☐ **F3** Soft deposit/alluvial mining: ☐ **F30** Small scale panning ☐ **F31** Dredging ☐ **F4** Infrastructure	☐ 1	☐ 2	☐ 3
☐ **F01 Extractive industry - forestry** ☐ **F0** Logging ☐ **F1** Log dumps ☐ **F2** Roads/trails ☐ **F3** Quarrying ☐ **F4** Other infrastructure	☐ 1	☐ 2	☐ 3

DFF02/02-19/07/94

Recorder's Ref: MIDGINBIL DD2 NPWS Site No: 4-1-10

☐ **F02 Extractive industry - quarrying** ☐ **F0** Prehistoric ☐ **F1** European ☐ **F2** Infrastructure	☐ 1	☐ 2	☐ 3
☐ **F03 Landfill**	☐ 1	☐ 2	☐ 3
☐ **F04 Urban development**	☐ 1	☐ 2	☐ 3
☐ **F05 Infrastructure development**	☐ 1	☐ 2	☐ 3
☐ **F06 Commercial development**	☐ 1	☐ 2	☐ 3
☐ **F07 NPWS** ☐ **F0** Fire trails ☐ **F1** Access trails ☐ **F2** Recreation management (eg. walking tracks) ☐ **F9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **F08 Recreational use** ☐ **F0** Government/private recreation management ☐ **F1** Vehicles ☐ **F9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **F09 Vandalism** ☐ **F0** Historic/contemporary graffiti (initials etc...) ☐ **F1** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **F10 Surveyors' marks**	☐ 1	☐ 2	☐ 3
☐ **F11 Steel axe marks**	☐ 1	☐ 2	☐ 3
☐ **F12 Abrasion/other defacement**	☐ 1	☐ 2	☐ 3
☐ **F13 Dust**	☐ 1	☐ 2	☐ 3
☐ **F14 Deposit or access/slope erosion**	☐ 1	☐ 2	☐ 3
☐ **F15 Artefact displacement**	☐ 1	☐ 2	☐ 3
☐ **F16 Scavenging**	☐ 1	☐ 2	☐ 3
☐ **F17 Shooting**	☐ 1	☐ 2	☐ 3
☐ **F18 Digging**	☐ 1	☐ 2	☐ 3
☐ **F19 Litter**	☐ 1	☐ 2	☐ 3
☐ **F99 Other** (please specify)	☐ 1	☐ 2	☐ 3
☐ **G FIRE DAMAGE** ☐ **G0** Burn/scorch marks ☐ **G1** Smoke damage ☐ **G2** Exfoliation ☐ **G9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **H PLANT DAMAGE** ☐ **H0** Vascular plants ☐ **H1** Lichens ☐ **H2** Algae ☐ **H3** Moss ☐ **H9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **H0** Rubbing ☐ **H1** Overgrowth ☐ **H2** Soil cover ☐ **H3** Roots ☐ **H4** Bark regrowth ☐ **H9** Other (please specify)			
☐ **J FUNGAL DAMAGE** ☐ **J0** Overgrowth	☐ 1	☐ 2	☐ 3
☐ **Z OTHER** (please specify)	☐ 1	☐ 2	☐ 3
NOTES:			

See Report by H Sullivan M Dallas

AMG 6297-8483

04-1-0011

1. Map Name TWEED HEADS... BURRINGBAR ..... 5. Site No. 4-1-11
2. Scale ....1:250000 ..... 1:25000 ..... 6. Site type .OPEN.....
3. Grid ref .6470 . 4660 .... 298 248 74 .. ..
4. Site name(s) ~~Middlehill~~ / DD3 ..... 7. Classification .....

8. Air photo ref MURWILLUMBAH 1965 Run 5 : 5045 & 5046 12/8/71
9. Cadastral Portion no. 76 Parish TOOLOND County BOUS Shire TWEED
10. Land Status ..... 11. .....

12. Directions for site relocation

Vehicle Access to Doon Doon Creek Bridge. Walk East along Doon Doon Creek past first major gully on left whereafter the Creek turns South Site is on East bank on 1st large area of open flat pasture.

[WSW to Doon Doon Public Hall.]

13. Owner .....Duckworth..... 14. Tenant/Manager .....
Address ....Doon Doon Creek Road ..... Address .....
.....Doon Doon..... .....
Attitude ...Sympathetic..... Attitude .....

15. Site Description

large ploughed field 100 x 30 M in larger open pasture

Soil - sandy, brown

(1) Flake found on surface in furrow - no retouch and well preserved.

16. Reasons for investigation Doon Doon Creek Dam Site Survey.....
17. Condition .Ploughed field. - livestock running over it.....
.....
18. Interpretation ..Scientific Research.....
19 Visitation ...Occasional.....
20. Recommendations ..None.....
.....

21. **Environmental description of site locality**

On broad flat pasture on E bank of Doon Doon Creek
adjacent areas – cleared pasture
– scattered eucalyptus + exotics on low hills
surrounding flat pasture rising to 10 M.

---

22. **Relation to other sites in locality**

Doon Doon 1 & DD2 – same type of site within ½ km distance
SW & WSW

---

23. **Details of artifact collections**

None

---

24. Is plan or diagram of site attached? ~~Yes~~/No

25. Are annotated photographs attached? Yes/~~No~~ How many?

26. Other additions

2. B/W ① SW to DD Public Hall
② View to Eastern Edge of field

3 Colour ① as above
② " "
③ View to S.W.

---

27. **Importance of site to Aborigines** Unknown

28. **Source of this information** —

---

29. **Oral sources of information** None

30. **Written references** —

---

31. **Recorded by** H. Sullivan **Filed by** J. Evans

Address 2/259 Donnelly Street
Armidale 2350

Date 19th July '78 **Date** 12/1/79

4-1-11

OPS01/02-18/08/94

N.P.W.S. NORTHERN REGION ARCHAEOLOGICAL SURVEY
OPEN SITE DESCRIPTION FORM

NPWS SITE NAME:

RECORDER'S REFERENCE: MIDGINBILL 1 DD3

☐ Surface recording ☐ Excavation ☐ Both

ACCESSION NO: 0/0228

COLLECTOR: L.S.

DATE: 25/8/94 ☐ Entered in site register

☐ Not on site register ☐ New site form completed

ASSOCIATED FEATURE CODES:

SAS/0228

INFORMATION SOURCES:

☐ Published literature Lit Sheet Nos: .....

☐ EIA report Report Nos: .....

.....

☐ Other NPWS report Report Nos: .....

☐ Other - unpublished Lit Sheet No: .....

.....

☑ Site card NPWS Site No: 4-1-11

Associated Survey Information Form No: .....

LENGTH: 100 metres

BREADTH: 3 metres

DEPTH: metres

SITE BOUNDARY DEFINITION CRITERIA:

☐ **01** Natural boundary ☐ **02** Decline in artefact density ☑ **03** Visibility ☐ **07** Other .....

☐ **04** Survey area/development impact ☐ **05** Aboriginal testimony ☐ **06** Arbitrary ☐ **08** Not specified

SLOPE: **ASPECT:** **VISIBILITY:**

TYPE OF GROUNDCOVER:

☐ **01** Leaf litter/bark ☑ **02** Grass ☐ **03** Shrubs ☐ **04** Moss/lichen ☐ **05** Water ☐ **06** Snow

☐ **07** Imported aggregates (eg road gravels, sand, shell, estuarine mud) ☐ **08** Redeposited sediments

☐ **09** Other..... ☐ **10** Unknown

OTHER DETECTION LIMITING FACTORS:

☐ **01** Pebbles/rocks same colour as artefacts ☐ **04** Burning effects mimicking artefacts

☐ **02** Leaf litter/bark having colour/sheen/shape of artefacts ☐ **05** Vegetation

☐ **03** Deep excavation/erosion (ie below archaeological horizon) ☐ **09** Other.....

CONDITION OF SITE:

☐ **01** Good ☐ **02** Fair ☑ **03** Poor ☐ **04** Destroyed ☐ **05** C-to-D issued

RECORDER: H. SULLIVAN **YEAR RECORDED:** 1979

RECORDER BACKGROUND:	**EXP**	**INEXP**		**EXP**	**INEXP**
☐ **01** Aboriginal community			☐ **02** NPWS archaeologist	☐	☐
☐ **03** NPWS ranger	☐	☐	☐ **04** Other Government	☐	☐
☐ **05** Academic – archaeologist	☐	☐	☐ **06** Academic – other discipline	☐	☐
☐ **07** Student archaeologist	☐	☐	☐ **08** Consultant archaeologist	☐	☐
☐ **09** Amateur/non-professional			☐ **10** Other (please specify)		

PURPOSE OF RECORDING:

☐ **01** Research – NPWS ☐ **02** Research – academic ☐ **03** Research – other ☐ **04** Government EIA

☐ **05** Non-Govt. EIA ☐ **06** Heritage study ☐ **07** Salvage ☐ **08** Record traditional info

☐ **09** Interest ☐ **10** Other (please specify) .....

SITE CONTENTS:

☑ **001** Stone ☐ **002** Bone ☐ **003** Shell ☐ **004** Wood ☐ **005** Plants/seeds

☐ **006** Pollen ☐ **007** Metal ☐ **008** Glass ☐ **009** Clay pipes ☐ **010** Other (please specify)

☐ **011** Charcoal .....

☐ **111** clustered/clumped .....

☐ **112** scattered .....

OPS02/02-18/08/94

Recorder's Ref: MIDGINBILL 1 DD3

NPWS Site No: 4-1-11

TOPOSEQUENCE:

☐ **01** Ridge ☐ **02** Crest ☐ **03** Simple slope ☐ **04** Upper slope
☐ **05** Mid slope ☐ **06** Lower slope ☑ **07** Flat ☐ **08** Open depression
☐ **09** Closed depression

WATER SOURCES IN PROXIMITY (Code nearest as 1 and tick others within 1.5km radius):

☐ **01** Waterhole ☐ **02** River ☐ **03** Creek ☐ **04** Spring/seep ☐ **05** Gully
☐ **06** Lake ☐ **07** Lagoon ☐ **08** Swamp ☐ **09** Well ☐ **10** Claypan
☐ **11** Billabong/oxbow ☐ **12** Condensation or dripping water (Relevant to Grinding Grooves only)
☐ **19** Other (please specify) .....

DISTANCE TO NEAREST WATER SOURCE: [ ] ☐ **01** Approximate ☐ **02** Measured

STATUS OF WATER SUPPLY:

☐ **01** Permanent ☐ **02** Temporary ☐ **03** Unknown

TYPE OF WATER:

☐ **01** Fresh ☐ **02** Saline ☐ **03** Brackish ☐ **04** Unknown

WATER MOVEMENT:

☐ **01** Still ☐ **02** Flowing

DISTURBANCE FACTORS:

Disturbance/Damage **X** ☐ **No** ☑ **Yes** (Please fill out the **Full Disturbance Factors Form**)

ARTEFACT SUMMARY:

Artefact Type	Raw Material	Frequency	Proportion
Flake		1	

DFF01/02-19/07/94

N.P.W.S. NORTHERN REGION ARCHAEOLOGICAL SURVEY

Order's Ref: MIDGINBILL 1 DD3

FULL DISTURBANCE FACTORS FORM

NPWS Site No: 4-1-11

	Minor	Moderate	Severe
☐ **A GEOMORPHOLOGICAL DAMAGE**	☐ 1	☐ 2	☐ 3
☐ **A00 Erosion** ☐ **A0** Sheetwash ☐ **A1** Gullying ☐ **A2** Streambank ☐ **A3** Coastal: ☐ **A30** Blowouts ☐ **A31** Dune collapse ☐ **A9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **A01 Aggradation** ☐ **A0** Alluvial ☐ **A1** Colluvial ☐ **A2** Aeolian ☐ **A3** Cavernous	☐ 1	☐ 2	☐ 3
☐ **A02 Weathering** ☐ **A0** Honeycomb ☐ **A1** Granular disintegration ☐ **A2** Micro-spalling/flaking/exfoliation ☐ **A3** Large scale exfoliation	☐ 1	☐ 2	☐ 3
☐ **A03 Natural block collapse** ☐ **A0** Occurred ☐ **A1** Impending	☐ 1	☐ 2	☐ 3
☐ **A04 Subsidence**	☐ 1	☐ 2	☐ 3
☐ **A05 Mineral staining**	☐ 1	☐ 2	☐ 3
☐ **A09 Other** (please specify)	☐ 1	☐ 2	☐ 3
☐ **B WATER DAMAGE** ☐ **B0** Weathering due to surface water flow ☐ **B1** Weathering due to dripping water ☐ **B2** Submerged ☐ **B3** Periodic flooding ☐ **B9** Other (please specify)	☐ 1	☐ 2	☐ 3
☑ **C ANIMAL DAMAGE** ☐ **C0** Pigs ☑ **C1** Cattle ☐ **C2** Macropods ☐ **C3** Brumbies/horses ☐ **C4** Goats ☐ **C5** Sheep ☐ **C6** Wombats ☐ **C7** Rabbits ☐ **C8** Birds ☐ **C9** Other (please specify)	☐ 1	☐ 2	☑ 3
☐ **C0** Rubbing ☐ **C1** Nesting/rooting ☐ **C2** Dust ☑ **C3** Hoof damage ☐ **C4** Horn damage ☐ **C5** Licking ☑ **C6** Urine/droppings ☐ **C7** Artefact displacements/trampling ☐ **C9** Other (please specify)			
☑ **D PASTORAL DAMAGE** ☑ **D0** Ploughing ☐ **D1** Cultivation ☐ **D2** Land clearing ☐ **D3** Water management ☐ **D4** Farm constructions ☐ **D9** Other (please specify)	☐ 1	☐ 2	☑ 3
☐ **E INSECT DAMAGE** ☐ **E0** Wasps ☐ **E1** Termites ☐ **E9** Other (please specify).....	☐ 1	☐ 2	☐ 3
☐ **E0** Nests ☐ **E1** Trails ☐ **E2** Mounds ☐ **E9** Other (please specify).....			
☐ **F HUMAN DAMAGE**	☐ 1	☐ 2	☐ 3
☐ **F00 Extractive industry - mining** ☐ **F0** Augering ☐ **F1** Open cut mining (hard rock) ☐ **F2** Shaft mining (hard rock) ☐ **F3** Soft deposit/alluvial mining: ☐ **F30** Small scale panning ☐ **F31** Dredging ☐ **F4** Infrastructure	☐ 1	☐ 2	☐ 3
☐ **F01 Extractive industry - forestry** ☐ **F0** Logging ☐ **F1** Log dumps ☐ **F2** Roads/trails ☐ **F3** Quarrying ☐ **F4** Other infrastructure	☐ 1	☐ 2	☐ 3

10

DFF02/02-19/07/94

Recorder's Ref: MIDGINBIL 1 DD3 NPWS Site No: 4-1-11

☐ **F02 Extractive industry - quarrying** ☐ **F0** Prehistoric ☐ **F1** European ☐ **F2** Infrastructure	☐ 1	☐ 2	☐ 3
☐ **F03 Landfill**	☐ 1	☐ 2	☐ 3
☐ **F04 Urban development**	☐ 1	☐ 2	☐ 3
☐ **F05 Infrastructure development**	☐ 1	☐ 2	☐ 3
☐ **F06 Commercial development**	☐ 1	☐ 2	☐ 3
☐ **F07 NPWS** ☐ **F0** Fire trails ☐ **F1** Access trails ☐ **F2** Recreation management (eg. walking tracks) ☐ **F9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **F08 Recreational use** ☐ **F0** Government/private recreation management ☐ **F1** Vehicles ☐ **F9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **F09 Vandalism** ☐ **F0** Historic/contemporary graffiti (initials etc...) ☐ **F1** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **F10 Surveyors' marks**	☐ 1	☐ 2	☐ 3
☐ **F11 Steel axe marks**	☐ 1	☐ 2	☐ 3
☐ **F12 Abrasion/other defacement**	☐ 1	☐ 2	☐ 3
☐ **F13 Dust**	☐ 1	☐ 2	☐ 3
☐ **F14 Deposit or access/slope erosion**	☐ 1	☐ 2	☐ 3
☐ **F15 Artefact displacement**	☐ 1	☐ 2	☐ 3
☐ **F16 Scavenging**	☐ 1	☐ 2	☐ 3
☐ **F17 Shooting**	☐ 1	☐ 2	☐ 3
☐ **F18 Digging**	☐ 1	☐ 2	☐ 3
☐ **F19 Litter**	☐ 1	☐ 2	☐ 3
☐ **F99 Other** (please specify)	☐ 1	☐ 2	☐ 3
☐ **G FIRE DAMAGE** ☐ **G0** Burn/scorch marks ☐ **G1** Smoke damage ☐ **G2** Exfoliation ☐ **G9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **H PLANT DAMAGE** ☐ **H0** Vascular plants ☐ **H1** Lichens ☐ **H2** Algae ☐ **H3** Moss ☐ **H9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **H0** Rubbing ☐ **H1** Overgrowth ☐ **H2** Soil cover ☐ **H3** Roots ☐ **H4** Bark regrowth ☐ **H9** Other (please specify)			
☐ **J FUNGAL DAMAGE** ☐ **J0** Overgrowth	☐ 1	☐ 2	☐ 3
☐ **Z OTHER** (please specify)	☐ 1	☐ 2	☐ 3
NOTES:			

See Report 4-1-16
by H Sullivan
M Dallas

04-1-0012

A.M.G. 5295-8505 Midginbil

1. Map Name TWEED HEADS ... BURRINGBAR ... 5. Site No. 4-1-12
2. Scale ... 1:250000 ... 1:25000 ... 6. Site type OPEN
3. Grid ref ... 6467 4682 2947 5077 ...
4. Site name(s) Bill Ridge / D.D.H. ... 7. Classification ...

8. Air photo ref MURWILLUMBAH 1965 Run 5 5045 & 5046 12/8/71
9. Cadastral Portion no. 110 Parish NULLUM County ROUS Shire TWEED
10. Land Status ... 11. ...

12. Directions for site relocation

Vehicle Access South along Doon Doon Creek Road, accross Creek J Smiths Bridge [private crossing] Site on cleared paddock WSW from Creek Crossing. Site on Western side of paddock approx 100 M North of the Southern fence line of this paddock.

13. Owner J. SMITH ... 14. Tenant/Manager ...
Address Doon Doon Creek Road ... Address ...
Doon Doon via KYOGLE P.O. ...
Attitude Very Interested ... Attitude ...

15. Site Description

Cleared pasture, good turf cover with patches of bracken, few trees

Scattered under & around Stringy Bark :— on an area approximately 60×30m on the Western side of the paddock.

1. hand axe
2. horse-hoof cores
1. large core.

Eastern side of field - marshy and undulating with little surface scatter of any rock [probably not ploughed as extensively as W. side which is flat.

16. Reasons for investigation Doon Doon Creek Dam Site Survey
17. Condition Well Ploughed field, implements most probably thrown up under tree by farmer while clearing & re ploughing
18. Interpretation Scientific Research
19 Visitation Regular
20. Recommendations None

4-1-12

21. Environmental description of site locality
Site situated on western side of a 30m high red clay hill that has 6-9 inch soil cover. Whole hill extensively ploughed, with good turf cover. Approx 120 M. from Doon Doon Creek which at this point has high sides with willow, lantana and creeper cover - medium to thick. cover. At pounds here the creek has steep rocky Eastern sides.

22. Relation to other sites in locality
DD8 [Axe grinding grooves] closest site about 140 M SEast of DD4. on the Eastern bank.
DD4/[redacted] situated approx 250 M from DD7 [surface scatter] are both on an E.W. line between DD5 [Cave with deposit] and DD6 [Rock shelter - scatter of few flakes]

23. Details of artifact collections
1. hand axe
4 horse hoof cores
1. large core
} held in the Dept Prehist. & Arch. Uni. New England

24. Is plan or diagram of site attached? [redacted]/No

25. Are annotated photographs attached? Yes/[redacted] How many?

26. Other additions
None.

3/B/W ① View E to Creek ② View NW to Smiths House ③ View NE to Creek Crossing
5/61 ①② 2 views SW ①② 2 views from SW ① Handaxe 'in situ'

27. Importance of site to Aborigines unknown.

28. Source of this information —

29. Oral sources of information
Owner and sons say 5-10 yrs ago they had made collections of edge ground axes [5-6 in #] but has since given them away.

30. Written references

31. Recorded by M Dallas. Filed by J. Evans

Address 21/259 Donnelly St Armidale 2350

Date 21/6/76 Date 12/1/79

4-1-12.

OPS01/02-18/08/94

N.P.W.S. NORTHERN REGION ARCHAEOLOGICAL SURVEY
OPEN SITE DESCRIPTION FORM

NPWS SITE NAME:

RECORDER'S REFERENCE: BYILL RIDGE DD4

☑ Surface recording ☐ Excavation ☐ Both

ASSOCIATED FEATURE CODES:

SAS/#229

LENGTH: 60 metres

BREADTH: 30 metres

DEPTH: metres

ACCESSION NO: 0/0229

COLLECTOR: L.D

DATE: 25/8/94 ☐ Entered in site register

☐ Not on site register ☐ New site form completed

INFORMATION SOURCES:

☐ Published literature Lit Sheet Nos: .....
☐ EIA report Report Nos: .....
.....
☐ Other NPWS report Report Nos: .....
☐ Other - unpublished Lit Sheet No: .....
.....
☑ Site card NPWS Site No: 4-1-12
Associated Survey Information Form No: .....

SITE BOUNDARY DEFINITION CRITERIA:

☐ **01** Natural boundary ☐ **02** Decline in artefact density ☑ **03** Visibility ☐ **07** Other .....
☐ **04** Survey area/development impact ☐ **05** Aboriginal testimony ☐ **06** Arbitrary ☐ **08** Not specified

SLOPE: **ASPECT:** **VISIBILITY:**

TYPE OF GROUNDCOVER:

☐ **01** Leaf litter/bark ☑ **02** Grass ☐ **03** Shrubs ☐ **04** Moss/lichen ☐ **05** Water ☐ **06** Snow
☐ **07** Imported aggregates (eg road gravels, sand, shell, estuarine mud) ☐ **08** Redeposited sediments
☐ **09** Other..... ☐ **10** Unknown

OTHER DETECTION LIMITING FACTORS:

☐ **01** Pebbles/rocks same colour as artefacts ☐ **04** Burning effects mimicking artefacts
☐ **02** Leaf litter/bark having colour/sheen/shape of artefacts ☐ **05** Vegetation
☐ **03** Deep excavation/erosion (ie below archaeological horizon) ☐ **09** Other.....

CONDITION OF SITE:

☐ **01** Good ☐ **02** Fair ☑ **03** Poor ☐ **04** Destroyed ☐ **05** C-to-D issued

RECORDER: M. DALLAS ✓ **YEAR RECORDED:** 1979

RECORDER BACKGROUND:	**EXP**	**INEXP**		**EXP**	**INEXP**
☐ **01** Aboriginal community			☐ **02** NPWS archaeologist	☐	☐
☐ **03** NPWS ranger	☐	☐	☐ **04** Other Government	☐	☐
☐ **05** Academic – archaeologist	☐	☐	☐ **06** Academic – other discipline	☐	☐
☐ **07** Student archaeologist	☐	☐	☐ **08** Consultant archaeologist	☐	☐
☐ **09** Amateur/non-professional			☐ **10** Other (please specify)		

PURPOSE OF RECORDING:

☐ **01** Research – NPWS ☐ **02** Research – academic ☐ **03** Research – other ☐ **04** Government EIA
☐ **05** Non-Govt. EIA ☐ **06** Heritage study ☐ **07** Salvage ☐ **08** Record traditional info
☐ **09** Interest ☐ **10** Other (please specify) .....

SITE CONTENTS:

☑ **001** Stone ☐ **002** Bone ☐ **003** Shell ☐ **004** Wood ☐ **005** Plants/seeds
☐ **006** Pollen ☐ **007** Metal ☐ **008** Glass ☐ **009** Clay pipes ☐ **010** Other (please specify)
☐ **011** Charcoal .....
☐ **111** clustered/clumped .....
☐ **112** scattered .....

OPS02/02-18/08/94

Recorder's Ref: Byill Ridge DD4

NPWS Site No: 4-1-12

TOPOSEQUENCE:

☑ **01** Ridge ☐ **02** Crest ☐ **03** Simple slope ☐ **04** Upper slope
☐ **05** Mid slope ☐ **06** Lower slope ☐ **07** Flat ☐ **08** Open depression
☐ **09** Closed depression

WATER SOURCES IN PROXIMITY (Code nearest as 1 and tick others within 1.5km radius):

☐ **01** Waterhole ☐ **02** River ☐ **03** Creek ☐ **04** Spring/seep ☐ **05** Gully
☐ **06** Lake ☐ **07** Lagoon ☐ **08** Swamp ☐ **09** Well ☐ **10** Claypan
☐ **11** Billabong/oxbow ☐ **12** Condensation or dripping water (Relevant to Grinding Grooves only)
☐ **19** Other (please specify) .....

DISTANCE TO NEAREST WATER SOURCE: ☐ **01** Approximate ☐ **02** Measured

STATUS OF WATER SUPPLY:

☐ **01** Permanent ☐ **02** Temporary ☐ **03** Unknown

TYPE OF WATER:

☐ **01** Fresh ☐ **02** Saline ☐ **03** Brackish ☐ **04** Unknown

WATER MOVEMENT:

☐ **01** Still ☐ **02** Flowing

DISTURBANCE FACTORS:

Disturbance/Damage **X** ☐ **No** ☐ **Yes** (Please fill out the **Full Disturbance Factors Form**)

ARTEFACT SUMMARY:

Artefact Type	Raw Material	Frequency	Proportion
Hand axe		1	
horsehoof core		1	
Large core		1	

DFF01/02-19/07/94

N.P.W.S. NORTHERN REGION ARCHAEOLOGICAL SURVEY

Order's Ref: BYILL RIDGE DN4

FULL DISTURBANCE FACTORS FORM

NPWS Site No: 4-1-12

	Minor	Moderate	Severe
☐ **A GEOMORPHOLOGICAL DAMAGE**	☐ 1	☐ 2	☐ 3
☐ **A00 Erosion** ☐ **A0** Sheetwash ☐ **A1** Gullying ☐ **A2** Streambank ☐ **A3** Coastal: ☐ **A30** Blowouts ☐ **A31** Dune collapse ☐ **A9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **A01 Aggradation** ☐ **A0** Alluvial ☐ **A1** Colluvial ☐ **A2** Aeolian ☐ **A3** Cavernous	☐ 1	☐ 2	☐ 3
☐ **A02 Weathering** ☐ **A0** Honeycomb ☐ **A1** Granular disintegration ☐ **A2** Micro-spalling/flaking/exfoliation ☐ **A3** Large scale exfoliation	☐ 1	☐ 2	☐ 3
☐ **A03 Natural block collapse** ☐ **A0** Occurred ☐ **A1** Impending	☐ 1	☐ 2	☐ 3
☐ **A04 Subsidence**	☐ 1	☐ 2	☐ 3
☐ **A05 Mineral staining**	☐ 1	☐ 2	☐ 3
☐ **A09 Other** (please specify)	☐ 1	☐ 2	☐ 3
☐ **B WATER DAMAGE** ☐ **B0** Weathering due to surface water flow ☐ **B1** Weathering due to dripping water ☐ **B2** Submerged ☐ **B3** Periodic flooding ☐ **B9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **C ANIMAL DAMAGE** ☐ **C0** Pigs ☐ **C1** Cattle ☐ **C2** Macropods ☐ **C3** Brumbies/horses ☐ **C4** Goats ☐ **C5** Sheep ☐ **C6** Wombats ☐ **C7** Rabbits ☐ **C8** Birds ☐ **C9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **C0** Rubbing ☐ **C1** Nesting/rooting ☐ **C2** Dust ☐ **C3** Hoof damage ☐ **C4** Horn damage ☐ **C5** Licking ☐ **C6** Urine/droppings ☐ **C7** Artefact displacements/trampling ☐ **C9** Other (please specify)			
☑ **D PASTORAL DAMAGE** ☑ **D0** Ploughing ☐ **D1** Cultivation ☑ **D2** Land clearing ☐ **D3** Water management ☐ **D4** Farm constructions ☐ **D9** Other (please specify)	☐ 1	☐ 2	☑ 3
☐ **E INSECT DAMAGE** ☐ **E0** Wasps ☐ **E1** Termites ☐ **E9** Other (please specify).....	☐ 1	☐ 2	☐ 3
☐ **E0** Nests ☐ **E1** Trails ☐ **E2** Mounds ☐ **E9** Other (please specify).....			
☐ **F HUMAN DAMAGE**	☐ 1	☐ 2	☐ 3
☐ **F00 Extractive industry - mining** ☐ **F0** Augering ☐ **F1** Open cut mining (hard rock) ☐ **F2** Shaft mining (hard rock) ☐ **F3** Soft deposit/alluvial mining: ☐ **F30** Small scale panning ☐ **F31** Dredging ☐ **F4** Infrastructure	☐ 1	☐ 2	☐ 3
☐ **F01 Extractive industry - forestry** ☐ **F0** Logging ☐ **F1** Log dumps ☐ **F2** Roads/trails ☐ **F3** Quarrying ☐ **F4** Other infrastructure	☐ 1	☐ 2	☐ 3

Recorder's Ref: Byll Ridge DD4

NPWS Site No: 4-1-12

☐ **F02 Extractive industry - quarrying** ☐ **F0** Prehistoric ☐ **F1** European ☐ **F2** Infrastructure	☐ 1	☐ 2	☐ 3
☐ **F03 Landfill**	☐ 1	☐ 2	☐ 3
☐ **F04 Urban development**	☐ 1	☐ 2	☐ 3
☐ **F05 Infrastructure development**	☐ 1	☐ 2	☐ 3
☐ **F06 Commercial development**	☐ 1	☐ 2	☐ 3
☐ **F07 NPWS** ☐ **F0** Fire trails ☐ **F1** Access trails ☐ **F2** Recreation management (eg. walking tracks) ☐ **F9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **F08 Recreational use** ☐ **F0** Government/private recreation management ☐ **F1** Vehicles ☐ **F9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **F09 Vandalism** ☐ **F0** Historic/contemporary graffiti (initials etc...) ☐ **F1** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **F10 Surveyors' marks**	☐ 1	☐ 2	☐ 3
☐ **F11 Steel axe marks**	☐ 1	☐ 2	☐ 3
☐ **F12 Abrasion/other defacement**	☐ 1	☐ 2	☐ 3
☐ **F13 Dust**	☐ 1	☐ 2	☐ 3
☐ **F14 Deposit or access/slope erosion**	☐ 1	☐ 2	☐ 3
☐ **F15 Artefact displacement**	☐ 1	☐ 2	☐ 3
☐ **F16 Scavenging**	☐ 1	☐ 2	☐ 3
☐ **F17 Shooting**	☐ 1	☐ 2	☐ 3
☐ **F18 Digging**	☐ 1	☐ 2	☐ 3
☐ **F19 Litter**	☐ 1	☐ 2	☐ 3
☐ **F99 Other** (please specify)	☐ 1	☐ 2	☐ 3
☐ **G FIRE DAMAGE** ☐ **G0** Burn/scorch marks ☐ **G1** Smoke damage ☐ **G2** Exfoliation ☐ **G9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **H PLANT DAMAGE** ☐ **H0** Vascular plants ☐ **H1** Lichens ☐ **H2** Algae ☐ **H3** Moss ☐ **H9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **H0** Rubbing ☐ **H1** Overgrowth ☐ **H2** Soil cover ☐ **H3** Roots ☐ **H4** Bark regrowth ☐ **H9** Other (please specify)			
☐ **J FUNGAL DAMAGE** ☐ **J0** Overgrowth	☐ 1	☐ 2	☐ 3
☐ **Z OTHER** (please specify)	☐ 1	☐ 2	☐ 3
NOTES:			

See Report 4-1-16
by H Sullivan
M Dallas

04-1-0016

A.M.G. 5295-8505 Midginbil

1. Map Name TWEED HEADS ... BURRINGBAR ... 5. Site No. 4-1-16
2. Scale 1:250000 ... 1:25000 ... 6. Site type O
3. Grid ref ... 6468 4680 ... 2969 5059 ... Axe Grinding Grooves
4. Site name(s) Nullum Stone Fences / D.D.8 ... 7. Classification ...
8. Air photo ref MURWILLUMBAH NSW 1965 RUN 5 ... 5045 & 5046 ... 19/8/71
9. Cadastral Portion no. 35 Parish NULLUM County ROUS State TWEED
10. Land Status ... 11. ...

12. Directions for site relocation

Drive along Doon Doon Creek Road to Water Pipes (2) channelling water under the road. Follow creek upstream (SW) 50 m to large outcrop of standstone 1 groove – possibly 2 merged ends one on the SW corner of low platform

Creek bends to the SW immediately to the south of site

13. Owner ... Smith ... 14. Tenant/Manager ...
Address Doon Doon Cr. Road ... Address ...
... Co. UKI P.O. ... ...
Attitude ... Very Interested ... Attitude ...

15. Site Description

On ledge of sandstone outcrop that forms part of creek bank on its Eastern Side. approx 150 M x 20 M.

ledge – 60 x 20 m.

1 groove about 1M from edge of Creek.

26 cm x 33 cms. x 3 cms (at centre)

Possibly 2 grooves running together – shaped round not oval (long)

16. Reasons for investigation Doon Doon Creek Dam Site Survey
17. Condition ... Excellent ...
...
18. Interpretation ... S. Research ...
19 Visitation ... Rare ...
20. Recommendations ... None ...
...

4-1-16

21. **Environmental description of site locality**

On sandstone scarp forming Eastern bank of Creek
Depth of Creek 1-2m at this point [local owner says its deep enough for a swimming hole.] about 5m. wide with lot of gravel on W. bank. West side open flat - East side high & steep with creeper, willow & bandana medium - dense beneath the road.

---

22. **Relation to other sites in locality**

DD4 & DD7 open - surface scatter sites with large core & groundedge axes. [DD4 had none but oral information from property owner indicates this particular paddock had yielded 5 to 6 over last 10 yrs since ploughing]

---

23. **Details of artifact collections** N/A.

---

24. Is plan or diagram of site attached? **Yes/No** 3 B/W.

25. Are annotated photographs attached? **Yes/No** **How many?**

26. Other additions

---

27. Importance of site to Aborigines —

28. Source of this information

---

29. Oral sources of information —

30. Written references

---

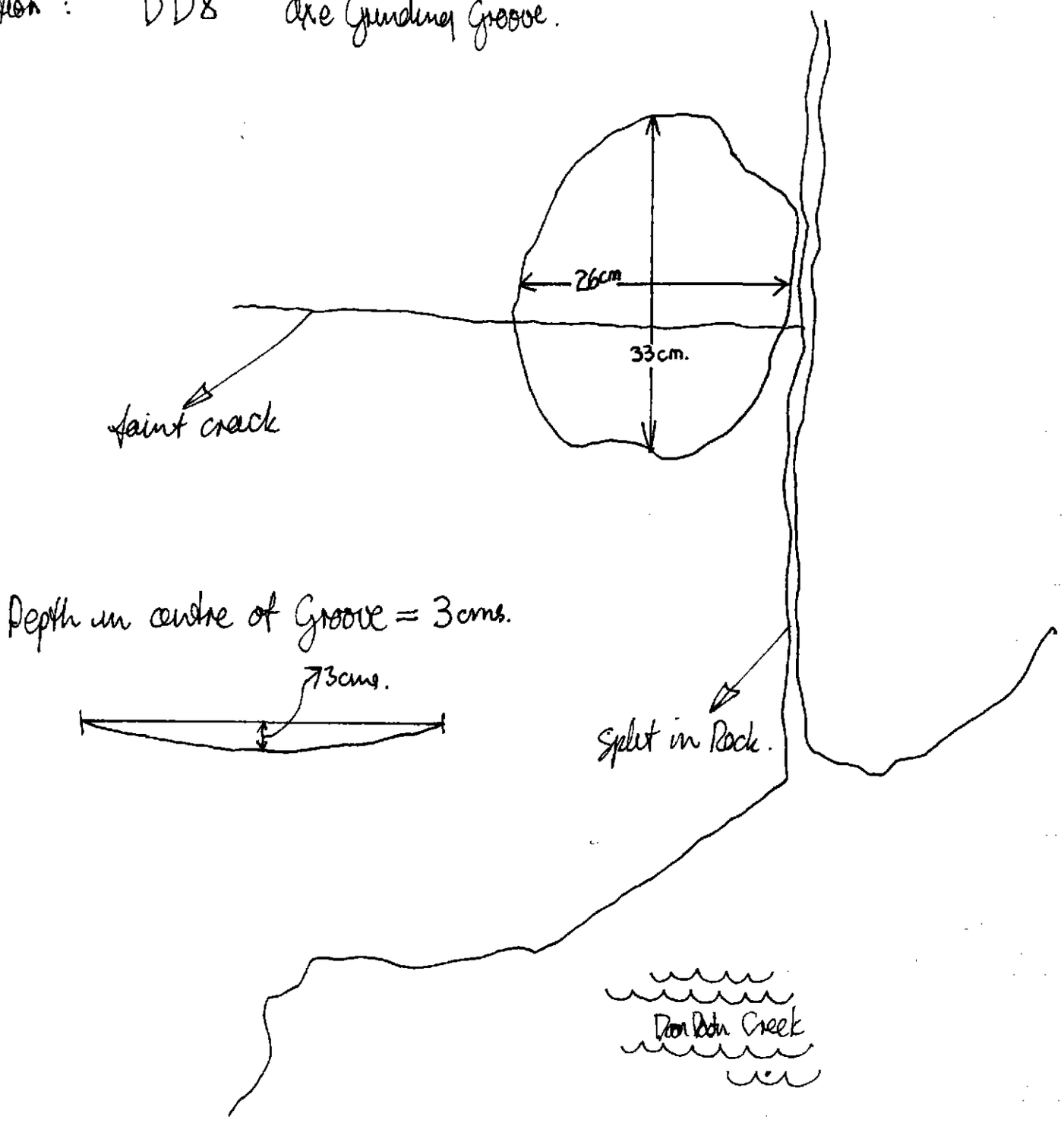
31. Recorded by H. Sullivan **Filed by** J. Evans

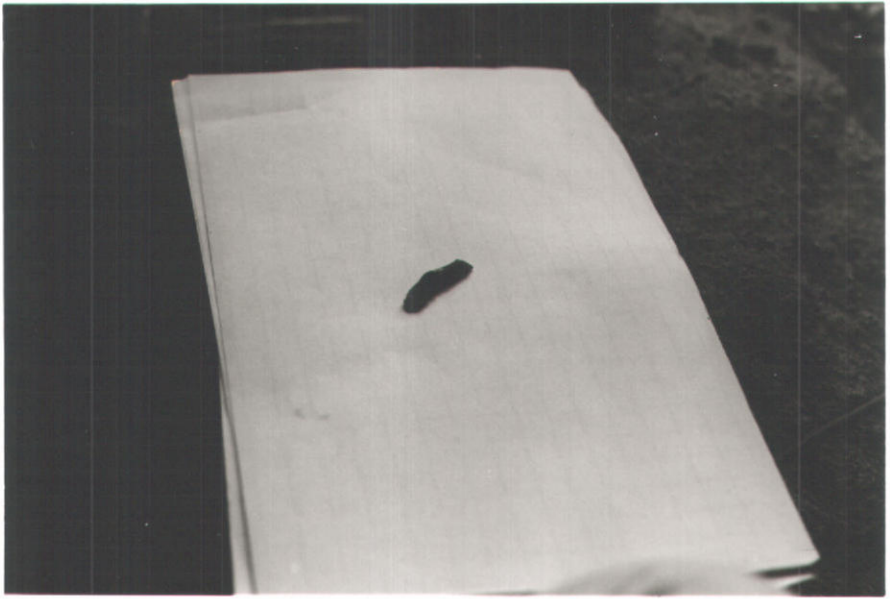
Address 2/259 Donnelly St
Armidale

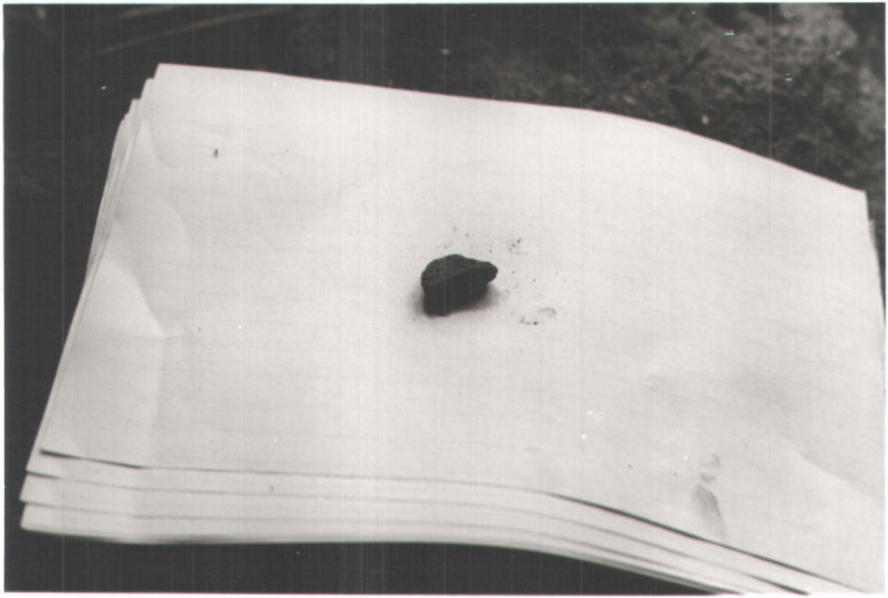
Date 20/6/78 **Date** 12/1/79

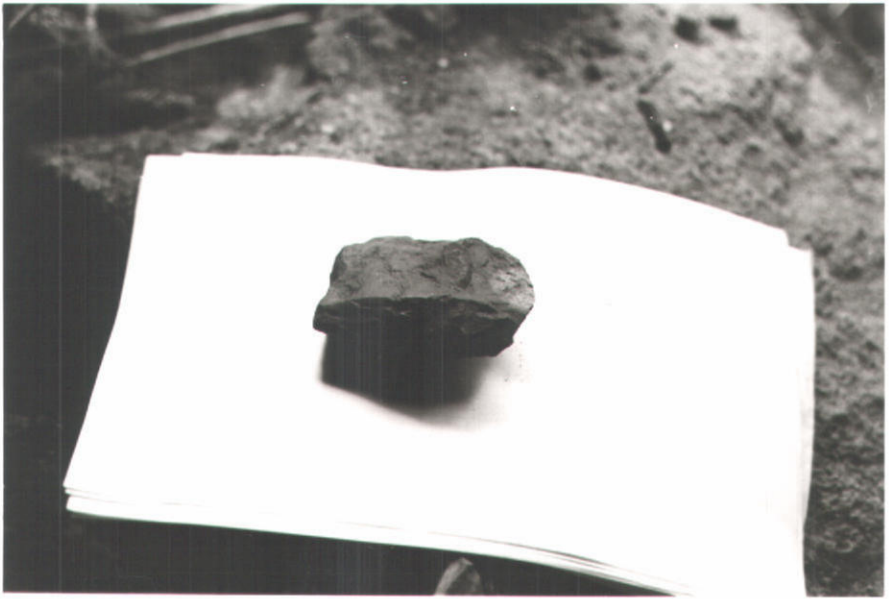
4-1-16

Section : DD8 Axe Grinding Groove.









A.MG. 5293-8521 REGISTER COPY

04-1-0025

1. Map Name Burringbar ... TWEED HEADS. .... 5. Site No. ~~#1-1-26~~
2. Scale 1:25,000 ..... 1:250,000 ..... 6. Site type OPEN ... .
3. Grid ref 2935 5225 ... 6468.4700 ....
4. Site name(s) Mt. MISERY / BARRAGA ..... 7. Classification .....

8. Air photo ref Murwillumbah NSW. 2771. 1:41,000 Runb. 28:3:79.
9. Cadastral Portion 107, Parish of Kunghur, in Rous .....
10. Land Status Abandoned dairy farm. ....
Property Tweed Shire Council.

12. Directions for site relocation. Follow Doon Doon Creek Road from its intersection with main road to a point opposite the gravel quarry (grid 297.526). Turn right onto dirt wheel track follow for approx 70m to flat area above creek bank (Ruins of tin shed & large tree & lumps on left side of track) where the road falls to a creek crossing. A surface scatter of flakes was observed & 4 collected. The road continues across the creek towards some ruins (297.523)

13. Owner Tweed Shire Council. 14. Tenant/Manager ....
Address Murwillumbah ..... Address .....
NSW. ....
Attitude ..... Attitude .....

15. Site Description

Four flakes of silcrete noticed in the road surface on flat ground approx 20m above the creek.
No archaeological context
No other visible evidence due to heavy grass & undergrowth.

16. Reasons for investigation Survey of Doon Doon Dam (Relocation) Site
17. Condition N/A .....
.....
18. Interpretation .....
19. Visitation Tuesday 4th September 1979 .....
20. Recommendations No further archaeological interest. .....
.....

M 2931

4-1-25

21. **Environmental description of site locality** Steep sandstone area above the site & the creek. Forested with heavy secondary regrowth following forestry & dairying activities in former years.

---

22. **Relation to other sites in locality** Tree Scar (Don Doo 9) approx 0.255 km to north north east.

---

23. **Details of artifact collections** 4 flakes collected.

---

24. **Is plan or diagram of site attached?** ~~Yes~~/No

25. **Are annotated photographs attached?** ~~Yes~~/No **How many?**

26. **Other additions**

---

27. **Importance of site to Aborigines**

28. **Source of this information**

---

29. **Oral sources of information**

30. **Written references**

---

31. **Recorded by** [signature] . **Filed by** [signature] .

Address 48 Lagoon Rd Fingal Head. NSW. ~~2487~~ 2485.

Date **Date**

OPS01/02-18/08/94

N.P.W.S. NORTHERN REGION ARCHAEOLOGICAL SURVEY
OPEN SITE DESCRIPTION FORM

NPWS SITE NAME:

RECORDER'S REFERENCE: Mt Misery

☑ Surface recording ☐ Excavation ☐ Both

ASSOCIATED FEATURE CODES:

SAS/0232

LENGTH: metres

BREADTH: metres

DEPTH: metres

ACCESSION NO: 0/0232

COLLECTOR: L.D.

DATE: 25/8/94 ☐ Entered in site register

☐ Not on site register ☐ New site form completed

INFORMATION SOURCES:

☐ Published literature Lit Sheet Nos: .....

☐ EIA report Report Nos: .....

.....

☐ Other NPWS report Report Nos: .....

☐ Other - unpublished Lit Sheet No: .....

.....

☑ Site card NPWS Site No: 4-1-25

Associated Survey Information Form No: .....

SITE BOUNDARY DEFINITION CRITERIA:

☐ **01** Natural boundary ☐ **02** Decline in artefact density ☑ **03** Visibility ☐ **07** Other .....

☐ **04** Survey area/development impact ☐ **05** Aboriginal testimony ☐ **06** Arbitrary ☐ **08** Not specified

SLOPE: **ASPECT:** **VISIBILITY:**

TYPE OF GROUNDCOVER:

☑ **01** Leaf litter/bark ☐ **02** Grass ☑ **03** Shrubs ☐ **04** Moss/lichen ☐ **05** Water ☐ **06** Snow

☐ **07** Imported aggregates (eg road gravels, sand, shell, estuarine mud) ☐ **08** Redeposited sediments

☐ **09** Other..... ☐ **10** Unknown

OTHER DETECTION LIMITING FACTORS:

☐ **01** Pebbles/rocks same colour as artefacts ☐ **04** Burning effects mimicking artefacts

☐ **02** Leaf litter/bark having colour/sheen/shape of artefacts ☐ **05** Vegetation

☐ **03** Deep excavation/erosion (ie below archaeological horizon) ☐ **09** Other.....

CONDITION OF SITE:

☐ **01** Good ☐ **02** Fair ☑ **03** Poor ☐ **04** Destroyed ☐ **05** C-to-D issued

RECORDER: A. PIPER

YEAR RECORDED: 1979

RECORDER BACKGROUND:	**EXP**	**INEXP**		**EXP**	**INEXP**
☐ **01** Aboriginal community			☐ **02** NPWS archaeologist	☐	☐
☐ **03** NPWS ranger	☐	☐	☐ **04** Other Government	☐	☐
☐ **05** Academic – archaeologist	☐	☐	☐ **06** Academic – other discipline	☐	☐
☐ **07** Student archaeologist	☐	☐	☐ **08** Consultant archaeologist	☐	☐
☐ **09** Amateur/non-professional			☐ **10** Other (please specify)		

PURPOSE OF RECORDING:

☐ **01** Research – NPWS ☐ **02** Research – academic ☐ **03** Research – other ☐ **04** Government EIA

☐ **05** Non-Govt. EIA ☐ **06** Heritage study ☐ **07** Salvage ☐ **08** Record traditional info

☐ **09** Interest ☐ **10** Other (please specify) .....

SITE CONTENTS:

☑ **001** Stone ☐ **002** Bone ☐ **003** Shell ☐ **004** Wood ☐ **005** Plants/seeds

☐ **006** Pollen ☐ **007** Metal ☐ **008** Glass ☐ **009** Clay pipes ☐ **010** Other (please specify)

☐ **011** Charcoal .....

☐ **111** clustered/clumped .....

☐ **112** scattered .....

0

OPS02/02-18/08/94

Recorder's Ref: MT Misery

NPWS Site No: 4-1-25

TOPOSEQUENCE:

☐ **01** Ridge ☐ **02** Crest ☐ **03** Simple slope ☐ **04** Upper slope
☐ **05** Mid slope ☐ **06** Lower slope ☐ **07** Flat ☐ **08** Open depression
☐ **09** Closed depression

WATER SOURCES IN PROXIMITY (Code nearest as 1 and tick others within 1.5km radius):

☐ **01** Waterhole ☐ **02** River ☑ **03** Creek ☐ **04** Spring/seep ☐ **05** Gully
☐ **06** Lake ☐ **07** Lagoon ☐ **08** Swamp ☐ **09** Well ☐ **10** Claypan
☐ **11** Billabong/oxbow ☐ **12** Condensation or dripping water (Relevant to Grinding Grooves only)
☐ **19** Other (please specify) .....

DISTANCE TO NEAREST WATER SOURCE: ☐ **01** Approximate ☐ **02** Measured

STATUS OF WATER SUPPLY:

☐ **01** Permanent ☐ **02** Temporary ☐ **03** Unknown

TYPE OF WATER:

☐ **01** Fresh ☐ **02** Saline ☐ **03** Brackish ☐ **04** Unknown

WATER MOVEMENT:

☐ **01** Still ☐ **02** Flowing

DISTURBANCE FACTORS:

Disturbance/Damage X ☐ **No** ☑ **Yes** (Please fill out the **Full Disturbance Factors Form**)

ARTEFACT SUMMARY:

Artefact Type	Raw Material	Frequency	Proportion
Flakes	Siliceous	4	

DFF01/02-19/07/94

N.P.W.S. NORTHERN REGION ARCHAEOLOGICAL SURVEY

Order's Ref: MT MISERY FULL DISTURBANCE FACTORS FORM NPWS Site No: 4-1-25

	Minor	Moderate	Severe
☐ **A GEOMORPHOLOGICAL DAMAGE**	☐ 1	☐ 2	☐ 3
☐ **A00 Erosion** ☐ **A0** Sheetwash ☐ **A1** Gullying ☐ **A2** Streambank ☐ **A3** Coastal: ☐ **A30** Blowouts ☐ **A31** Dune collapse ☐ **A9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **A01 Aggradation** ☐ **A0** Alluvial ☐ **A1** Colluvial ☐ **A2** Aeolian ☐ **A3** Cavernous	☐ 1	☐ 2	☐ 3
☐ **A02 Weathering** ☐ **A0** Honeycomb ☐ **A1** Granular disintegration ☐ **A2** Micro-spalling/flaking/exfoliation ☐ **A3** Large scale exfoliation	☐ 1	☐ 2	☐ 3
☐ **A03 Natural block collapse** ☐ **A0** Occurred ☐ **A1** Impending	☐ 1	☐ 2	☐ 3
☐ **A04 Subsidence**	☐ 1	☐ 2	☐ 3
☐ **A05 Mineral staining**	☐ 1	☐ 2	☐ 3
☐ **A09 Other** (please specify)	☐ 1	☐ 2	☐ 3
☐ **B WATER DAMAGE** ☐ **B0** Weathering due to surface water flow ☐ **B1** Weathering due to dripping water ☐ **B2** Submerged ☐ **B3** Periodic flooding ☐ **B9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **C ANIMAL DAMAGE** ☐ **C0** Pigs ☐ **C1** Cattle ☐ **C2** Macropods ☐ **C3** Brumbies/horses ☐ **C4** Goats ☐ **C5** Sheep ☐ **C6** Wombats ☐ **C7** Rabbits ☐ **C8** Birds ☐ **C9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **C0** Rubbing ☐ **C1** Nesting/rooting ☐ **C2** Dust ☐ **C3** Hoof damage ☐ **C4** Horn damage ☐ **C5** Licking ☐ **C6** Urine/droppings ☐ **C7** Artefact displacements/trampling ☐ **C9** Other (please specify)			
☐ **D PASTORAL DAMAGE** ☐ **D0** Ploughing ☐ **D1** Cultivation ☐ **D2** Land clearing ☐ **D3** Water management ☐ **D4** Farm constructions ☐ **D9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **E INSECT DAMAGE** ☐ **E0** Wasps ☐ **E1** Termites ☐ **E9** Other (please specify).....	☐ 1	☐ 2	☐ 3
☐ **E0** Nests ☐ **E1** Trails ☐ **E2** Mounds ☐ **E9** Other (please specify).....			
☑ **F HUMAN DAMAGE**	☐ 1	☐ 2	☑ 3
☐ **F00 Extractive industry - mining** ☐ **F0** Augering ☐ **F1** Open cut mining (hard rock) ☐ **F2** Shaft mining (hard rock) ☐ **F3** Soft deposit/alluvial mining: ☐ **F30** Small scale panning ☐ **F31** Dredging ☐ **F4** Infrastructure	☐ 1	☐ 2	☐ 3
☑ **F01 Extractive industry - forestry** ☐ **F0** Logging ☐ **F1** Log dumps ☐ **F2** Roads/trails ☐ **F3** Quarrying ☐ **F4** Other infrastructure	☐ 1	☐ 2	☑ 3

DFF02/02-19/07/94

Recorder's Ref: MT MISERY

NPWS Site No: 4-1-25

☐ **F02 Extractive industry - quarrying** ☐ **F0** Prehistoric ☐ **F1** European ☐ **F2** Infrastructure	☐ 1	☐ 2	☐ 3
☐ **F03 Landfill**	☐ 1	☐ 2	☐ 3
☐ **F04 Urban development**	☐ 1	☐ 2	☐ 3
☐ **F05 Infrastructure development**	☐ 1	☐ 2	☐ 3
☐ **F06 Commercial development**	☐ 1	☐ 2	☐ 3
☐ **F07 NPWS** ☐ **F0** Fire trails ☐ **F1** Access trails ☐ **F2** Recreation management (eg. walking tracks) ☐ **F9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **F08 Recreational use** ☐ **F0** Government/private recreation management ☐ **F1** Vehicles ☐ **F9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **F09 Vandalism** ☐ **F0** Historic/contemporary graffiti (initials etc...) ☐ **F1** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **F10 Surveyors' marks**	☐ 1	☐ 2	☐ 3
☐ **F11 Steel axe marks**	☐ 1	☐ 2	☐ 3
☐ **F12 Abrasion/other defacement**	☐ 1	☐ 2	☐ 3
☐ **F13 Dust**	☐ 1	☐ 2	☐ 3
☐ **F14 Deposit or access/slope erosion**	☐ 1	☐ 2	☐ 3
☐ **F15 Artefact displacement**	☐ 1	☐ 2	☐ 3
☐ **F16 Scavenging**	☐ 1	☐ 2	☐ 3
☐ **F17 Shooting**	☐ 1	☐ 2	☐ 3
☐ **F18 Digging**	☐ 1	☐ 2	☐ 3
☐ **F19 Litter**	☐ 1	☐ 2	☐ 3
☐ **F99 Other** (please specify)	☐ 1	☐ 2	☐ 3
☐ **G FIRE DAMAGE** ☐ **G0** Burn/scorch marks ☐ **G1** Smoke damage ☐ **G2** Exfoliation ☐ **G9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **H PLANT DAMAGE** ☐ **H0** Vascular plants ☐ **H1** Lichens ☐ **H2** Algae ☐ **H3** Moss ☐ **H9** Other (please specify)	☐ 1	☐ 2	☐ 3
☐ **H0** Rubbing ☐ **H1** Overgrowth ☐ **H2** Soil cover ☐ **H3** Roots ☐ **H4** Bark regrowth ☐ **H9** Other (please specify)			
☐ **J FUNGAL DAMAGE** ☐ **J0** Overgrowth	☐ 1	☐ 2	☐ 3
☐ **Z OTHER** (please specify)	☐ 1	☐ 2	☐ 3
NOTES:			

9

See Report with 4-1-25.

REGISTER COPY

AMG. 5299 - 8528

04-1-0026

1. Map Name Burringbar TWEED HEADS ..... 5. Site No.
2. Scale 1:25.000 ..... 1:250,000 ..... 6. Site type Scarred Tree
3. Grid ref 2952...5269 ..... 6471-4706 .....
4. Site name(s) MT MILBURY / BARRILL ..... 7. Classification .....

8. Air photo ref Murwillumbah NSW 2771 1:41.000 Run 6 28.3.79.
9. Cadastral .....
10. Land Status Abandoned dairy farm.

12. Directions for site relocation Follow Doo-Doo Creek Rd from its intersection with the main road to a point opposite gravel quarry (grid 297 526). Turn right down dirt track for approx 30 m. At fork wheel track turns west down to a crossing of Doo-Doo Creek. Cross the creek, follow wheel track to north west along creek bank for approx 200m until opposite the northern end of the gravel quarry on the opposite bank. The tree is a large Moreton Bay Chestnut with a group of other rainforest trees immediately above the creek bank.

13. Owner Tweed Shire Council
Address Murwillumbah N.S.W.
Attitude .....

14. Tenant/Manager .....
Address .....
.....
Attitude .....

15. Site Description Tree type: Moreton Bay Chestnut (Blackbean)
Scar is on the western side of the trunk approx 6m above the ground.

Dimensions: Tree: Girth 3.6 m.
Height above water 6.5 m.
Height of scar 6 m.

Scar. Height 1.7 m inside.
2.20 m scar edge.
Bark depth 70-80 m m.
Space between bark + sapwood 30-40 mm

Width. Top 270 m m.
Base 260 m m
Narrowest Point 200 m m
Widest Point. 320 m m.

No obvious axe marks.

16. Reasons for investigation Survey of Doo-Doo-Dan (Relocation) Site
17. Condition Scar very clearly defined. Tree is hollow - sapwood show signs of deterioration at scar base.
18. Interpretation .....
19. Visitation Tuesday 4th September 1979.
20. Recommendations In view of flooding of dam site, removal is most desirable.

M 2931

21. **Environmental description of site locality** The scarred tree is one of a small group of remnant rainforest trees on the creek bank. The surrounding area is cleared slopes of former rainforest, now heavily grassed having formally been a dairy farm. The slopes to the west beginning immediately above the creek bank extend towards Mount Misery. They are very heavily vegetated with secondary regrowth & dense undergrowth.

---

22. **Relation to other sites in locality.** Four waste flakes were collected during the survey at grid 2935 5225 approx 0.255 km to south south east — devoid of any other archaeological interest.

---

23. **Details of artifact collections** N/A.

---

24. **Is plan or diagram of site attached?** ~~Yes~~/No

25. **Are annotated photographs attached?** ~~Yes~~/No **How many?**

26. **Other additions**

See Paper A. An Archaeological Survey of the Doa Doa Dam (Relocation) Site.

27. **Importance of site to Aborigines** See survey mentioned above.

28. **Source of this information**

~

---

29. **Oral sources of information** N.1.

30. **Written references** N.1.

---

31. **Recorded by** A Tyson. **Filed by** M Kelly.

Address 48 Logan Rd. Fingal Head. NSW. 2485.

Date **Date** 23/11/79.

4-1-26

LISMORE DIST.

See Report with 4-1-25.

A.M.G. 5299-8528

REGISTER COPY

1. Map Name ...TWEED HEADS..... ..BURRINGBAR..... 5. Site No. ...4-1-27.....
2. Scale .....1:250,000..... ...1:25,000..... 6. Site type .SURFACE CAMP...
3. Grid ref ...6471:4706..... ...2958:5256... .....
4. Site name(s) .MT MISERY / BYRILL..... 7. Classification .....

8. Air photo ref .....
9. Cadastral .....
10. Land Status ..... 11. .....

12. Directions for site relocation

04-1-0027

13. Owner ..... 14. Tenant/Manager ....
Address ..... Address .....
....
Attitude ..... Attitude .....

15. Site Description

A DAMAGED GROUND EDGE AXE WAS FOUND ON THE CK BANK. THE AXE WAS DEVOID OF CONTEXT.

16. Reasons for investigation ..SURVEY OF DOON DOON DAM (PROPOSED).....
17. Condition .....
.....
18. Interpretation .....
19 Visitation .....
20. Recommendations .....
.....

21. **Environmental description of site locality**

22. **Relation to other sites in locality**

23. **Details of artifact collections**

24. **Is plan or diagram of site attached?** Yes/No

25. **Are annotated photographs attached?** Yes/No **How many?**

26. **Other additions**

27. **Importance of site to Aborigines**

28. **Source of this information**

29. **Oral sources of information**

30. **Written references** 4-1-27

A PIPER. AN ARCHAEOLOGICAL SURVEY OF POOL OOR DAM (RECREATION) SITE

31. **Recorded by** A. PIPER **Filed by** M Kelly.

Address

Date **Date** 23/11/79.

OPS01/02-18/08/94

N.P.W.S. NORTHERN REGION ARCHAEOLOGICAL SURVEY
OPEN SITE DESCRIPTION FORM

NPWS SITE NAME:

RECORDER'S REFERENCE: MT MISERY

☑ Surface recording ☐ Excavation ☐ Both

ASSOCIATED FEATURE CODES:

SAS/0233

LENGTH: metres

BREADTH: metres

DEPTH: metres

ACCESSION NO: 0/0233

COLLECTOR: L.B.

DATE: 25/8/94 ☐ Entered in site register

☐ Not on site register ☐ New site form completed

INFORMATION SOURCES:

☐ Published literature Lit Sheet Nos: .....

☐ EIA report Report Nos: .....

.....

☐ Other NPWS report Report Nos: .....

☐ Other - unpublished Lit Sheet No: .....

.....

☑ Site card NPWS Site No: 4-1-27

Associated Survey Information Form No: .....

SITE BOUNDARY DEFINITION CRITERIA:

☐ **01** Natural boundary ☐ **02** Decline in artefact density ☐ **03** Visibility ☐ **07** Other .....

☐ **04** Survey area/development impact ☐ **05** Aboriginal testimony ☐ **06** Arbitrary ☐ **08** Not specified

SLOPE: **ASPECT:** **VISIBILITY:**

TYPE OF GROUNDCOVER:

☐ **01** Leaf litter/bark ☐ **02** Grass ☐ **03** Shrubs ☐ **04** Moss/lichen ☐ **05** Water ☐ **06** Snow

☐ **07** Imported aggregates (eg road gravels, sand, shell, estuarine mud) ☐ **08** Redeposited sediments

☐ **09** Other..... ☐ **10** Unknown

OTHER DETECTION LIMITING FACTORS:

☐ **01** Pebbles/rocks same colour as artefacts ☐ **04** Burning effects mimicking artefacts

☐ **02** Leaf litter/bark having colour/sheen/shape of artefacts ☐ **05** Vegetation

☐ **03** Deep excavation/erosion (ie below archaeological horizon) ☐ **09** Other.....

CONDITION OF SITE:

☐ **01** Good ☐ **02** Fair ☐ **03** Poor ☐ **04** Destroyed ☐ **05** C-to-D issued

RECORDER: A. PIPER **YEAR RECORDED:** 1979

RECORDER BACKGROUND:	**EXP**	**INEXP**		**EXP**	**INEXP**
☐ **01** Aboriginal community			☐ **02** NPWS archaeologist	☐	☐
☐ **03** NPWS ranger	☐	☐	☐ **04** Other Government	☐	☐
☐ **05** Academic – archaeologist	☐	☐	☐ **06** Academic – other discipline	☐	☐
☐ **07** Student archaeologist	☐	☐	☐ **08** Consultant archaeologist	☐	☐
☐ **09** Amateur/non-professional			☐ **10** Other (please specify)		

PURPOSE OF RECORDING:

☐ **01** Research – NPWS ☐ **02** Research – academic ☐ **03** Research – other ☐ **04** Government EIA

☐ **05** Non-Govt. EIA ☐ **06** Heritage study ☐ **07** Salvage ☐ **08** Record traditional info

☐ **09** Interest ☐ **10** Other (please specify) .....

SITE CONTENTS:

☑ **001** Stone ☐ **002** Bone ☐ **003** Shell ☐ **004** Wood ☐ **005** Plants/seeds

☐ **006** Pollen ☐ **007** Metal ☐ **008** Glass ☐ **009** Clay pipes ☐ **010** Other (please specify)

☐ **011** Charcoal .....

☐ **111** clustered/clumped .....

☐ **112** scattered .....

OPS02/02-18/08/94

Recorder's Ref: MT MISERY

NPWS Site No: 4-1-27

TOPOSEQUENCE:

☐ **01** Ridge ☐ **02** Crest ☐ **03** Simple slope ☐ **04** Upper slope
☐ **05** Mid slope ☐ **06** Lower slope ☑ **07** Flat ☐ **08** Open depression
☐ **09** Closed depression

WATER SOURCES IN PROXIMITY (Code nearest as 1 and tick others within 1.5km radius):

☐ **01** Waterhole ☐ **02** River ☐ **03** Creek ☐ **04** Spring/seep ☐ **05** Gully
☐ **06** Lake ☐ **07** Lagoon ☐ **08** Swamp ☐ **09** Well ☐ **10** Claypan
☐ **11** Billabong/oxbow ☐ **12** Condensation or dripping water (Relevant to Grinding Grooves only)
☐ **19** Other (please specify) .....

DISTANCE TO NEAREST WATER SOURCE: ☐ **01** Approximate ☐ **02** Measured

STATUS OF WATER SUPPLY:

☐ **01** Permanent ☐ **02** Temporary ☐ **03** Unknown

TYPE OF WATER:

☐ **01** Fresh ☐ **02** Saline ☐ **03** Brackish ☐ **04** Unknown

WATER MOVEMENT:

☐ **01** Still ☐ **02** Flowing

DISTURBANCE FACTORS: (NOT INDICATED – one damaged ground edge axe devoid of context)

Disturbance/Damage **X** ☐ **No** ☐ **Yes** (Please fill out the **Full Disturbance Factors Form**)

ARTEFACT SUMMARY:

Artefact Type	Raw Material	Frequency	Proportion
Damaged GROUND EDGE AXE		1	

0

[✓] New recording [ ] Additional Info

National Parks and Wildlife Service

Box 1967, Hurstville NSW 2220. Tel: (02) 585 6444

Standard Site Recording Form Revised 5/88

04-1-0050

1:250,000 map sheet: TWEED NPWS Code 104

AMG Grid reference (Full reference - please include leading digits): 250K 539570 mE 25K; 250K 6842000 mN 5/6 25K

Scale of map used for grid reference (Please use largest scale available): [✓] 25K, 50K (preferred) [ ] 100K [ ] 250K

1:25K, 50K, 100K map name: HUONBROOK

HEAD OFFICE USE ONLY:
NPWS Site no: 04-1-50
Site types: Shelter Deposit
Accessioned by: [illegible] Date: 13/8/93
Data entered by: _____ Date: _____

Owner/Manager: NSW FORESTRY COMMISSION
Address:

Site name: KOONYUM RANGE 1 Locality/property name: NULLUM STATE FOREST

NPWS District: LISMORE (15) Region: NORTHERN

Reason for investigation

BYRON SHIRE ABORIGINAL HERITAGE STUDY

Portion no: STATE FOREST
Parish: TOOLOND

Photos taken? NO
How many attached?

How to get to the site (refer to permanent features, give best approach to site eg. from above, below, along cliff. (Draw diagram on separate sheet.) WILSONS CREEK RD SOUTH WEST FROM MULLUMBIMBY → TURN RIGHT ONTO KOONYUM RANGE ROAD → APPROXIMATELY 3KM TO TEALES LOOKOUT TURN ON LEFT - CONTINUE ALONG KOONYUM RD. FOR 1.5 KM. TO WHERE ROAD BEGINS TO FOLLOW CLIFFLINE AROUND. STOP AT CORNER, WALK SOUTH THROUGH THICK BUSH TO BOTTOM OF RHYOLITE OUTCROP. SITE IS ON NTH. END OF OUTCROP.

Other sites in locality? YES Site Types include: SHELTERS WITH DEPOSIT
Are sites in NPWS Register? RECORD FORMS ACCOMPANYING

Have artefacts been removed from site? UNKNOWN When?
By whom? Deposited where?

Is site important to local Aborigines? WERE NOT PREVIOUSLY AWARE OF SITE
Give contact(s) name(s) + address(es) SAM LEVER
TWEED/BYRON L.A.L.C.

Contacted for this recording? YES
(Attach additional information separately) If not, why not?

Verbal/written reference sources (including full title of accompanying report). NPWS Report Catalogue #

DRAFT : BYRON SHIRE ABORIGINAL HERITAGE STUDY C-2626

Checklist: surface visibility, damage/disturbance/ threat to site

Condition of site: DEPOSIT AT DRIPLINE DISTURBED BY WATER WASH

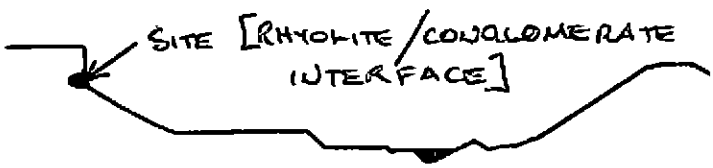
Recommendations for management & protection (attach separate sheet if necessary):
WOULD BE DIFFICULT TO DIVERT WASH FROM DRIPLINE AREA BUT MAY BE DONE WITH A FEW STRATEGICALLY PLACED BOULDERS.
DEPOSIT WITHIN SHELTER IS NOT THREATENED

Site recorded by: J. COLLINS Date: 18/8/93
Address/institution: UNE ARMIDALE

SITE POSITION & ENVIRONMENT | OFFICE USE ONLY: NPWS site no:

1. Land form a. beach/hill slope/ridge top, etc: ESCARPMENT TOP b. site aspect: 340° c. slope: 20°

d. mark on diagram provided *or* on your own sketch the position of the site:



e. Describe briefly: CLIFFLINE OVERHANG 20m LONG, 2m WIDE 15m TO DRIPLINE.

f. Local rock type: RHYOLITE OVERLYING CONGLOMERATE g. Land use/effect: FOREST

2. Distance from drinking water: 100m. Source: INTERMITTENT GULLY [OR FROM IMMEDIATELY IN FRONT OF SITE DURING VERY WET PERIODS]

3 Resource Zone associated with site (estuarine, riverine, forest etc): FOREST

4 Vegetation: WET SCLEROPHYLL FOREST - Blueberry Ash, Brush Box, Ferns, Syzigium, Mahogany, orchids,

5. Edible plants noted: SYZIGIUM SP., FERNS, ORCHID BULBS.

6 Faunal resources (include shellfish): MACROPODS, POSSUMS & OTHER FOREST MARSUPIALS.

7 Other exploitable resources (river pebbles, ochre, etc). NIL.

Site type: SHELTER WITH DEPOSIT

CHECKLIST TO HELP. length, width, depth, height of site, shelter, deposit, structure, element eg. tree scar, grooves in rock.

DEPOSIT: colour, texture, estimated depth, stratigraphy, contents-shell, bone, stone, charcoal, density & distribution of these, stone types, artefact types.

ART: area of surface decorated, motifs, colours, wet, dry pigment, technique of engraving, no. of figures, sizes, patination.

BURIALS: number & condition of bone, position, age, sex, associated artefacts.

TREES: number, alive, dead, likely age, scar shape, position, size, patterns, axe marks, regrowth

QUARRIES: rock type, debris, recognisable artefacts, percentage quarried.

OTHER SITES EG. structures (fish traps, stone arrangements, bora rings, mia mias), mythological sites, rock holes, engraved groove channels, contact sites (mussions massacres cemeteries) as appropriate

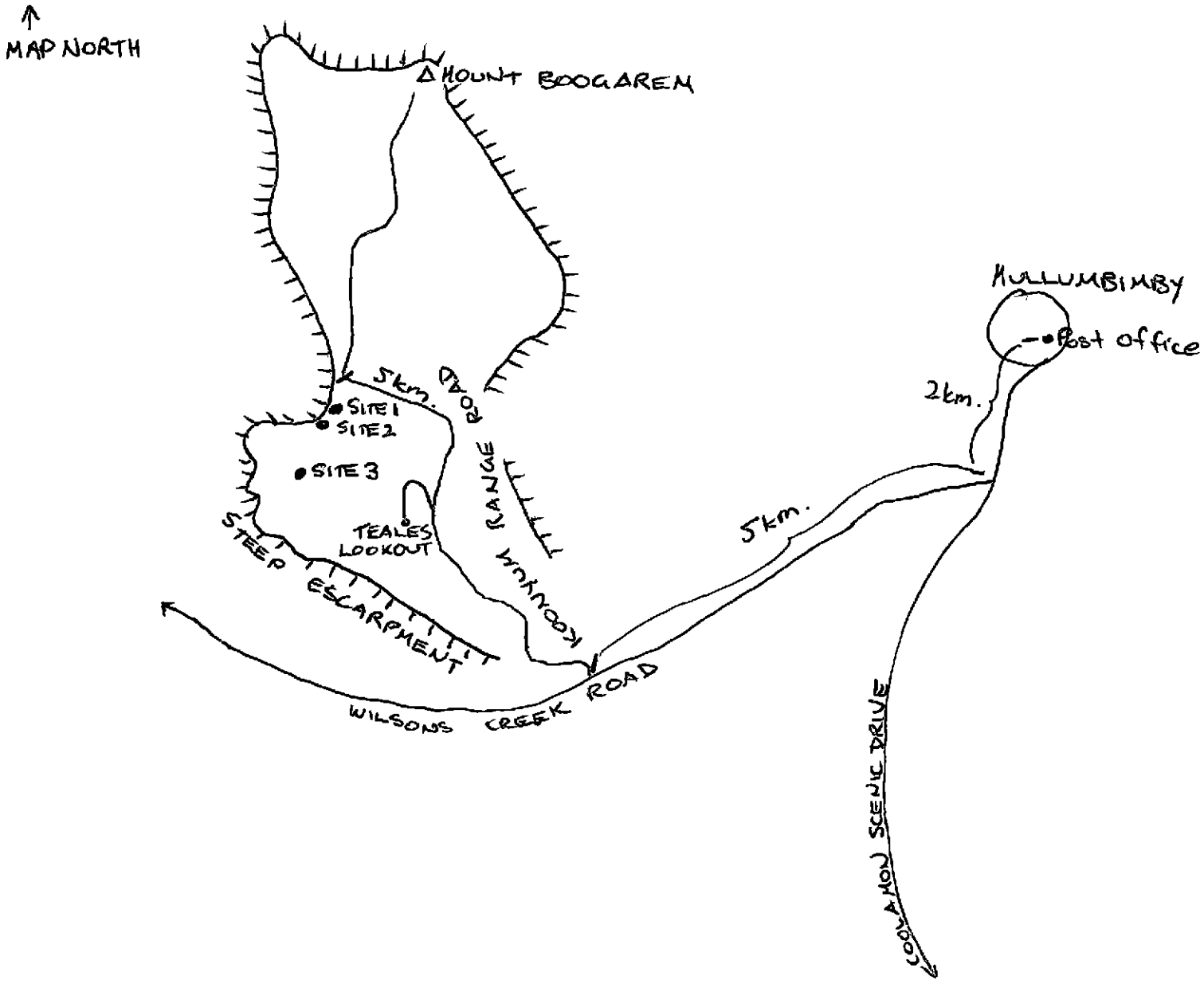
DESCRIPTION OF SITE & CONTENTS.
Note state of preservation of site & contents Do NOT dig, disturb, damage site or contents.

SHELTER HAS A 1·5m. WIDE AND 9m. LONG AREA OF FINE BROWN/GREY DEPOSIT WHICH IS CUT AT THE FRONT BY A SMALL WASH GULLY. NODULES OF RED & YELLOW OCHRE, BONE FRAGMENTS CHARCOAL AND SOME STONE ARTEFACTS (FINE-GRAINED BLACK VOLCANIC STONE [LIKELY TO BE EXOTIC]) ARE VISIBLE ON THE SHELTER DEPOSIT SURFACE. IN ADDITION 1 FRAGMENT OF PIPI SHELL WITH UMBO WAS OBSERVED ON THE SURFACE.

WATER WASH IN FRONT OF THE SHELTER HAS CUT INTO DEPOSIT UP TO A DEPTH OF APPROXIMATELY 80 CM, SUGGESTING THAT DEPOSIT WITHIN THE SHELTER MAY ALSO BE OF SOME DEPTH. ARCHAEOLOGICAL MATERIALS, PARTICULARLY CHARCOAL, HAVE BEEN WASHED DOWN THIS FEATURE AND IT IS THUS DIFFICULT TO DISCERN WHETHER THE DEPOSIT SHOWS DISCRETE STRATIFICATION WITHOUT CLEANING BACK THE DISTURBED SECTION.

Attach sketches etc, eg. plan & section of shelter, show relation between site contents, indicate north, show scale.
Attach annotated photos (stereo where useful) showing scale, particularly for art sites.

• KOONYUM RANGE SHELTERS WITH DEPOSIT



4-1-50.

Eva Day

From: Ian Fox <asset@better.net.au>
Sent: Monday, 17 October 2022 12:22 PM
To: Eva Day
Subject: RE: missing site cards - help

Hello Eva,

Lucky your e-mail has been forwarded through to me as my service provider of some 20 years has recently closed down and apparently no longer is providing a service! FYI my new e-mail address is ianfox1720@gmail.com

I am now retired and no longer actively working in the field of cultural heritage management. However, I do recognise the snip of sites you have attached below. They are part of a Tweed Shire Council (TSC) initiative with the local Aboriginal community to map the cultural landscape for inclusion in their shire wide Aboriginal Cultural Heritage Management Plan (ACHMP). I believe the ACHMP and accompanying sites map is publicly available on the TSC website.

I was engaged by TSC to prepare the cultural landscape map and to assist with writing the ACHMP. As the project identified some 150 new cultural sites (with input from local Aboriginal Sites Officers) I was not required to fill out the detail of AHIMS site cards and I believe a bulk upload of all the new site information was completed by an Office of Environment and Heritage (OEH) staff member based in Armidale, Roger Mehr. TSC arranged for this to be done.

The BMP numbers listed in the 'site name' box refer to an old Southern Cross University project called the "Bundjalung Mapping Project" where myself and community chosen Sites Officers collected primarily historic records to relocate and identify cultural sites in today's landscape. Some of these sites were visited where appropriate, but all were endorsed by the TSC Aboriginal Advisory Committee. They were incorporated into the ACHMP Cultural Landscape Map.

I hope this explanation is of some use to you. I am not aware that any site specific cards were filled out other than the bulk upload arranged by Roger Mehr. Notwithstanding, the detail of site information is kept by the Tweed Byron Local Aboriginal Lands Council Sites Officers and it was agreed to require restricted location and information.

Regards,
Ian Fox.

From: Eva Day <Eva.Day@environment.nsw.gov.au>
Sent: Friday, 14 October 2022 1:06 PM
To: asset@better.net.au
Subject: missing site cards - help

Hi Ian,

I am hoping you can assist us?
You entered site cards onto AHIMS systems but the documents have not been uploaded yet.
If you have a copy of site cards could you please send them to us so that we can fill in the missing gap see below screen shot

This site cards has restricted location.

Site ID	Site Name	Zone	Easting	Northing
04-1-0080	Tyalgum earth mounds BMP-05-0015	56	519650	6864450
04-1-0081	Durigan Plateau Rockshelter BMP-05-0016	56	517090	6866400
04-1-0082	Coowarragum BMP-05-0019	56	515900	6862050
04-1-0083	Hidden Creek BMP-05-0022	56	519200	6866750
04-1-0085	Mt Hobwee/Biby Hill BMP-05-0024	56	519500	6873800
04-1-0086	Pinacle Road Bora Ring BMP-05-0026	56	515700	6859500
04-1-0087	Back Creek Grinding Grooves BMP-05-0027	56	515700	6857400
04-1-0088	Back Creek Camp BMP-05-0028	56	515800	6857300
04-1-0089	Byrrill Ridge BMP-05-0034	56	527900	6850500

Customer Feedback Survey

Eva Day
Business Support, Information Systems
Environment, Energy and Science - Heritage NSW
Department of Planning and Environment
Level 6
10 Valentine Avenue
Parramatta NSW 2150

T: 02 9873 8602
E: eva.day@environment.nsw.gov.au
Website Facebook Instagram LinkedIn

Heritage NSW and coronavirus (COVID-19)
Heritage NSW has taken steps to protect the safety, health and wellbeing of our staff, communities and customers. Whilst our offices remain open, we have put in place flexible working arrangements for our teams across NSW and continue to adapt our working arrangements as necessary. Face-to-face meetings and field work/site visits with our customers are subject to rules on gatherings and social distancing measures. We thank you for your patience and understanding at this time.

I acknowledge and respect the traditional custodians and ancestors of the lands I work across

---

This email is intended for the addressee(s) named and may contain confidential and/or privileged information.
If you are not the intended recipient, please notify the sender and then delete it immediately.
Any views expressed in this email are those of the individual sender except where the sender expressly and with authority states them to be the views of the NSW Office of Environment, Energy and Science.

PLEASE CONSIDER THE ENVIRONMENT BEFORE PRINTING THIS EMAIL

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville NSW 2220

Office of Environment & Heritage

Office Use Only

Site Number 04-1-0188

Date received / / Date entered into system / / Date catalogued / /

Entered by (I.D.)

Information Access

☐ Gender/male ☐ Gender/female ☐ Location restriction ☐ General restriction ☐ No access

Office Use Only

For Further Information Contact:

☐ **Nominated Trustee**

Title	Surname	First Name	Initials

Organisation

Address

Phone number Fax

Client on system ☐

☐ **Knowledge Holder**

Title	Surname	First Name	Initials
Mr	Williams	Des	DW

Organisation

Address

Phone number Fax

Client on system ☐

Aboriginal Heritage Unit or Cultural Heritage Division Contacts

Roger Mehr

Geographic Location

Site Name Rockface Road Tweed ACH Artefa

Easting 532368 Northing 6849559 AGD/GDA GDA

Mapsheet BURR2S

Zone 56 Location Method Non-Differential GPS

Other Registration

Primary Recorder

Title	Surname	First Name	Initials
Mr	Fox	Ian	IF

Organisation Converge

Address

Phone number Fax

Date recorded 10/10/2016

Client on system ☐

NPWS Aboriginal Site Recording Form - Site Information

OPEN/CLOSE SITE Open Site

Site Context

Landform

- ☐ Mountainous
- ☐ Plain
- ☐ Rolling hills
- ☐ Steep hills
- ☐ Undulating plain

Slope

☐ degrees

Landform Unit

- ☐ Beach
- ☐ Coastal rock platform
- ☐ Dune
- ☐ Intertidal flat
- ☐ Lagoon
- ☐ Tidal Creek
- ☐ Tidal Flat
- ☐ Cliff
- ☐ Crest
- ☐ Flat
- ☐ Lower slope
- ☐ Mid slope
- ☐ Upper slope
- ☐ Plain
- ☐ Ridge
- ☐ Tor
- ☐ Valley flat
- ☐ Levy
- ☐ Stream bank
- ☐ Stream channel
- ☐ Swamp
- ☐ Terrace
- ☐ Terrace flat

Vegetation

- ☐ Closed forest
- ☐ Grasslands
- ☐ Isolated clumps of trees
- ☐ Open forest
- ☐ Open woodland
- ☐ Scrub
- ☐ Woodland
- ☐ Cleared
- ☐ Revegetated
- ☐ N/A

Land use

- ☐ Conservation
- ☐ Established urban
- ☐ Farming-intensive
- ☐ Farming-low intensity
- ☐ Forestry
- ☐ Industrial
- ☐ Mining
- ☐ Pastoral/grazing
- ☐ Recreation
- ☐ Semi-rural
- ☐ Service corridor
- ☐ Transport corridor
- ☐ Urban expansion
- ☐ Residential

Water

Distance to permanent water source ☐ metres

Distance to temporary water source ☐ metres

Name of nearest permanent water source

Name of nearest temporary water

Directions for Relocation

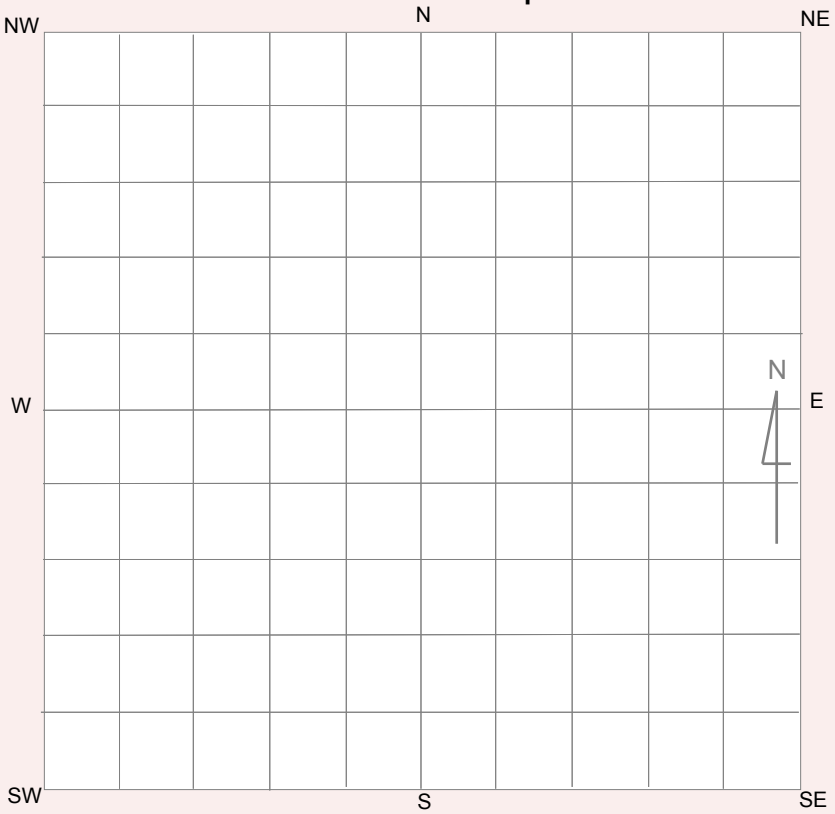
Not provided.

Current Land Tenure

- ☐ Public — National Park / other Government Dept.
- ☐ Private

Primary report I.D. ☐ (I.D. Office Use only)

Site Location Map



NPWS Aboriginal Site Recording Form - Site Information

General Site Information

Closed Site

Shelter/Cave Formation

- ☐ Boulder
- ☐ Wind erosion
- ☐ Water erosion
- ☐ Rock collapse

Rock Surface Condition

- ☐ Boulder
- ☐ Sandstone platform
- ☐ Silica gloss
- ☐ Tessellated
- ☐ Weathered
- ☐ Other platform

Condition of Ceiling

- ☐ Boulder
- ☐ Sandstone platform
- ☐ Silica gloss
- ☐ Tessellated
- ☐ Weathered
- ☐ Other platform

Shelter Aspect

- ☐ North
- ☐ North East
- ☐ East
- ☐ South East
- ☐ South
- ☐ South West
- ☐ West
- ☐ North West

Open Site

Site Orientation

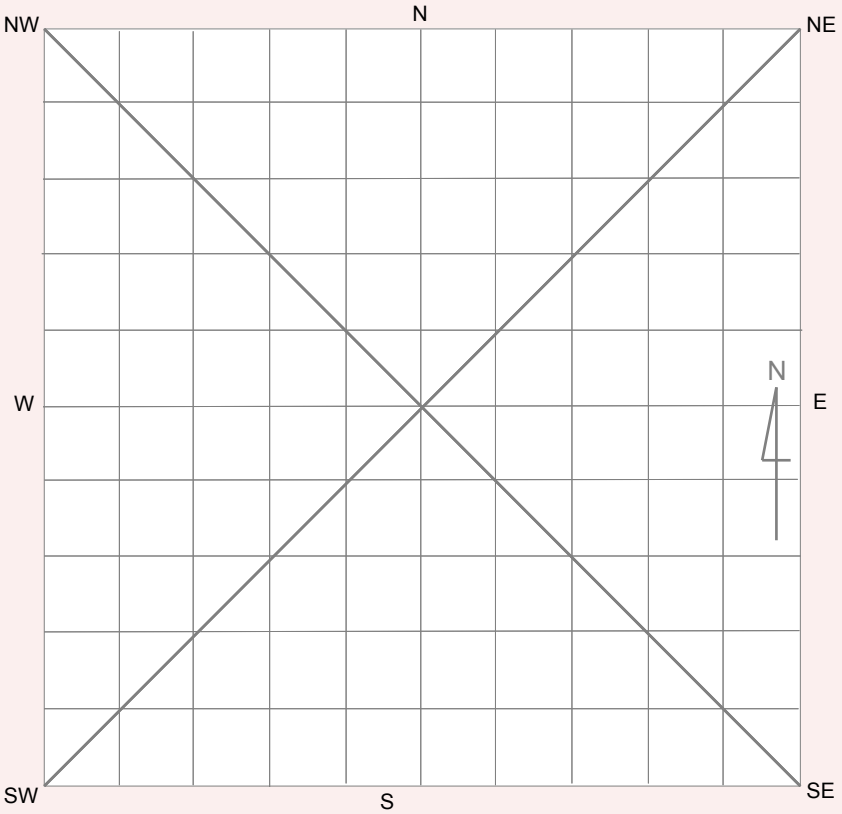
- ☐ N-S
- ☐ NE-SW
- ☐ E-W
- ☐ SE-NW
- ☐ N/A

Features

- ☐ 1. Aboriginal Ceremony & Dreaming
- ☐ 2. Aboriginal Resource & Gathering
- ☐ 3. Art
- ☑ 4. Artefact
- ☐ 5. Burial
- ☐ 6. Ceremonial Ring
- ☐ 7. Conflict
- ☐ 8. Earth Mound
- ☐ 9. Fish Trap
- ☐ 10. Grinding Groove
- ☐ 11. Habitation Structure
- ☐ 12. Hearth
- ☐ 13. Non Human Bone & Organic Material
- ☐ 14. Ochre quarry
- ☐ 15. Potential Archaeological Deposit
- ☐ 16. Stone Quarry
- ☐ 17. Shell
- ☐ 18. Stone Arrangement
- ☐ 19. Modified Tree
- ☐ 20. Water Hole

Site Plan

Indicate scale, boundaries of site, features



Site Dimensions

Closed Site Dimensions (m)

- ☐ Internal length
- ☐ Internal width
- ☐ Shelter height
- ☐ Shelter floor area

Open Site Dimensions (m)

- ☐ Total length of visible site
- ☐ Average width of visible site
- ☐ Estimated area of visible site
- ☐ Length of assessed site area

Aboriginal Community Interpretation and Management Recommendations

Preliminary Site Assessment

Site Cultural & Scientific Analysis and Preliminary Management Recommendations

This section should only be filled in by the Endorsees

Endorsed by: ☐ Knowledge Holder ☐ Nominated Trustee ☐ Native Title Holder ☐ Community Consensus

Title | Surname | First Name | Initials

Organisation

Address

Phone number | Fax

Attachments (No.)

- ☐ A4 location map
- ☐ B/W photographs
- ☐ Colour photographs
- ☐ Slides
- ☐ Aerial photographs
- ☐ Site plans, drawings
- ☐ Recording tables
- ☐ Other
- ☐ Feature inserts-No. ☐

Comments

Site card completed by OEH personnel. All information that was provided by consultant has been entered.

NPWS FEATURE RECORDING FORM - ARTEFACT

Site I.D.

Site Name

First recorded date

Importance

No. of instances

Recorded by

Yes No

Stone artefacts only

Artefacts collected

Permit issued

Percentage of Non-stone Artefacts to Percentage of Stone Artefacts

0-9% 10-19% 20-29% 30-39% 40-49% 50-59% 60-69% 70-79% 80-89% 90-100%

Feature Context & Condition

Scatter No.

Easting

Northing

Density

(Artefact count per square metre)

Dimensions

Length (m) Width (m) Depth (m)

Yes No

In situ

Stratified

Feature Condition

- Very good
- Good
- Poor

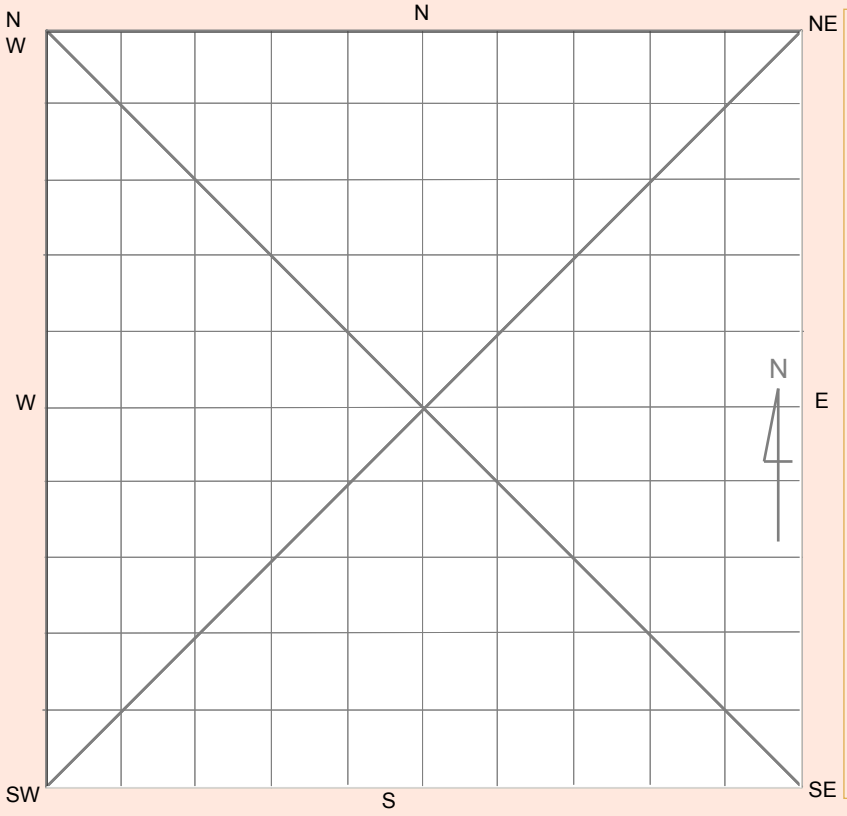
General Condition

- Weathered
- Vehicle damage
- Surface water wash
- Fire damage
- Erosion
- Stock damage
- Exposed archaeological material

Recommended Action

- Boardwalk
- Fencing
- Closure to public
- Continued inspection
- Fire hazard reduction
- Expert assessment
- Meeting with land manager
- Revegetation
- Signage
- Soil erosion control
- Track closure/re-routing
- Additional recording

Feature Plan (Indicate scale, location of instances)



Feature Environment

(Complete when *feature* environment differs to *site* environment, use attributes from cover card, p. 2)

Land form

Land form unit

Slope

Vegetation

Land use

Water

Distance to permanent water source metres

Distance to temporary water source metres

Name of nearest permanent water source

Name of nearest temporary water

NPWS FEATURE RECORDING TABLE - ARTEFACT

Stone Artefact

Instance No.	Recording Date	Artefact Material	Artefact Type	Platform Surface	Platform Type	Termination	Cross Section	Length (mm)	Width (mm)	Thickness (mm)

Other Artefact Type

Instance No.	Recording Date	Artefact Material	Artefact Type	Description	Length (mm)	Width (mm)	Thickness (mm)

Material

Basalt
Chert
Fine grained siliceous
Granite
Quartz
Quartzite
Sandstone
Silcrete
Green glass
Amber glass
Amethyst glass
Clear glass
Ceramic
Porcelain
Tin can
Wire
Nail
Button
Shell
Bone
Wood
Resin

Artefact Description

Adze
Anvil
Axe
Backed blade
Blade
Core
Core tool
Cyclon
Distal fragment
Eloura
Flake
Flake tool
Flaked piece
Hammerstone
Manuport
Milling slab
Mortar
Muller
Nuclear tool
Pirri
Proximal fragment
Tula
Other diagnostic type
Modified
Unworked

Platform Surface

Cortex
Flake scar
More than one flake scar
Faceted
Ground
Indeterminate
Bipolar

Termination

Feather
Hinge
Step
Outrepasse
Bipolar

Platform Type

W
Focal
Shattered
Indeterminate
Bipolar

Cross Section

High/strong
High/weak
Low/weak
Irregular

Comments:

NPWS FEATURE RECORDING FORM - MODIFIED TREE

Site I.D. | Site Name

First recorded date | **Importance** | **Aboriginal Information Recorded?**

No. of instances

Recorded by

Feature description

Easting | Northing

No. of scars

No. of carved panels

Feature Condition

- Very good
- Good
- Poor

Condition

- Weathered
- Ringbarked
- Fire damage
- Vehicle damage
- Insects/termites
- Rot
- Limb fall
- Stock damage

Recommended Action

- Fencing
- Closure to public
- Continued inspection
- Expert assessment
- Fire hazard reduction
- Insect removal
- Meeting with land manager
- Rubbish removal
- Signage
- Tree health assessment
- Track closure/re-routing
- Additional recording

Feature environment

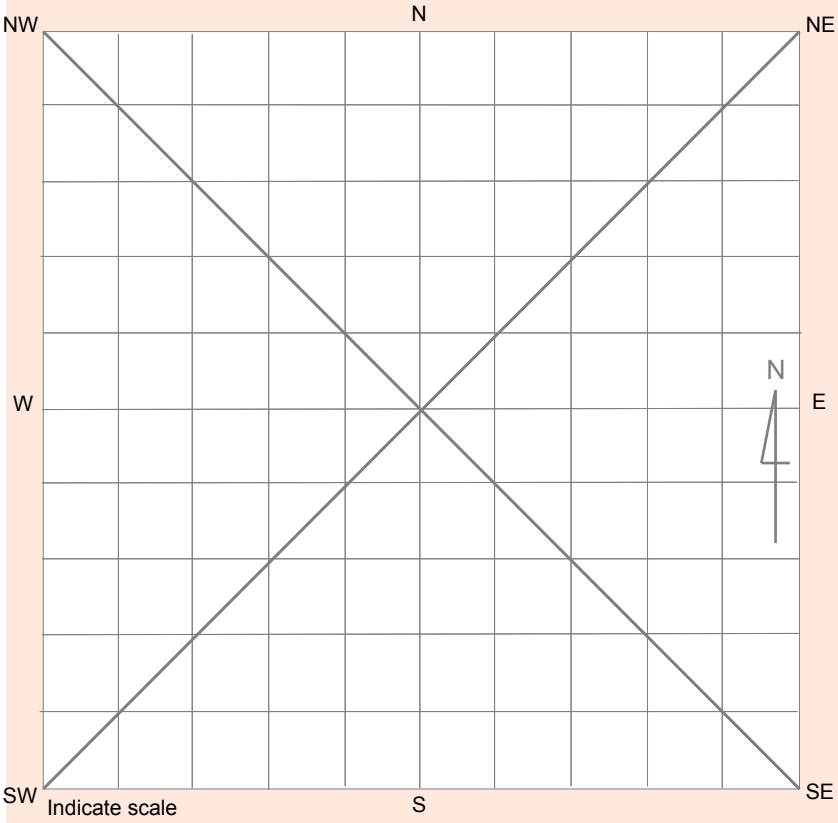
(Complete when *feature* environment differs to *site* environment, use attributes from cover card, page 2)

- Land form
- Land form unit
- Slope
- Vegetation
- Land use

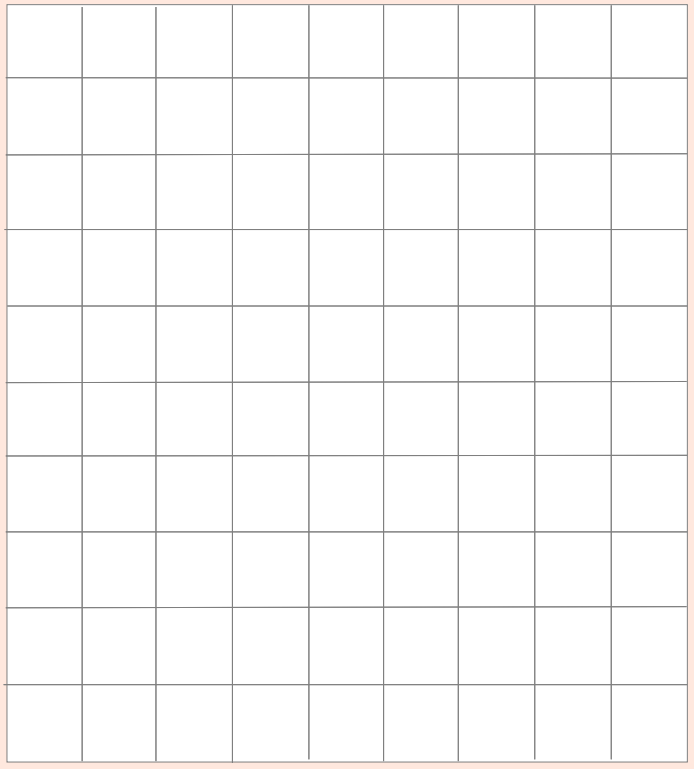
Water

- Distance to permanent water source ____ metres
- Distance to temporary water source ____ metres
- Name of nearest permanent water source
- Name of nearest temporary water

Feature Location Plan



Scar/Carved Panel Drawing



Attach additional drawings

NPWS FEATURE RECORDING TABLE - MODIFIED TREE

Instance No.	Recording Date	Type	Species	Living Status	Tree Status	Regrowth	Length of Scar	Width of Scar	Depth	Height Above Ground	No. of Scars	Shape	No. of Carved Panels	Carving Type	Orientation	Axe Marks

NPWS FEATURE RECORDING FORM - GROOVE

Site I.D.

Site Name

First recorded date / /

Importance

Aboriginal Information Recorded?

No. of instances

Recorded by

Feature Description

Type of Grinding Feature

- Broad
- Narrow/point
- Hollow
- Flat

Seed Species Present

Recording date / /

Groove Function

Profile Shape

- 'U' shaped
- 'V' shaped
- Flat

Dimensions

	Smallest	Largest	
Length (mm)			Groove count
Width (mm)			Cluster count
Depth (mm)			

Feature Context & Condition

Easting

Northing

Dimensions of Whole Feature Length (m) Width (m)

Feature Condition

- Very good
- Good
- Poor

General Condition

- Weathered
- Vandalised

General Condition ctd

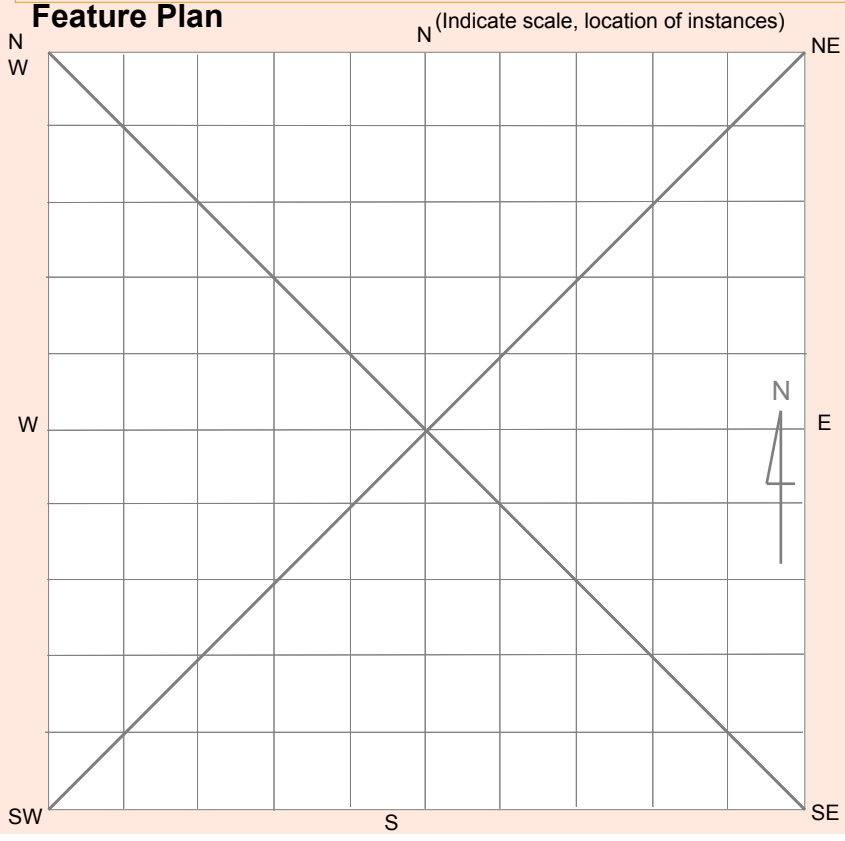
- Fire damage
- Surface water wash
- Graffiti
- Vehicle damage
- Erosion
- Stock damage

Recommended Action

- Boardwalk
- Cage/barrier/fencing
- Closure to public
- Continued inspection
- Expert assessment
- Graffiti removal
- Meeting with land manager
- Revegetation
- Rubbish removal
- Signage
- Erosion control
- Track closure/re-routing
- Additional recording

Feature Plan

(Indicate scale, location of instances)



Feature Environment

(Complete when *feature* environment differs to *site* environment, use attributes from cover card, p. 2)

- Land form
- Land form unit
- Slope
- Vegetation
- Land use

Water

Distance to permanent water source metres

Distance to temporary water source metres

Name of nearest permanent water source

Name of nearest temporary water

NPWS FEATURE RECORDING FORM - ART

Site I.D. ____ Site Name ____

First recorded date ____/____/____ **Importance** ____ **Aboriginal Information Recorded?** ____

No. of instances ____

Recorded by ____

Feature Context & Condition

Easting ____ Northing ____

Pigment ☐ Engraved ☐ Super-impositioning ☐

Artwork Condition

- ☐ Very good
- ☐ Good
- ☐ Poor

General Condition

- ☐ Weathered
- ☐ Vandalised
- ☐ Surface water wash
- ☐ Mineralisation
- ☐ Graffiti
- ☐ Fire damage
- ☐ Insects/termites
- ☐ Erosion
- ☐ Stock
- ☐ Unstable structure

Recommended Action

- ☐ Boardwalk
- ☐ Cage/barrier/fencing
- ☐ Closure to public
- ☐ Continued inspection
- ☐ Dripline
- ☐ Expert assessment
- ☐ Fire hazard removal
- ☐ Graffiti removal
- ☐ Insect/bird nest removal
- ☐ Meeting with land manager
- ☐ Rubbish removal
- ☐ Signage
- ☐ Erosion control
- ☐ Track closure/re-routing
- ☐ Additional recording

Feature Environment

(Complete when *feature* environment differs to *site* environment, use attributes from cover card, p. 2)

- ____ Land form
- ____ Land form unit
- ____ Slope
- ____ Vegetation
- ____ Land use

Water

- Distance to permanent water source ____ metres
- Distance to temporary water source ____ metres
- Name of nearest permanent water source ____
- Name of nearest temporary water ____

Art Sketch Plan

Sketch and number motif groups

NPWS FEATURE RECORDING TABLE - ART MOTIF

Instance	Recording Date	Motif	Application Technique	Form	Main Colour	Location	Condition

Motif

Anthropomorphic
Bird
Bird Track
Canoe
Circle
Contact material culture
Duck
Eel
Emu
Emu track
European figure
Female
Fish
Foot
Hand
Jellyfish
Kangaroo
Line
Lizard
Macropod
Macropod Track
Male
Marine-Other
Other
Pattern
Quadruped
Reptile
Rifle
Shield
Ship
Snake
Spear
Wallaby

Application Technique

Abraded
Drawn
Other
Painted
Pecked
Pigment & Engraved
Stencilled

Form

Fill
Line
Line+ Fill
Other
Pattern

Main Colour

Black
Mauve *
N/A
Orange *
Other
Red *
White *
Yellow *

Art Location

All over shelter surfaces
ceiling
Floor
Mostly near largest sheltered space
Mostly on out of the way surfaces
Other
Wall

Condition

Faded
Stained
Mineralisation Evident
V brant Colours
Unweathered
Weathered

Comments:

NPWS FEATURE RECORDING FORM - SHELL

Site I.D. ____ Site Name ____

First recorded date ____/____/____ **Importance** ____ **Aboriginal Information Recorded?** ____

No. of instances ____

Recorded by ____

Feature Context & Condition

Easting ____ Northing ____

Dimensions of Whole Feature

____ Length (m) ____ Width (m) ____ Depth (m)

Shell Distribution

- ☐ Surface scatter
- ☐ Stratified deposit
- ☐ Mounded

____ Distance to high water mark (m)

Feature Condition

- ☐ Very good
- ☐ Good
- ☐ Poor

General Condition

- ☐ Weathered
- ☐ Vandalised
- ☐ Surface water wash
- ☐ Mineralisation
- ☐ Graffiti

General Condition ctd

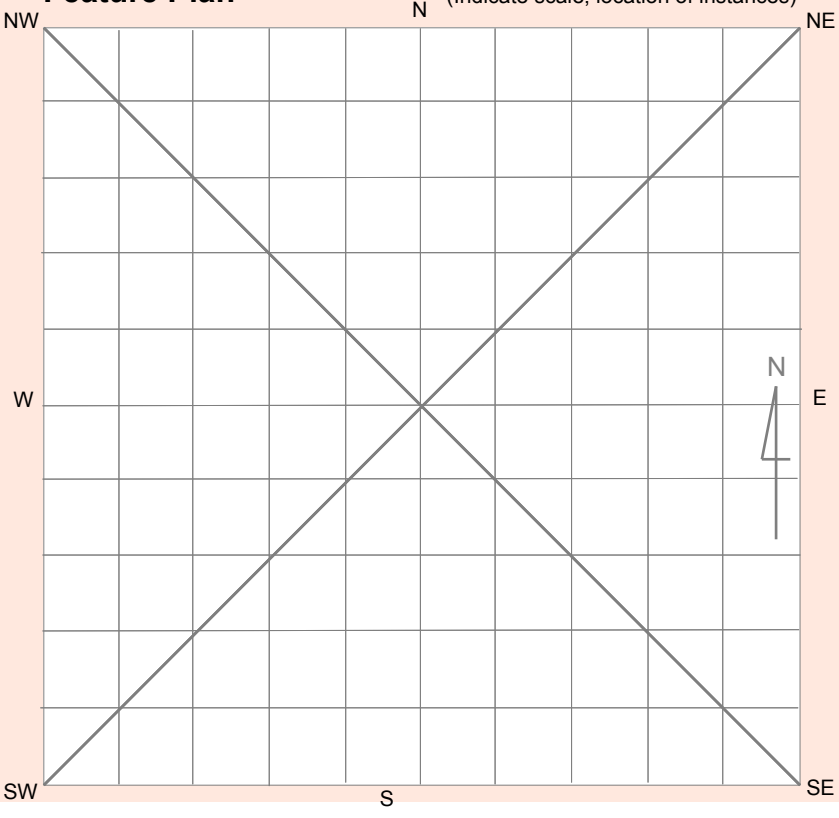
- ☐ Fire damage
- ☐ Vehicle damage
- ☐ Insects/termites
- ☐ Erosion
- ☐ Stock damage
- ☐ Unstable structure
- ☐ Exposed bone material
- ☐ Exposed archaeological material

Recommended Action

- ☐ Boardwalk
- ☐ Cage/barrier/fencing
- ☐ Closure to public
- ☐ Continued inspection
- ☐ Expert assessment
- ☐ Fire hazard removal
- ☐ Graffiti removal
- ☐ Meeting with land manager
- ☐ Insect/bird nest removal
- ☐ Revegetation
- ☐ Rubbish removal
- ☐ Signage
- ☐ Erosion control
- ☐ Track closure/re-routing
- ☐ Additional recording

Feature Plan

(Indicate scale, location of instances)



Feature Environment

(Complete when *feature* environment differs to *site* environment, use attributes from cover card, p. 2)

____ Land form

____ Land form unit

____ Slope

____ Vegetation

____ Land use

Water

Distance to permanent water source ____ metres

Distance to temporary water source ____ metres

Name of nearest permanent water source ____

Name of nearest temporary water ____

NPWS FEATURE RECORDING TABLE - SHELL

Instance No.	Recording Date	Shell Species	% of this species shell to % total of other shell

Species		Percentage of this Species Shell to Percentage Total of other Shell
Anadara	Nerita	0 – 9%
Bimbala	Ocean Snail	10 – 19%
Chiton	Periwinkle	20 – 29%
Cowrie	P	30 – 39%
Dog Cockle	Ribbed Cockle	40 – 49%
Duck Bill	Rock Oyster	50 – 59%
Limpit	Whiad	60 – 69%
Mud oyster	Triton	70 – 79%
Mutton Fish	Turban (large)	80 – 89%
		90 – 100%

Comments:

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville NSW 2220

Office of Environment & Heritage

Office Use Only

Site Number 04-1-0188

Date received / / Date entered into system / / Date catalogued / /

Entered by (I.D.)

Information Access

☐ Gender/male ☐ Gender/female ☐ Location restriction ☐ General restriction ☐ No access

Office Use Only

For Further Information Contact:

☐ **Nominated Trustee**

Title	Surname	First Name	Initials

Organisation

Address

Phone number Fax

Client on system ☐

☐ **Knowledge Holder**

Title	Surname	First Name	Initials
Mr	Williams	Des	DW

Organisation

Address

Phone number Fax

Client on system ☐

Aboriginal Heritage Unit or Cultural Heritage Division Contacts

Roger Mehr

Geographic Location

Site Name Rockface Road Tweed ACH Artefa

Easting 532368 Northing 6849559 AGD/GDA GDA

Mapsheet BURR2S

Zone 56 Location Method Non-Differential GPS

Other Registration

Primary Recorder

Title	Surname	First Name	Initials
Mr	Fox	Ian	IF

Organisation Converge

Address

Phone number Fax

Client on system ☐

Date recorded 10/10/2016

NPWS Aboriginal Site Recording Form - Site Information

OPEN/CLOSE SITE Open Site

Site Context

Landform

- ☐ Mountainous
- ☐ Plain
- ☐ Rolling hills
- ☐ Steep hills
- ☐ Undulating plain

Landform Unit

- ☐ Beach
- ☐ Coastal rock platform
- ☐ Dune
- ☐ Intertidal flat
- ☐ Lagoon
- ☐ Tidal Creek
- ☐ Tidal Flat
- ☐ Cliff
- ☐ Crest
- ☐ Flat
- ☐ Lower slope
- ☐ Mid slope
- ☐ Upper slope
- ☐ Plain
- ☐ Ridge
- ☐ Tor
- ☐ Valley flat
- ☐ Levy
- ☐ Stream bank
- ☐ Stream channel
- ☐ Swamp
- ☐ Terrace
- ☐ Terrace flat

Slope

☐ degrees

Vegetation

- ☐ Closed forest
- ☐ Grasslands
- ☐ Isolated clumps of trees
- ☐ Open forest
- ☐ Open woodland
- ☐ Scrub
- ☐ Woodland
- ☐ Cleared
- ☐ Revegetated
- ☐ N/A

Land use

- ☐ Conservation
- ☐ Established urban
- ☐ Farming-intensive
- ☐ Farming-low intensity
- ☐ Forestry
- ☐ Industrial
- ☐ Mining
- ☐ Pastoral/grazing
- ☐ Recreation
- ☐ Semi-rural
- ☐ Service corridor
- ☐ Transport corridor
- ☐ Urban expansion
- ☐ Residential

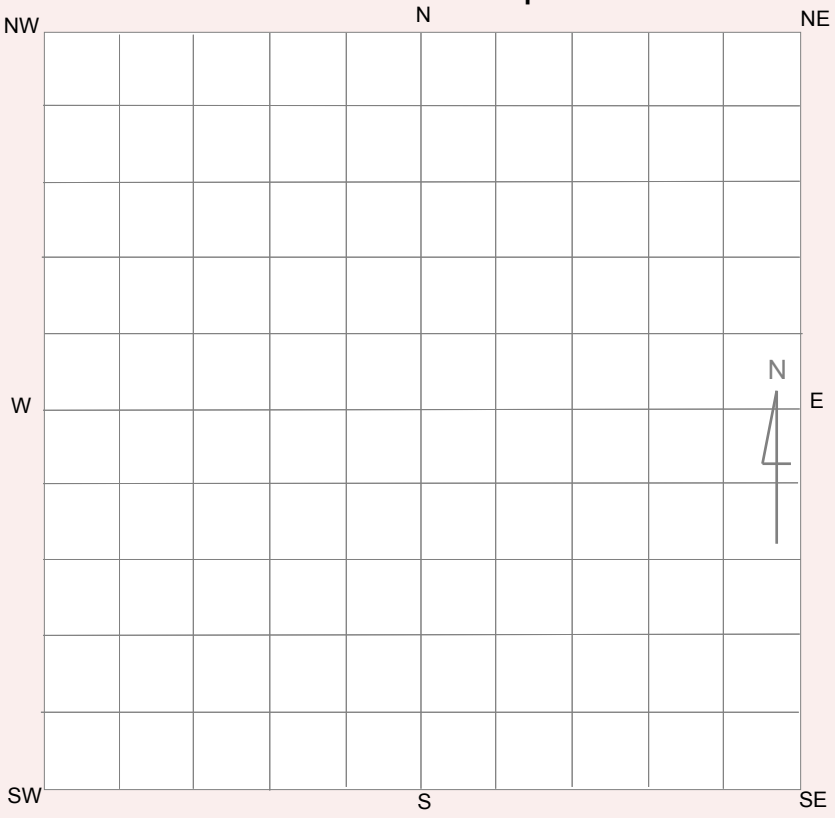
Water

Distance to permanent water source	☐ metres
Distance to temporary water source	☐ metres
Name of nearest permanent water source	
Name of nearest temporary water	

Directions for Relocation

Not provided.

Site Location Map



Current Land Tenure

- ☐ Public — National Park / other Government Dept.
- ☐ Private

Primary report **I.D.** ☐ (I.D. Office Use only)

NPWS Aboriginal Site Recording Form - Site Information

General Site Information

Closed Site

Shelter/Cave Formation

- ☐ Boulder
- ☐ Wind erosion
- ☐ Water erosion
- ☐ Rock collapse

Rock Surface Condition

- ☐ Boulder
- ☐ Sandstone platform
- ☐ Silica gloss
- ☐ Tessellated
- ☐ Weathered
- ☐ Other platform

Condition of Ceiling

- ☐ Boulder
- ☐ Sandstone platform
- ☐ Silica gloss
- ☐ Tessellated
- ☐ Weathered
- ☐ Other platform

Shelter Aspect

- ☐ North
- ☐ North East
- ☐ East
- ☐ South East
- ☐ South
- ☐ South West
- ☐ West
- ☐ North West

Open Site

Site Orientation

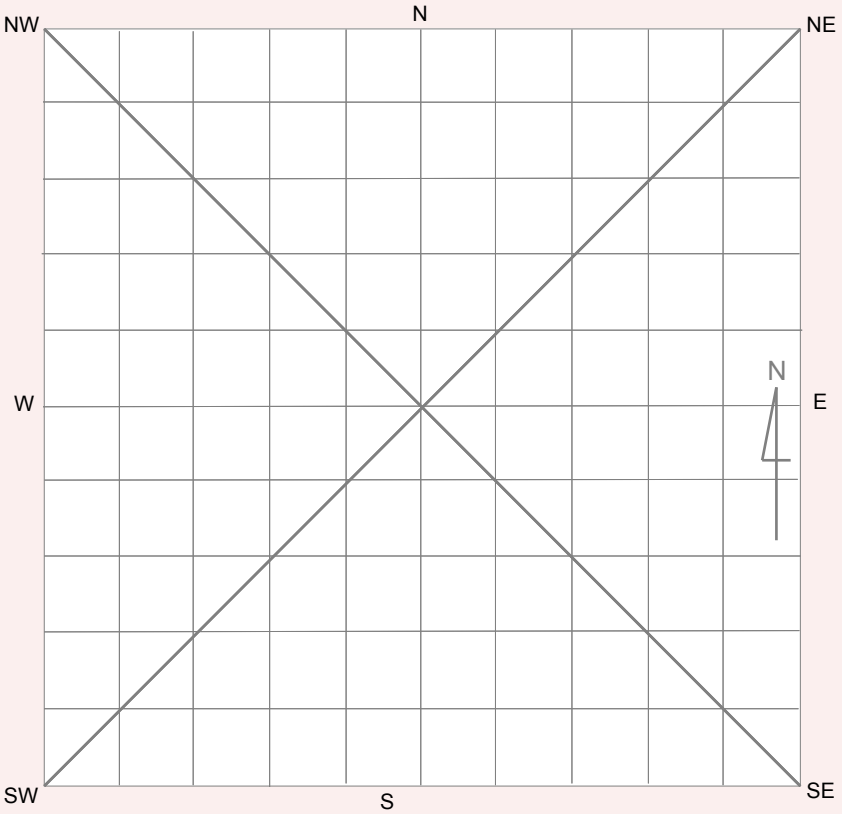
- ☐ N-S
- ☐ NE-SW
- ☐ E-W
- ☐ SE-NW
- ☐ N/A

Features

- ☐ 1. Aboriginal Ceremony & Dreaming
- ☐ 2. Aboriginal Resource & Gathering
- ☐ 3. Art
- ☑ 4. Artefact
- ☐ 5. Burial
- ☐ 6. Ceremonial Ring
- ☐ 7. Conflict
- ☐ 8. Earth Mound
- ☐ 9. Fish Trap
- ☐ 10. Grinding Groove
- ☐ 11. Habitation Structure
- ☐ 12. Hearth
- ☐ 13. Non Human Bone & Organic Material
- ☐ 14. Ochre quarry
- ☐ 15. Potential Archaeological Deposit
- ☐ 16. Stone Quarry
- ☐ 17. Shell
- ☐ 18. Stone Arrangement
- ☐ 19. Modified Tree
- ☐ 20. Water Hole

Site Plan

Indicate scale, boundaries of site, features



Site Dimensions

Closed Site Dimensions (m)

- ☐ Internal length
- ☐ Internal width
- ☐ Shelter height
- ☐ Shelter floor area

Open Site Dimensions (m)

- ☐ Total length of visible site
- ☐ Average width of visible site
- ☐ Estimated area of visible site
- ☐ Length of assessed site area

Aboriginal Community Interpretation and Management Recommendations

Preliminary Site Assessment

Site Cultural & Scientific Analysis and Preliminary Management Recommendations

This section should only be filled in by the Endorsees

Endorsed by: ☐ Knowledge Holder ☐ Nominated Trustee ☐ Native Title Holder ☐ Community Consensus

Title | Surname | First Name | Initials

Organisation

Address

Phone number | Fax

Attachments (No.)

- ☐ A4 location map
- ☐ B/W photographs
- ☐ Colour photographs
- ☐ Slides
- ☐ Aerial photographs
- ☐ Site plans, drawings
- ☐ Recording tables
- ☐ Other
- ☐ Feature inserts-No. ☐

Comments

Site card completed by OEH personnel. All information that was provided by consultant has been entered.

NPWS FEATURE RECORDING FORM - ARTEFACT

Site I.D.

Site Name

First recorded date

Importance

No. of instances

Recorded by

Yes No

Stone artefacts only

Artefacts collected

Permit issued

Percentage of Non-stone Artefacts to Percentage of Stone Artefacts

0-9% 10-19% 20-29% 30-39% 40-49% 50-59% 60-69% 70-79% 80-89% 90-100%

Feature Context & Condition

Scatter No.

Easting

Northing

Density

(Artefact count per square metre)

Dimensions

Length (m) Width (m) Depth (m)

Yes No

In situ

Stratified

Feature Condition

- Very good
- Good
- Poor

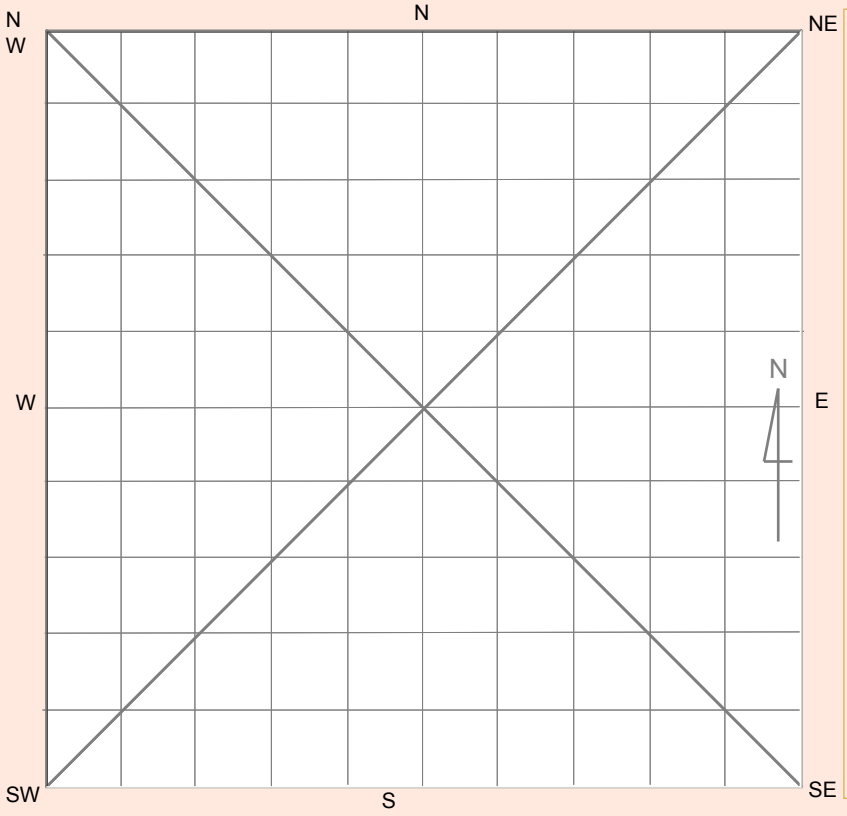
General Condition

- Weathered
- Vehicle damage
- Surface water wash
- Fire damage
- Erosion
- Stock damage
- Exposed archaeological material

Recommended Action

- Boardwalk
- Fencing
- Closure to public
- Continued inspection
- Fire hazard reduction
- Expert assessment
- Meeting with land manager
- Revegetation
- Signage
- Soil erosion control
- Track closure/re-routing
- Additional recording

Feature Plan (Indicate scale, location of instances)



Feature Environment

(Complete when *feature* environment differs to *site* environment, use attributes from cover card, p. 2)

Land form

Land form unit

Slope

Vegetation

Land use

Water

Distance to permanent water source metres

Distance to temporary water source metres

Name of nearest permanent water source

Name of nearest temporary water

NPWS FEATURE RECORDING TABLE - ARTEFACT

Stone Artefact

Instance No.	Recording Date	Artefact Material	Artefact Type	Platform Surface	Platform Type	Termination	Cross Section	Length (mm)	Width (mm)	Thickness (mm)

Other Artefact Type

Instance No.	Recording Date	Artefact Material	Artefact Type	Description	Length (mm)	Width (mm)	Thickness (mm)

Material

Basalt
Chert
Fine grained siliceous
Granite
Quartz
Quartzite
Sandstone
Silcrete
Green glass
Amber glass
Amethyst glass
Clear glass
Ceramic
Porcelain
Tin can
Wire
Nail
Button
Shell
Bone
Wood
Resin

Artefact Description

Adze
Anvil
Axe
Backed blade
Blade
Core
Core tool
Cyclon
Distal fragment
Eloura
Flake
Flake tool
Flaked piece
Hammerstone
Manuport
Milling slab
Mortar
Muller
Nuclear tool
Pirri
Proximal fragment
Tula
Other diagnostic type
Modified
Unworked

Platform Surface

Cortex
Flake scar
More than one flake scar
Faceted
Ground
Indeterminate
Bipolar

Termination

Feather
Hinge
Step
Outrepasse
Bipolar

Platform Type

W
Focal
Shattered
Indeterminate
Bipolar

Cross Section

High/strong
High/weak
Low/weak
Irregular

Comments:

NPWS FEATURE RECORDING FORM - MODIFIED TREE

Site I.D. | Site Name

First recorded date | **Importance** | **Aboriginal Information Recorded?**

No. of instances

Recorded by

Feature description

Easting | Northing

No. of scars

No. of carved panels

Feature Condition

- Very good
- Good
- Poor

Condition

- Weathered
- Ringbarked
- Fire damage
- Vehicle damage
- Insects/termites
- Rot
- Limb fall
- Stock damage

Recommended Action

- Fencing
- Closure to public
- Continued inspection
- Expert assessment
- Fire hazard reduction
- Insect removal
- Meeting with land manager
- Rubbish removal
- Signage
- Tree health assessment
- Track closure/re-routing
- Additional recording

Feature environment

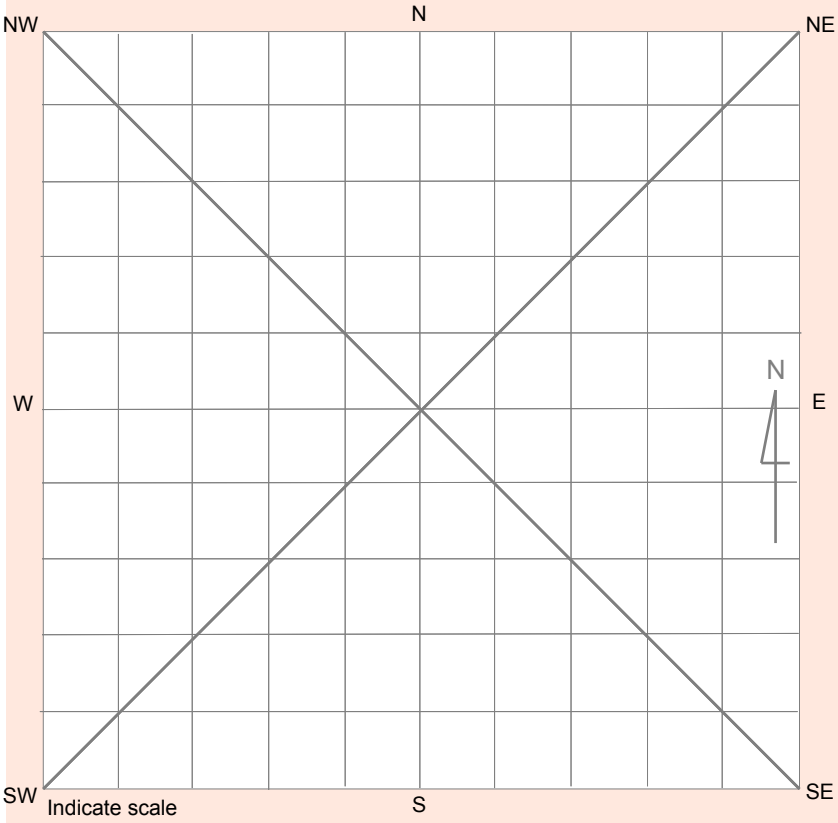
(Complete when *feature* environment differs to *site* environment, use attributes from cover card, page 2)

- Land form
- Land form unit
- Slope
- Vegetation
- Land use

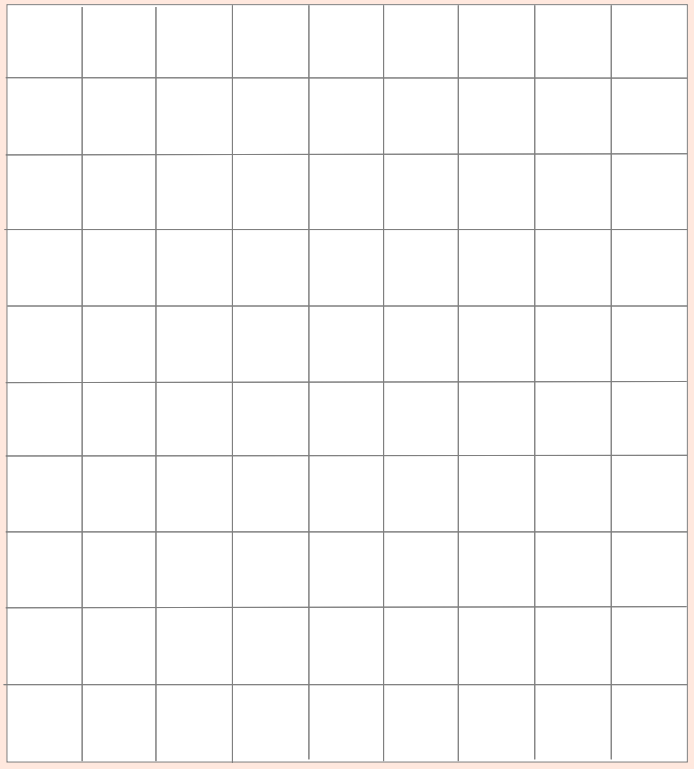
Water

- Distance to permanent water source ____ metres
- Distance to temporary water source ____ metres
- Name of nearest permanent water source
- Name of nearest temporary water

Feature Location Plan



Scar/Carved Panel Drawing



Attach additional drawings

NPWS FEATURE RECORDING TABLE - MODIFIED TREE

Instance No.	Recording Date	Type	Species	Living Status	Tree Status	Regrowth	Length of Scar	Width of Scar	Depth	Height Above Ground	No. of Scars	Shape	No. of Carved Panels	Carving Type	Orientation	Axe Marks

NPWS FEATURE RECORDING FORM - GROOVE

Site I.D.

Site Name

First recorded date / /

Importance

Aboriginal Information Recorded?

No. of instances

Recorded by

Feature Description

Type of Grinding Feature

- Broad
- Narrow/point
- Hollow
- Flat

Seed Species Present

Recording date / /

Groove Function

Profile Shape

- 'U' shaped
- 'V' shaped
- Flat

Dimensions

	Smallest	Largest	
Length (mm)			Groove count
Width (mm)			Cluster count
Depth (mm)			

Feature Context & Condition

Easting

Northing

Dimensions of Whole Feature Length (m) Width (m)

Feature Condition

- Very good
- Good
- Poor

General Condition

- Weathered
- Vandalised

General Condition ctd

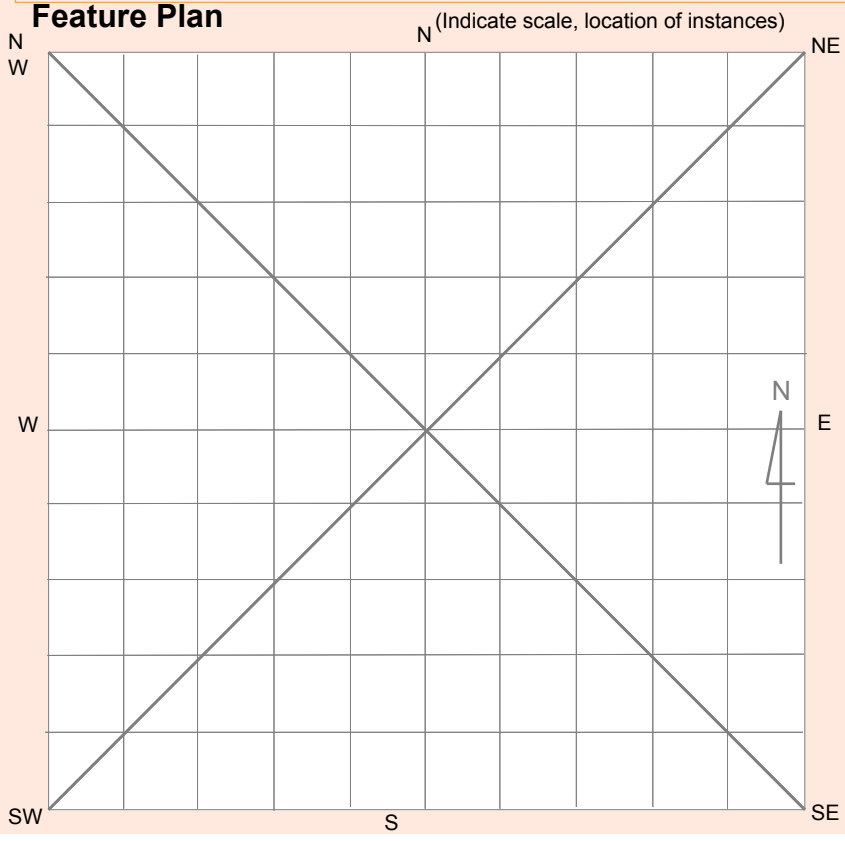
- Fire damage
- Surface water wash
- Graffiti
- Vehicle damage
- Erosion
- Stock damage

Recommended Action

- Boardwalk
- Cage/barrier/fencing
- Closure to public
- Continued inspection
- Expert assessment
- Graffiti removal
- Meeting with land manager
- Revegetation
- Rubbish removal
- Signage
- Erosion control
- Track closure/re-routing
- Additional recording

Feature Plan

(Indicate scale, location of instances)



Feature Environment

(Complete when *feature* environment differs to *site* environment, use attributes from cover card, p. 2)

- Land form
- Land form unit
- Slope
- Vegetation
- Land use

Water

Distance to permanent water source metres

Distance to temporary water source metres

Name of nearest permanent water source

Name of nearest temporary water

NPWS FEATURE RECORDING FORM - ART

Site I.D. ____ Site Name ____

First recorded date ____/____/____ **Importance** ____ **Aboriginal Information Recorded?** ____

No. of instances ____

Recorded by ____

Feature Context & Condition

Easting ____ Northing ____

Pigment ☐ Engraved ☐ Super-impositioning ☐

Artwork Condition

- ☐ Very good
- ☐ Good
- ☐ Poor

General Condition

- ☐ Weathered
- ☐ Vandalised
- ☐ Surface water wash
- ☐ Mineralisation
- ☐ Graffiti
- ☐ Fire damage
- ☐ Insects/termites
- ☐ Erosion
- ☐ Stock
- ☐ Unstable structure

Recommended Action

- ☐ Boardwalk
- ☐ Cage/barrier/fencing
- ☐ Closure to public
- ☐ Continued inspection
- ☐ Dripline
- ☐ Expert assessment
- ☐ Fire hazard removal
- ☐ Graffiti removal
- ☐ Insect/bird nest removal
- ☐ Meeting with land manager
- ☐ Rubbish removal
- ☐ Signage
- ☐ Erosion control
- ☐ Track closure/re-routing
- ☐ Additional recording

Feature Environment

(Complete when *feature* environment differs to *site* environment, use attributes from cover card, p. 2)

- ____ Land form
- ____ Land form unit
- ____ Slope
- ____ Vegetation
- ____ Land use

Water

- Distance to permanent water source ____ metres
- Distance to temporary water source ____ metres
- Name of nearest permanent water source ____
- Name of nearest temporary water ____

Art Sketch Plan

Sketch and number motif groups

NPWS FEATURE RECORDING TABLE - ART MOTIF

Instance	Recording Date	Motif	Application Technique	Form	Main Colour	Location	Condition

Motif

Anthropomorphic
Bird
Bird Track
Canoe
Circle
Contact material culture
Duck
Eel
Emu
Emu track
European figure
Female
Fish
Foot
Hand
Jellyfish
Kangaroo
Line
Lizard
Macropod
Macropod Track
Male
Marine-Other
Other
Pattern
Quadruped
Reptile
Rifle
Shield
Ship
Snake
Spear
Wallaby

Application Technique

Abraded
Drawn
Other
Painted
Pecked
Pigment & Engraved
Stencilled

Form

Fill
Line
Line+ Fill
Other
Pattern

Main Colour

Black
Mauve *
N/A
Orange *
Other
Red *
White *
Yellow *

Art Location

All over shelter surfaces
ceiling
Floor
Mostly near largest sheltered space
Mostly on out of the way surfaces
Other
Wall

Condition

Faded
Stained
Mineralisation Evident
V brant Colours
Unweathered
Weathered

Comments:

NPWS FEATURE RECORDING FORM - SHELL

Site I.D. ____ Site Name ____

First recorded date ____/____/____ **Importance** ____ **Aboriginal Information Recorded?** ____

No. of instances ____

Recorded by ____

Feature Context & Condition

Easting ____ Northing ____

Dimensions of Whole Feature

____ Length (m) ____ Width (m) ____ Depth (m)

Shell Distribution

- ☐ Surface scatter
- ☐ Stratified deposit
- ☐ Mounded

____ Distance to high water mark (m)

Feature Condition

- ☐ Very good
- ☐ Good
- ☐ Poor

General Condition

- ☐ Weathered
- ☐ Vandalised
- ☐ Surface water wash
- ☐ Mineralisation
- ☐ Graffiti

General Condition ctd

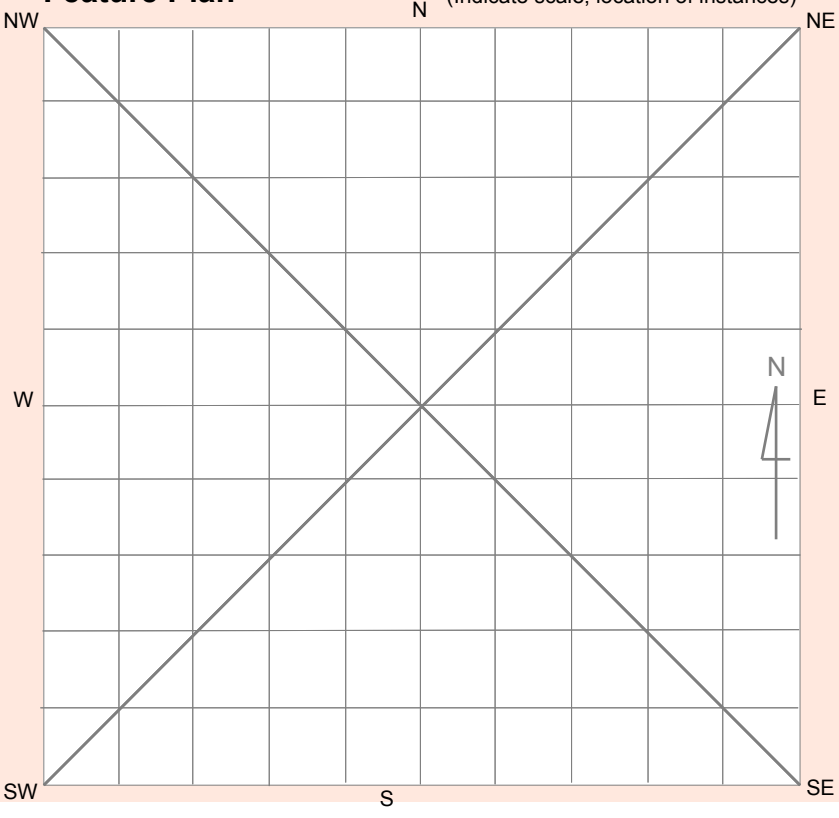
- ☐ Fire damage
- ☐ Vehicle damage
- ☐ Insects/termites
- ☐ Erosion
- ☐ Stock damage
- ☐ Unstable structure
- ☐ Exposed bone material
- ☐ Exposed archaeological material

Recommended Action

- ☐ Boardwalk
- ☐ Cage/barrier/fencing
- ☐ Closure to public
- ☐ Continued inspection
- ☐ Expert assessment
- ☐ Fire hazard removal
- ☐ Graffiti removal
- ☐ Meeting with land manager
- ☐ Insect/bird nest removal
- ☐ Revegetation
- ☐ Rubbish removal
- ☐ Signage
- ☐ Erosion control
- ☐ Track closure/re-routing
- ☐ Additional recording

Feature Plan

(Indicate scale, location of instances)



Feature Environment

(Complete when *feature* environment differs to *site* environment, use attributes from cover card, p. 2)

____ Land form

____ Land form unit

____ Slope

____ Vegetation

____ Land use

Water

Distance to permanent water source ____ metres

Distance to temporary water source ____ metres

Name of nearest permanent water source ____

Name of nearest temporary water ____

NPWS FEATURE RECORDING TABLE - SHELL

Instance No.	Recording Date	Shell Species	% of this species shell to % total of other shell

Species		Percentage of this Species Shell to Percentage Total of other Shell
Anadara	Nerita	0 – 9%
Bimbala	Ocean Snail	10 – 19%
Chiton	Periwinkle	20 – 29%
Cowrie	P	30 – 39%
Dog Cockle	Ribbed Cockle	40 – 49%
Duck Bill	Rock Oyster	50 – 59%
Limpit	Whiad	60 – 69%
Mud oyster	Triton	70 – 79%
Mutton Fish	Turban (large)	80 – 89%
		90 – 100%

Comments:

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0231 **Date recorded:** 21-06-2018

Site Location Information

Site name: CHD A51

Easting: 529048 **Northing:** 6850447 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Recreation

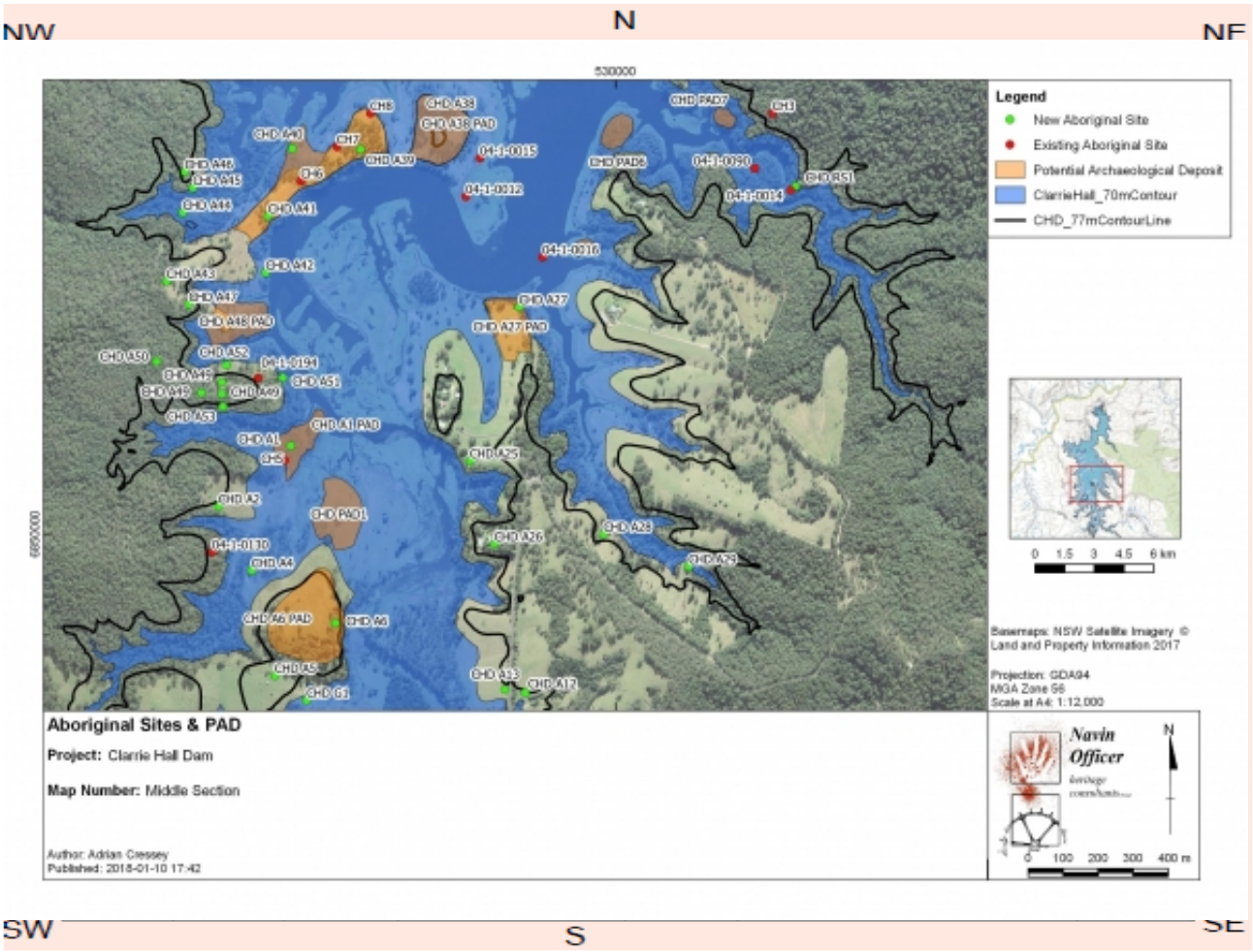
Land Form Unit: Slope **Vegetation:** Woodland

Distance to Water (m): 40 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open

Site condition: Disturbed

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
1. Artefact	1	1	1				

Description:

an isolated find visible in an area of mounded soil and logs. Artefact: 1. white and blue agate core with three negative scars; 39 x 22 x 20 mm

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
2.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

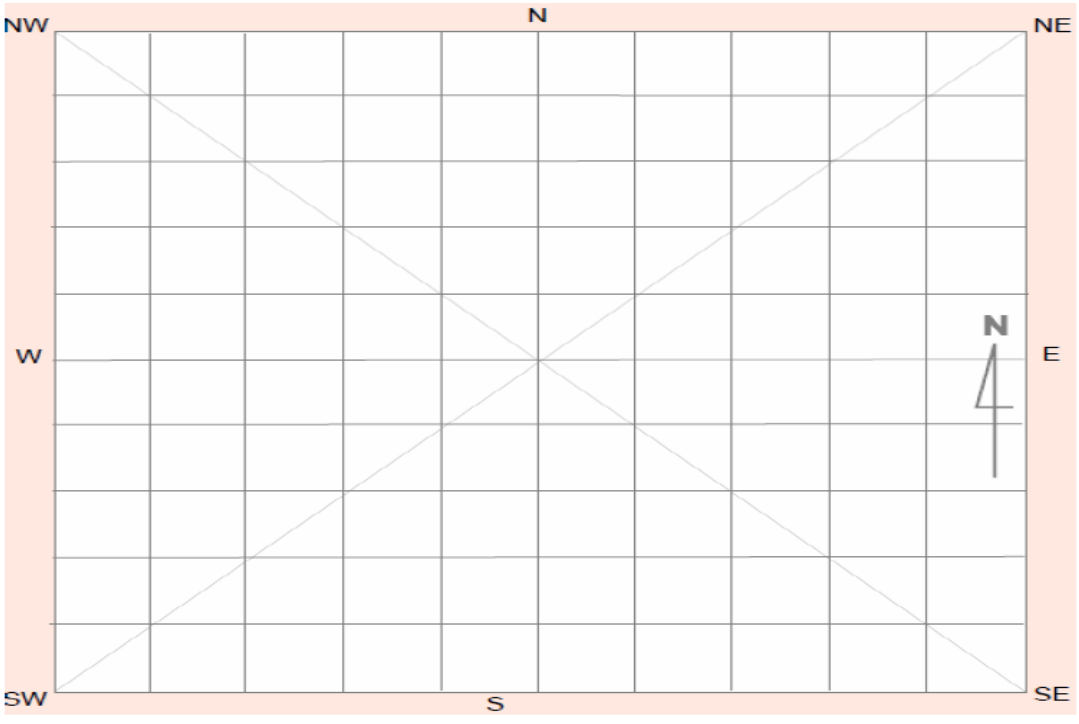
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: artefact

Description: location, north east

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0232 **Date recorded:** 21-06-2018

Site Location Information

Site name: CHD-A31

Easting: 528569 **Northing:** 6852189 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Recreation

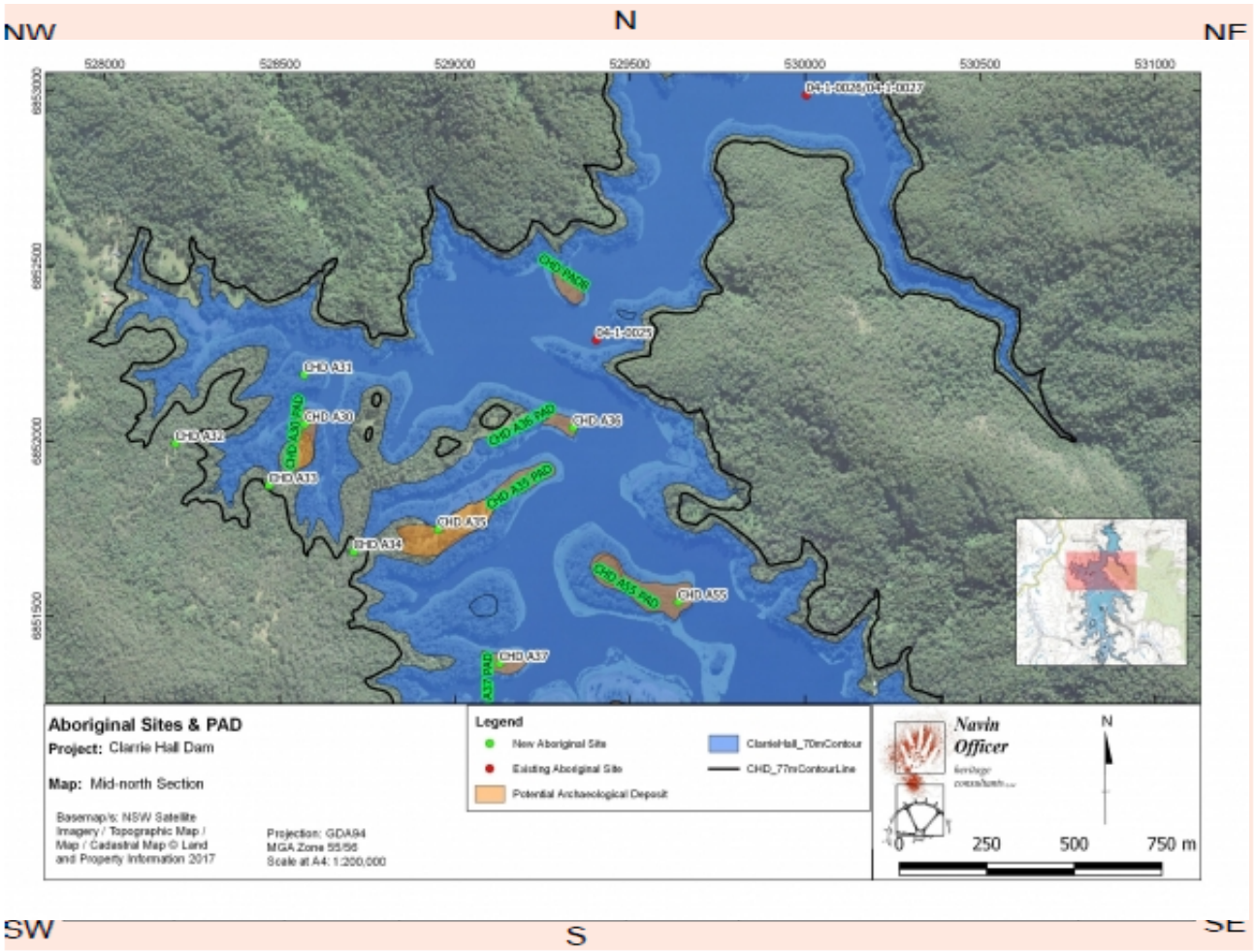
Land Form Unit: Crest **Vegetation:** Closed Forest

Distance to Water (m): 35 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open

Site condition: Disturbed

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
1.	Artefact	3	1	1				

Description:

scatter of three stone artefacts visible in broad erosion scour at the end of a vehicle track Artefacts: 1. chalcedony flake; 11 x 10 x 2 mm 2. chalcedony manuport; 26 x 15 x 5 mm 3. chalcedony manuport with potlid scars; 16 x 11 x 2 mm

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
2.								

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

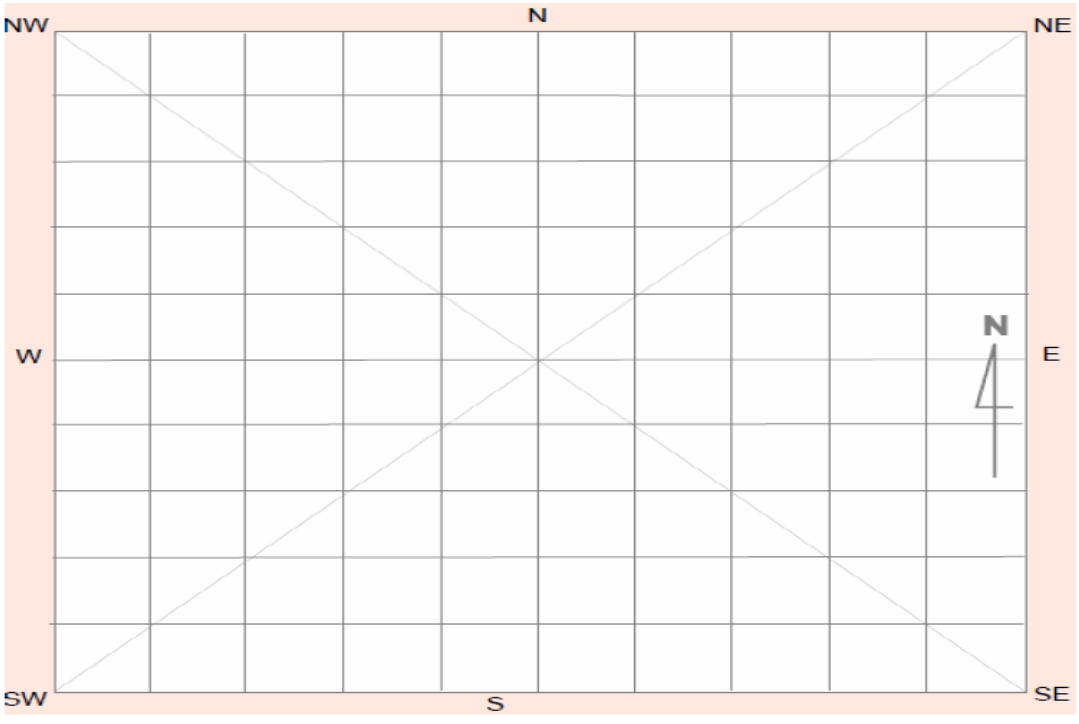
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: artefacts

Description: location, east

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0235 **Date recorded:** 21-06-2018

Site Location Information

Site name: CHD-A30

Easting: 528571 **Northing:** 6852048 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Farming Low Intensity

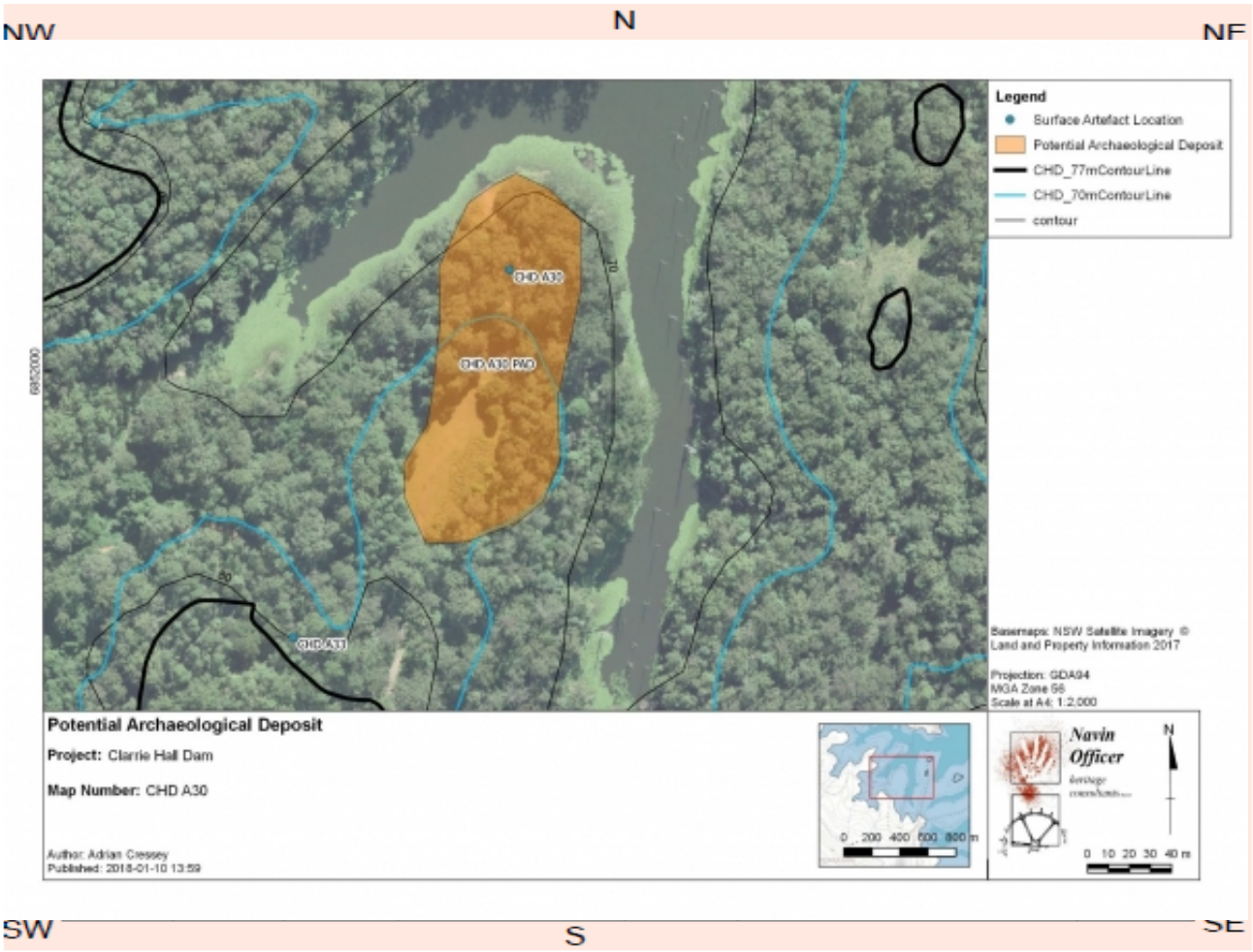
Land Form Unit: Crest **Vegetation:** Closed Forest

Distance to Water (m): 25 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open **Site condition:** Disturbed

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
1.	Artefact	6	200	70				

Description:

scatter of six stone artefacts visible in a broad erosion scour in a cleared horse paddock, and associated PAD

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
2.	Potential Archaeological Deposit		200	70				

Description:

Given the number of artefacts, landscape context, and estimated soil depth, this site is assessed as having moderate to high potential for the presence of subsurface archaeological deposits.

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

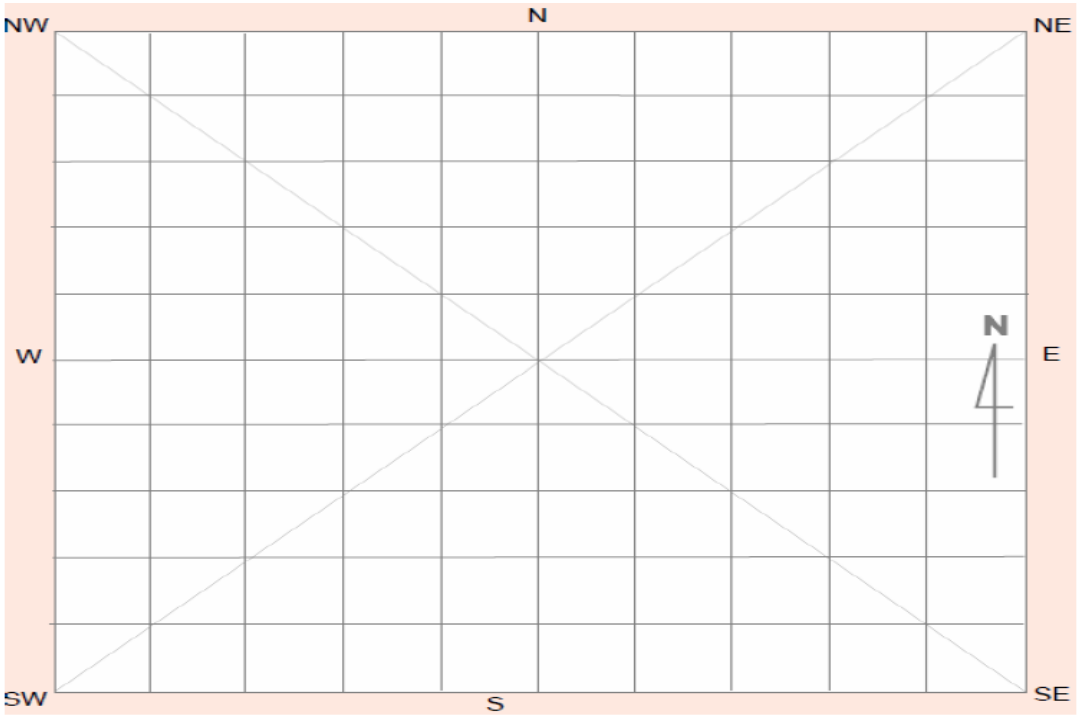
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: artefact

Description: location, south

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0238 **Date recorded:** 21-06-2018

Site Location Information

Site name: CHD-A36

Easting: 529337 **Northing:** 6852037 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Recreation

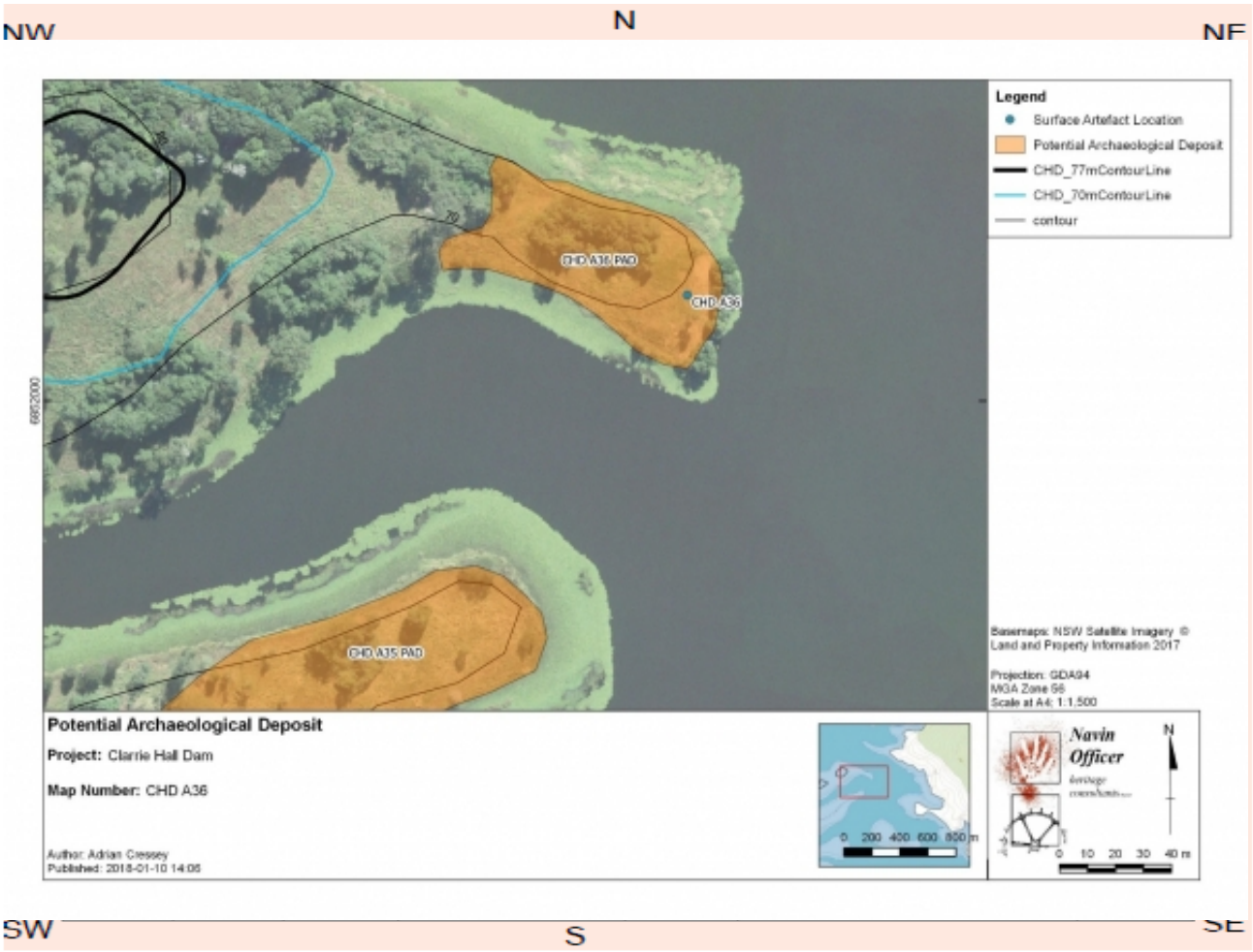
Land Form Unit: Crest **Vegetation:** Scrub

Distance to Water (m): 70 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open

Site condition: Disturbed

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
1.	Artefact	9	85	40				

Description:

scatter of nine stone artefacts visible in an area of sheet erosion caused by a recent flooding event and associated PAD. The site is directly adjacent to the existing dam shoreline.

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
2.	Potential Archaeological Deposit		85	40				

Description:

Given the low and flat gradient of this landform, its proximity to Doon Doon Creek, the number of surface artefacts present, and its estimated soil depth, this site is assessed as having high potential for the presence of subsurface archaeological deposits

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

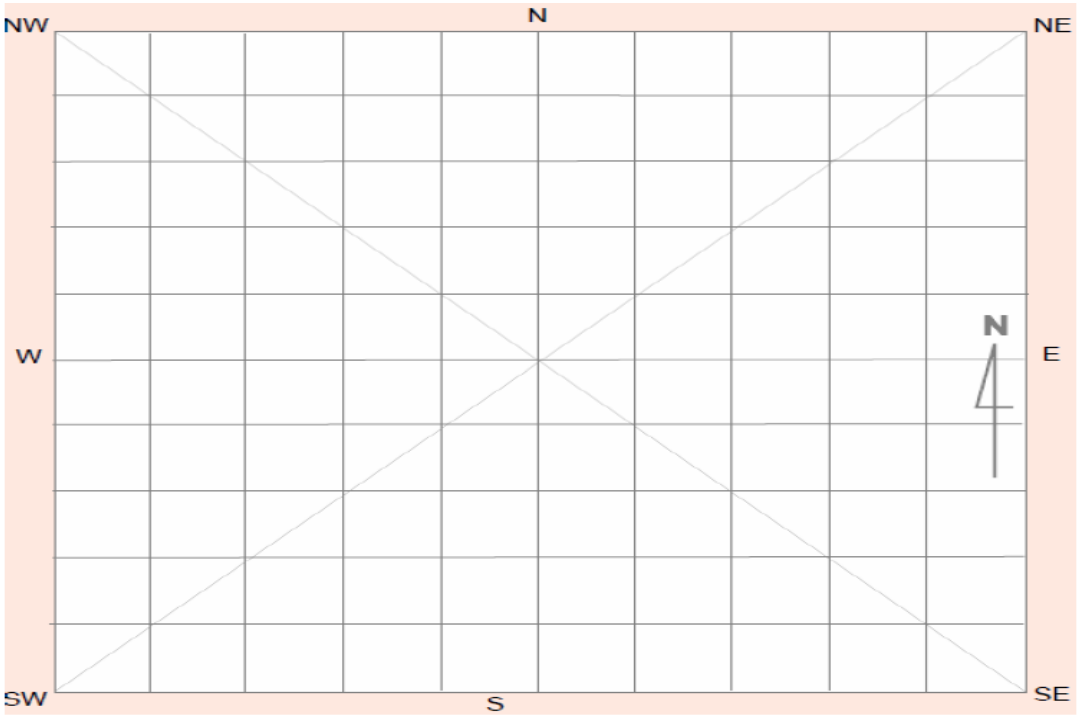
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: artefact

Description: Location, south west

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0239 **Date recorded:** 21-06-2018

Site Location Information

Site name: CHD-A37

Easting: 529127 **Northing:** 6851364 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Recreation

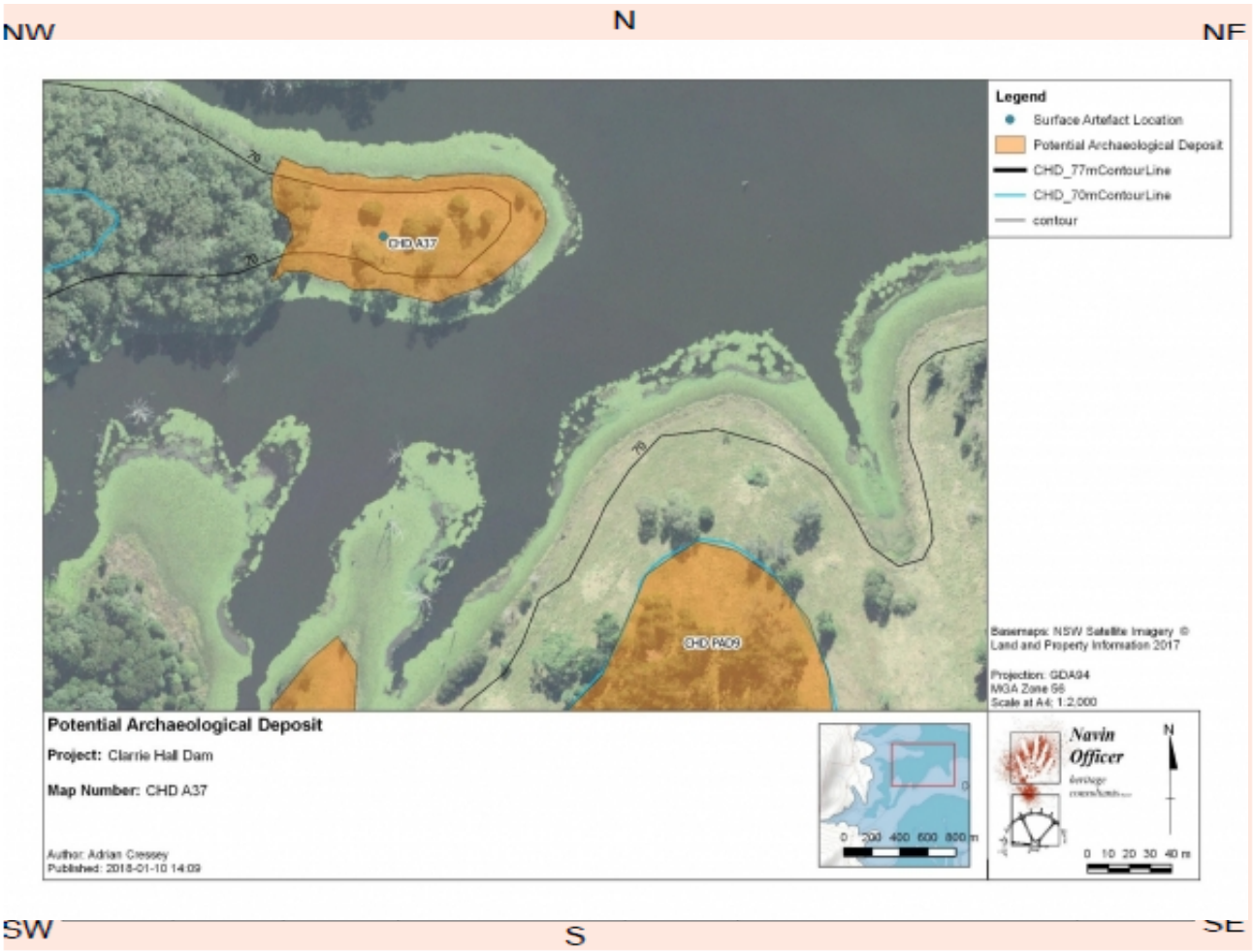
Land Form Unit: Crest **Vegetation:** Open Woodland

Distance to Water (m): 100 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open **Site condition:** Disturbed

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
1. Artefact	1	1	1				

Description:

isolated find visible in a small exposure adjacent to the current dam shoreline, and an associated PAD. 1. distal portion of a chert flake; 10 x 8 x 2 mm

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
2. Potential Archaeological Deposit		100	50				

Description:

Given the flat gradient of this landform, its proximity to water, and its estimated soil depth, this site is assessed as having moderate to high potential for the presence of subsurface archaeological deposits. The site has good views towards the Two Sisters peaks, a culturally important site

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

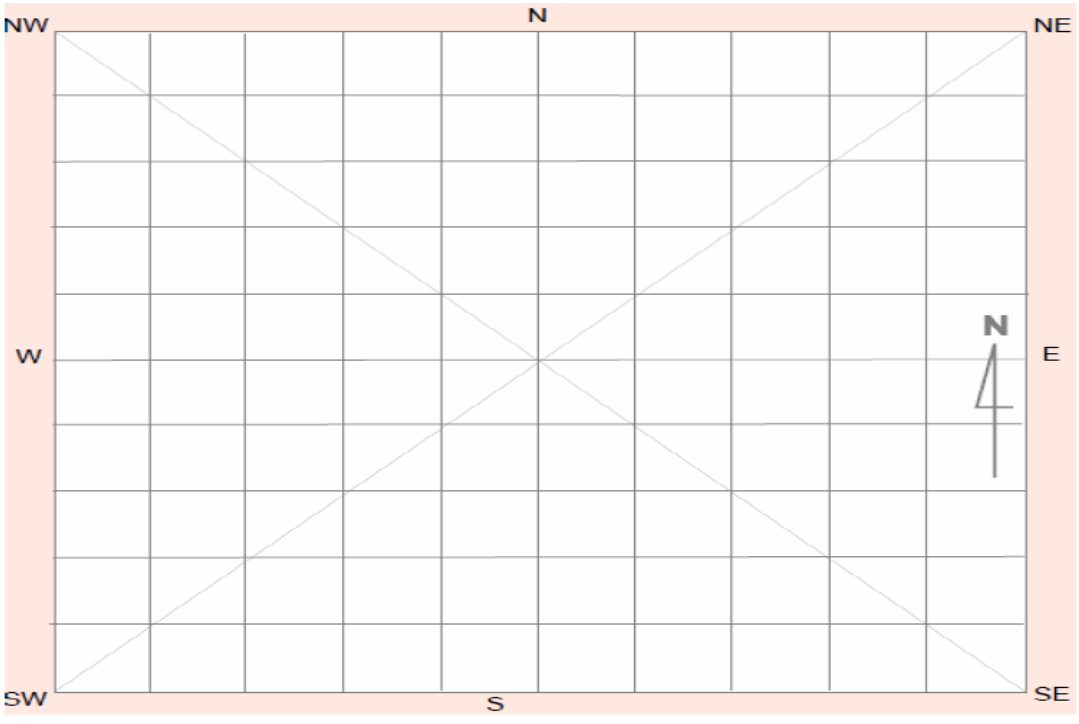
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: artefact

Description: location, facing northeast towards Two Sisters peaks

Description:

Description:

Site restrictions

Do you want to Restrict this site?: ☐

Restriction type: Gender ☐ General ☐ Location ☐

Why is this site restricted?:

Further information contact

Title	Surname	First name

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0242 **Date recorded:** 21-06-2018

Site Location Information

Site name: CHD-A40

Easting: 529074 **Northing:** 6851103 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Recreation

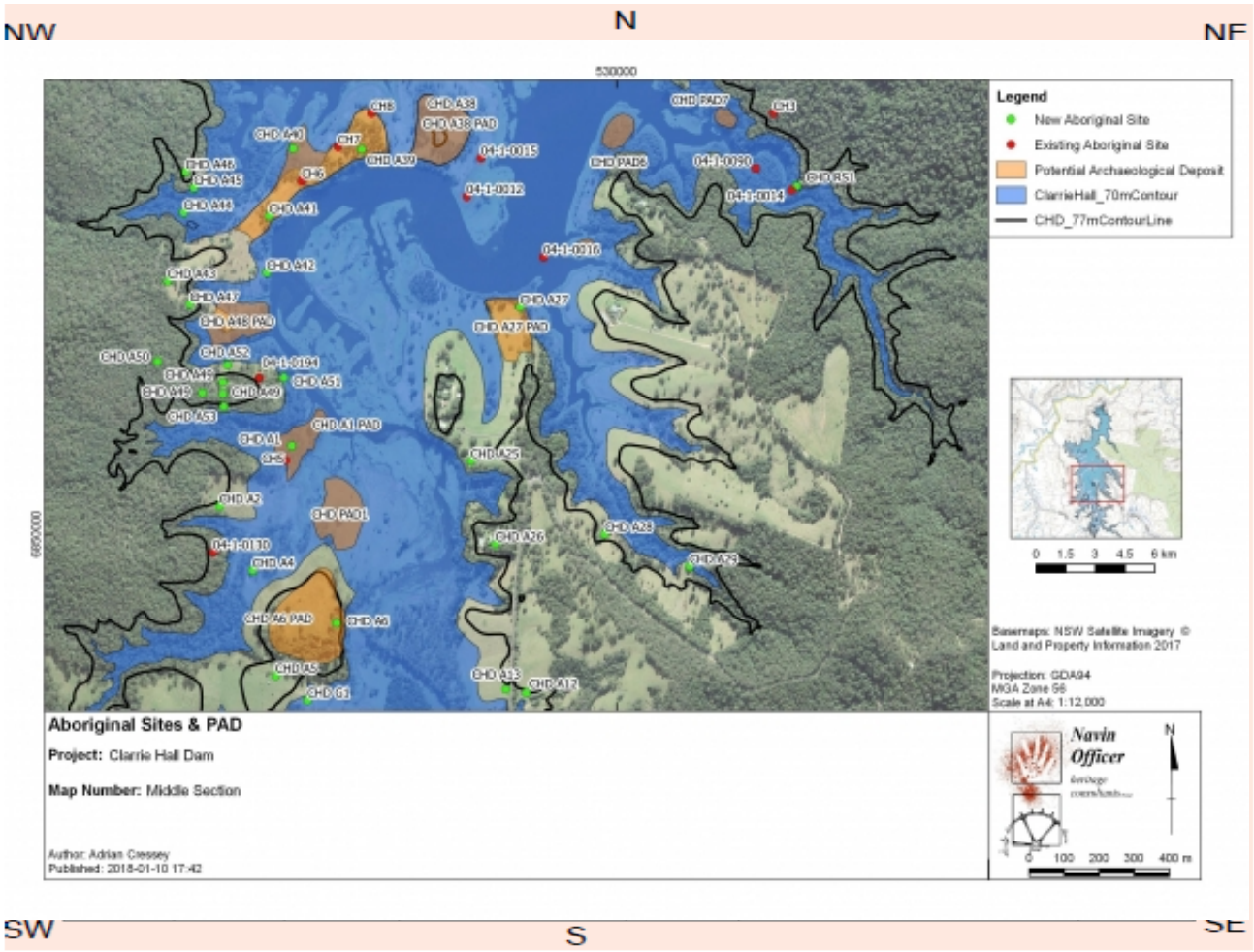
Land Form Unit: Crest **Vegetation:** Isolated clumps of trees

Distance to Water (m): 100 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open

Site condition: Disturbed

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
1. Artefact	2	1	1				

Description:

scatter of two artefacts (Figure 7.88) visible in an area of erosion beneath a tree (Figure 7.89). Artefacts: 1. basalt flaked piece; 40 x 30 x 5 mm 2. chalcedony manuport (nodule); 40 x 30 x 20 mm

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
2.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

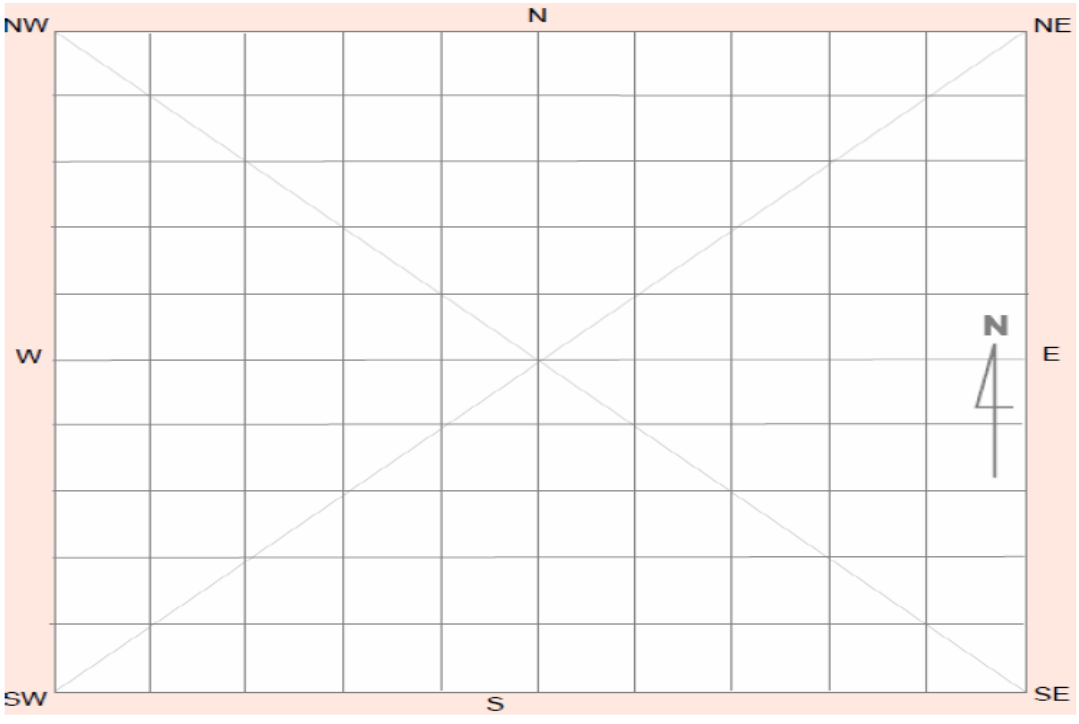
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: artefact

Description: location, north

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0244 **Date recorded:** 21-06-2018

Site Location Information

Site name: CHD-A42

Easting: 528999 **Northing:** 6850748 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Recreation

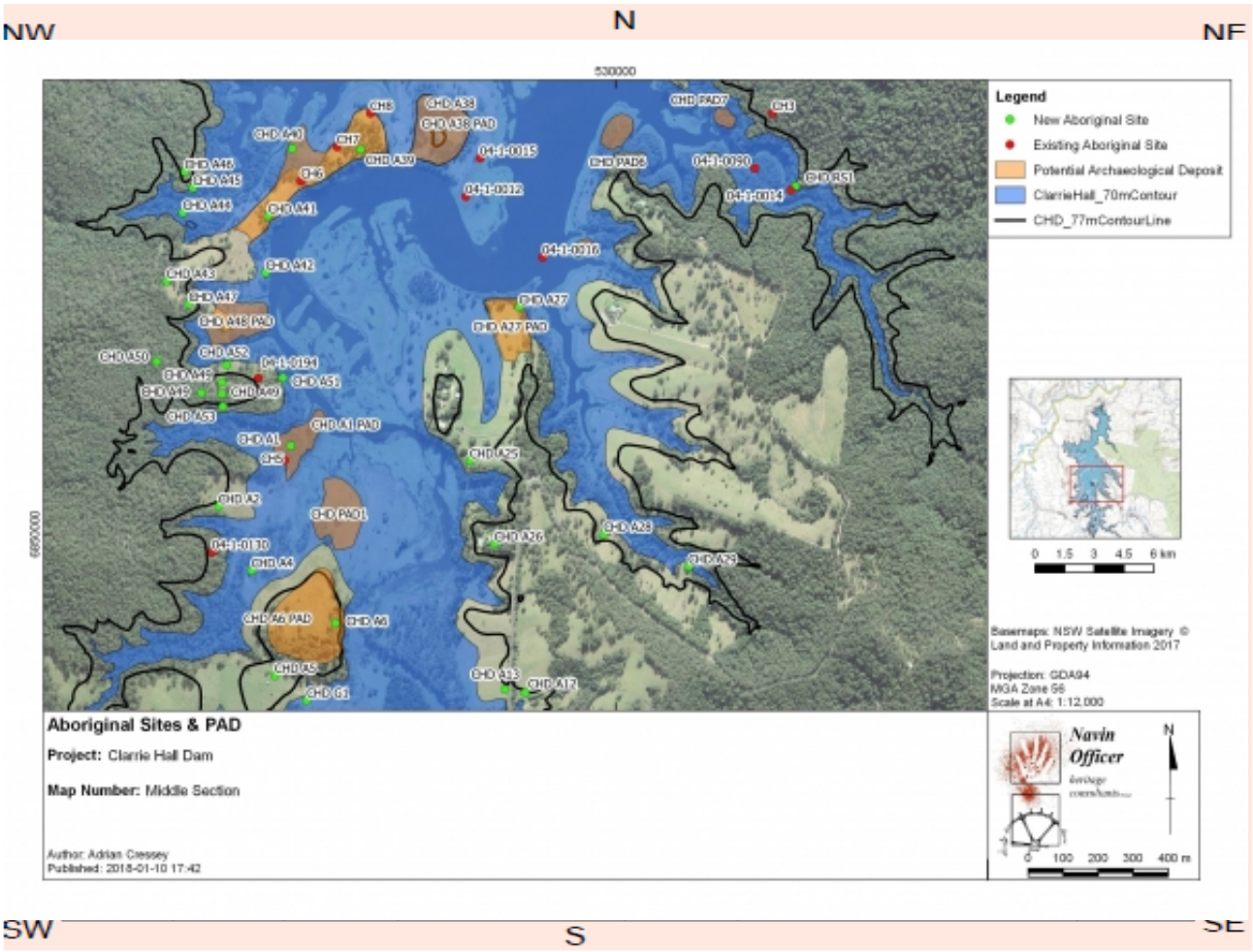
Land Form Unit: Crest **Vegetation:** Grasslands

Distance to Water (m): 50 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open

Site condition: Disturbed

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
1. Artefact	1	1	1				

Description:

isolated find visible in an area of sheet erosion above the dam shoreline, proximal portion of a chert flake;

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
2.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

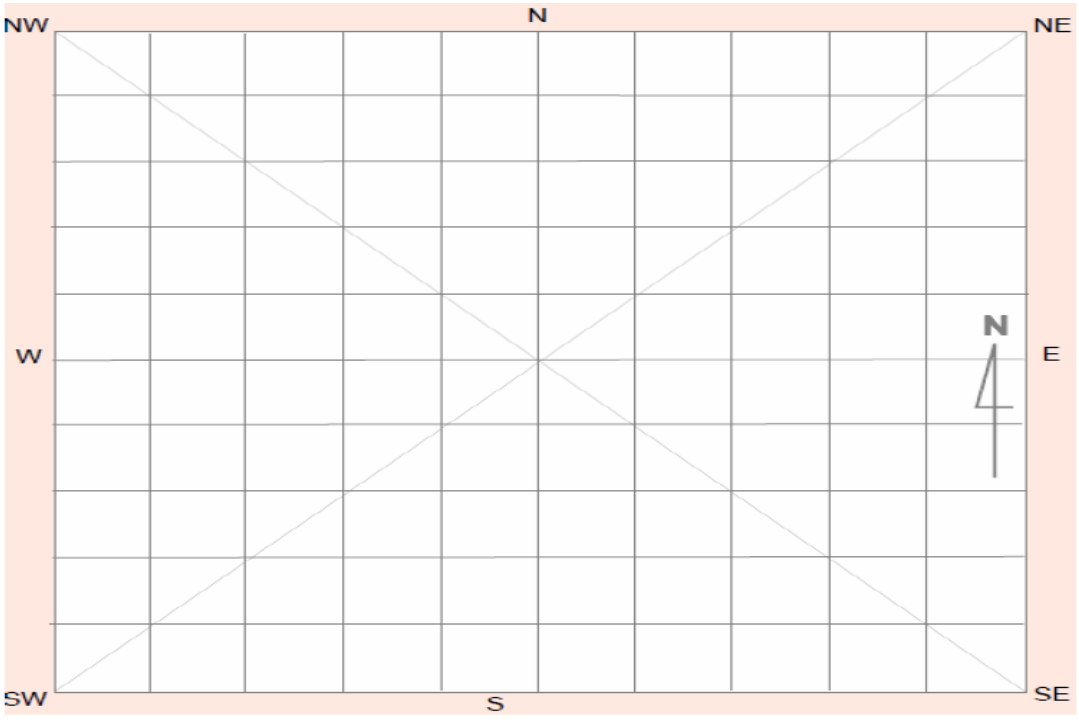
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: location, west

Description:

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0246 **Date recorded:** 21-06-2018

Site Location Information

Site name: CHD-A44

Easting: 528762 **Northing:** 6850920 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Transport Corridor

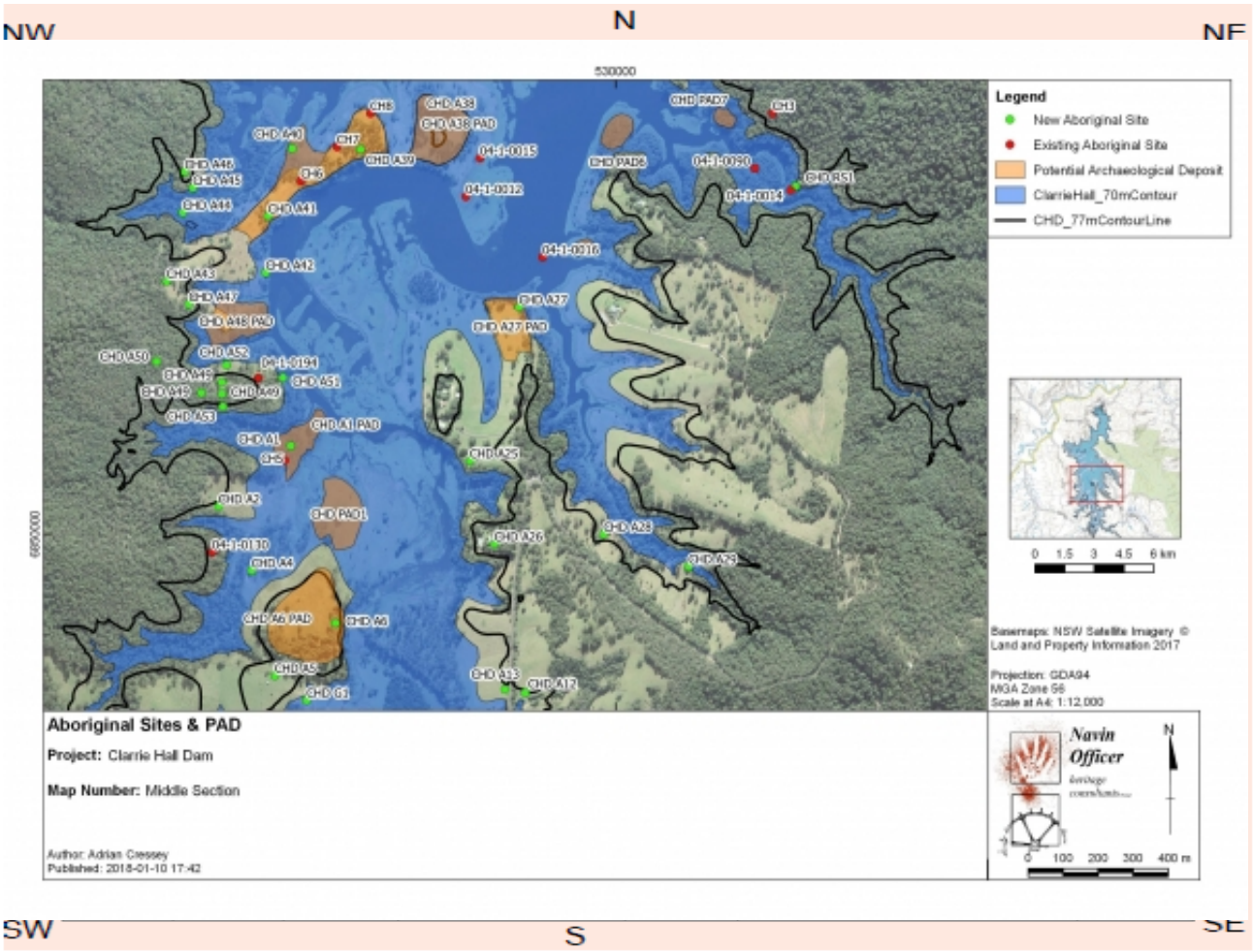
Land Form Unit: Flat **Vegetation:** Revegetated

Distance to Water (m): 250 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open

Site condition: Disturbed

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
1. Artefact	1	1	1				

Description:

isolated find visible on a vehicle track covered heavily with leaf litter chalcedony flaked piece; 32 x 25 x 5 mm

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
2.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

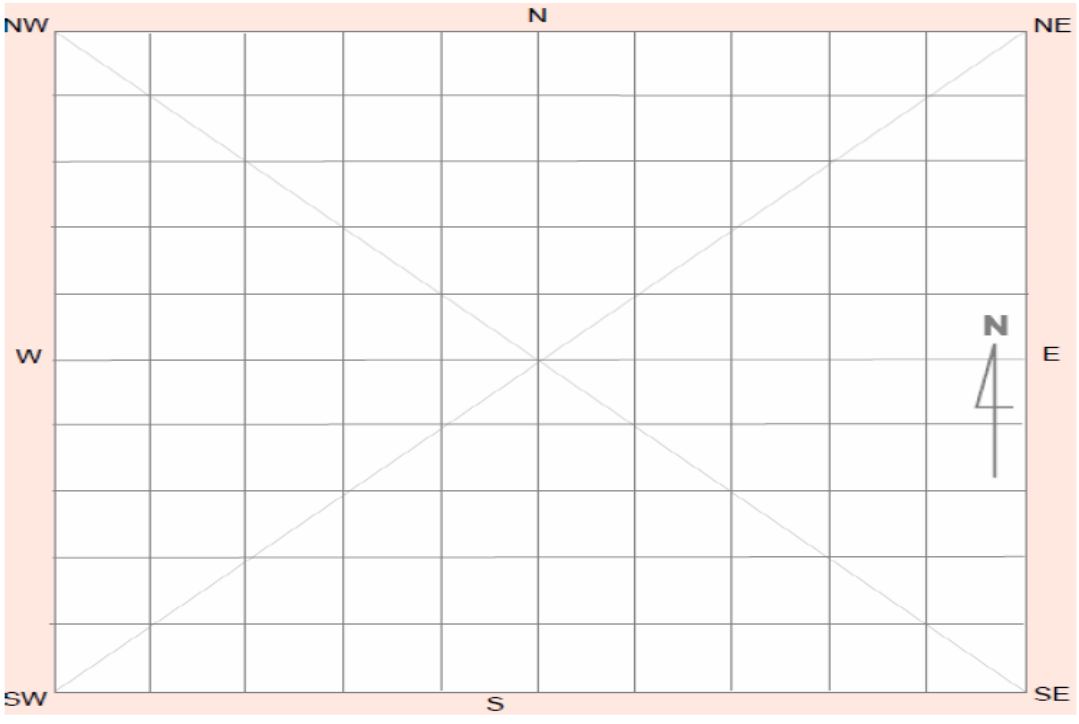
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: location, south

Description:

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0249 **Date recorded:** 21-06-2018

Site Location Information

Site name: CHD A48

Easting: 528999 **Northing:** 6850748 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Recreation

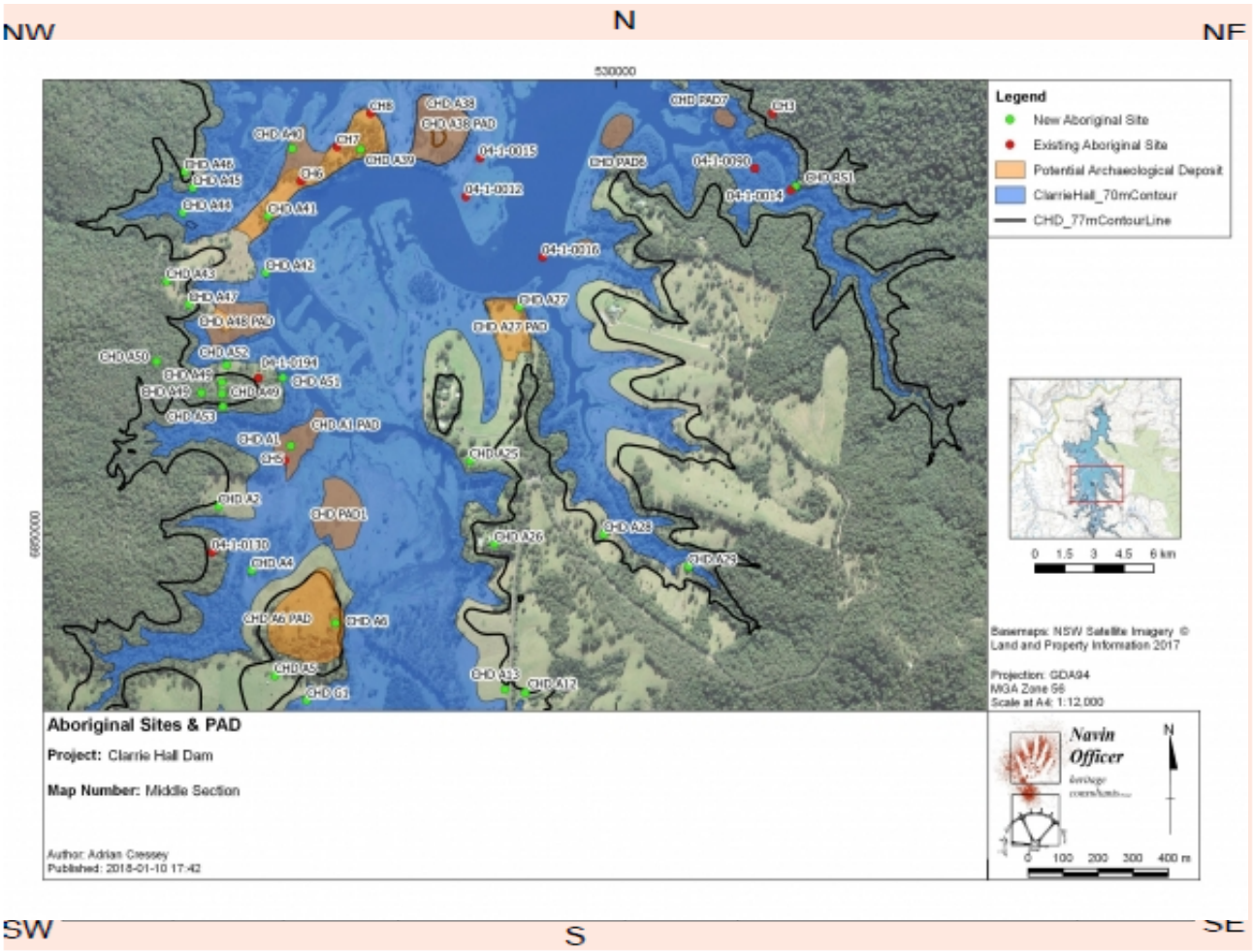
Land Form Unit: Crest **Vegetation:** Open Woodland

Distance to Water (m): 50 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open

Site condition: Disturbed

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
1. Artefact	9	200	100				

Description:

scatter of nine artefacts visible in an area of sheet erosion, and associated PAD.

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
2. Potential Archaeological Deposit		200	100				

Description:

Given the landform, flat gradient, its proximity to Doon Doon Creek, number of surface artefacts present, and its estimated soil depth, this site is assessed as having high potential for the presence of subsurface archaeological deposits.

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

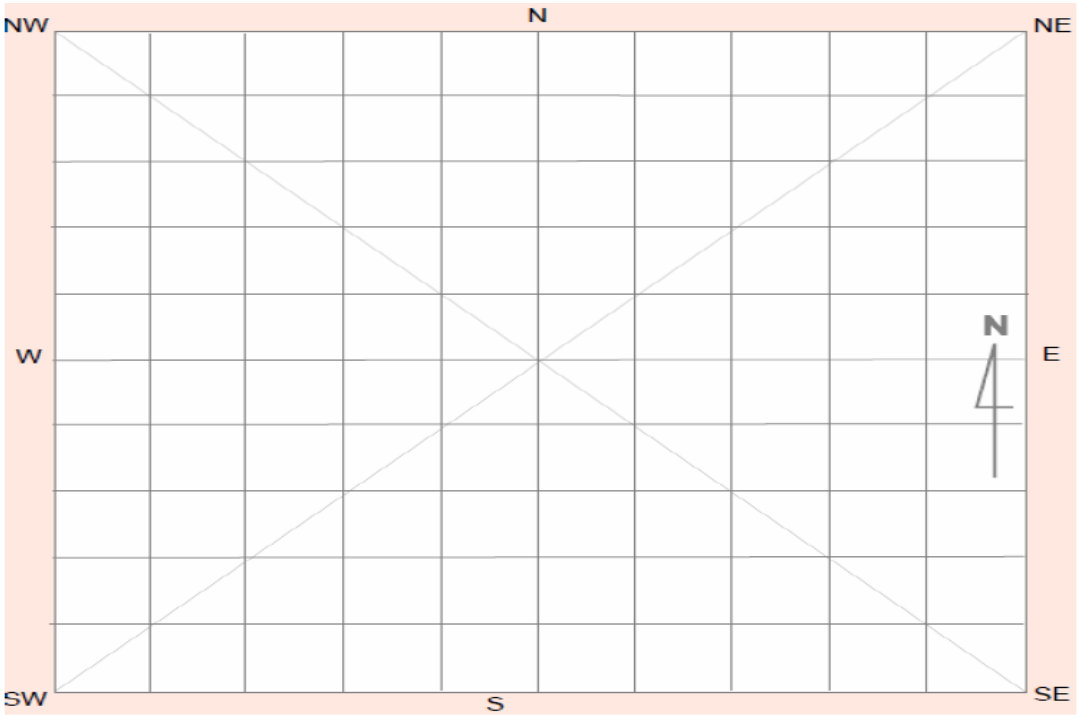
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: artefact

Description: location, east

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0250 **Date recorded:** 21-06-2018

Site Location Information

Site name: CHD-A45

Easting: 528790 **Northing:** 6850991 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Transport Corridor

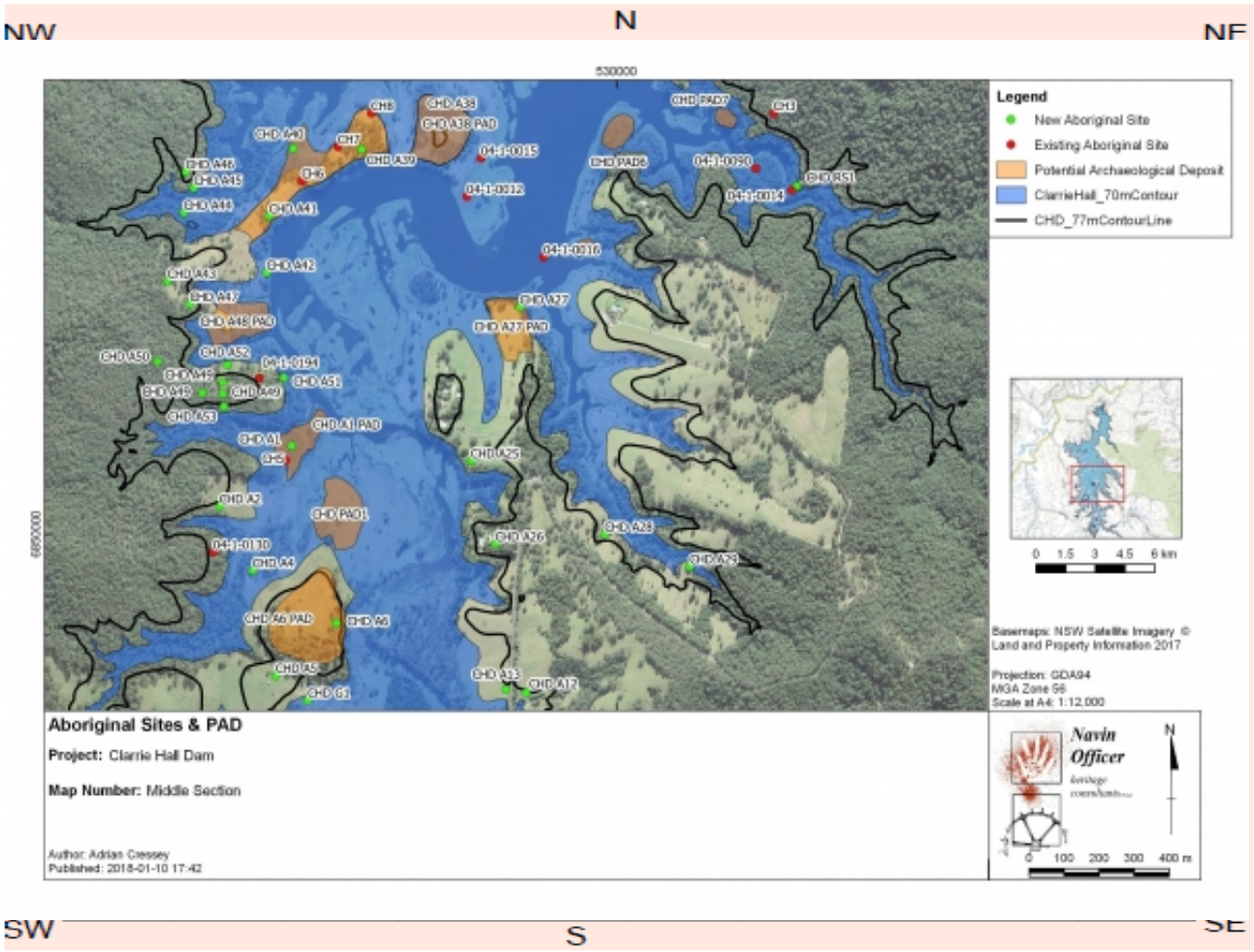
Land Form Unit: Crest **Vegetation:** Revegetated

Distance to Water (m): 250 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open

Site condition: Disturbed

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
1. Artefact	1	1	1				

Description:

isolated find visible on a vehicle track. red chert flake; 1 5x 10 x 15 mm

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
2.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

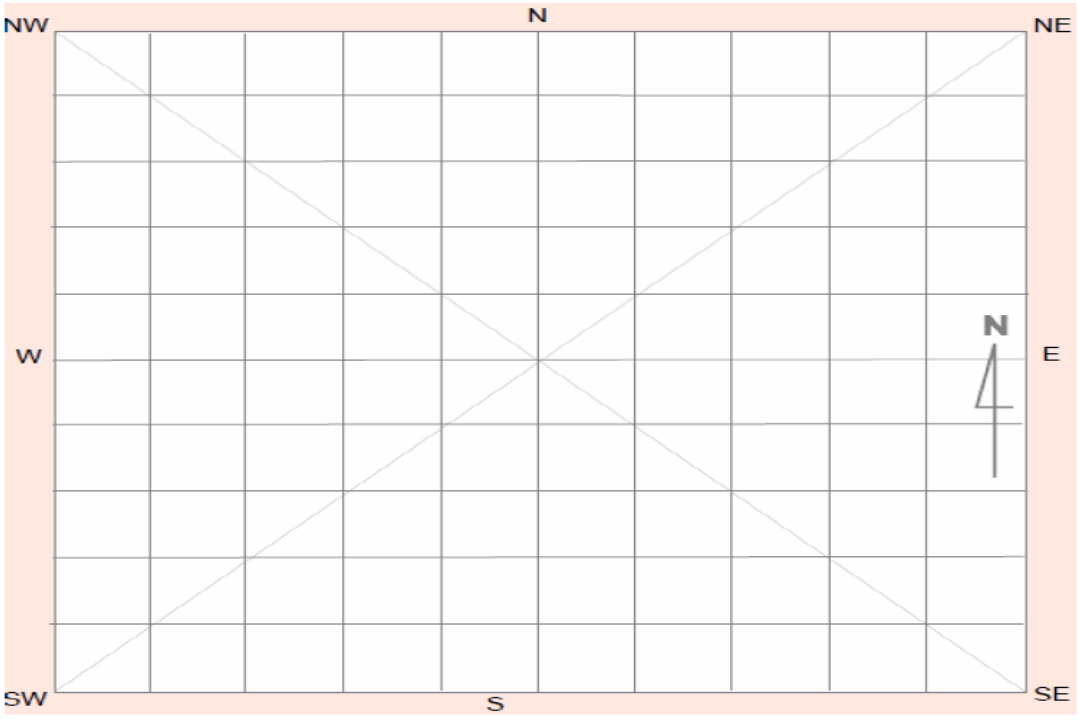
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: artefact

Description: location, north

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0255 **Date recorded:** 21-06-2018

Site Location Information

Site name: CHD-A26

Easting: 529653 **Northing:** 6849971 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Residential

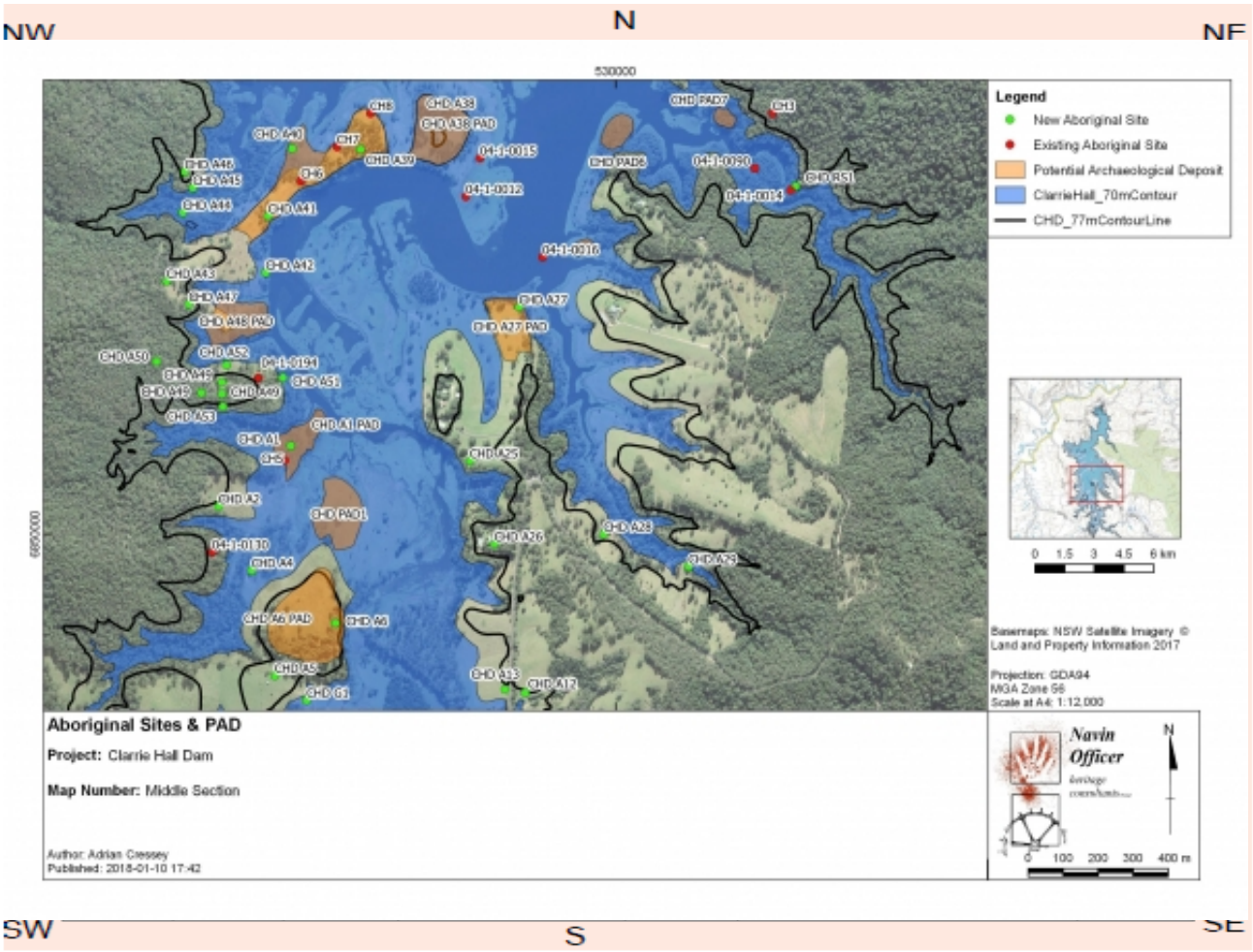
Land Form Unit: Crest **Vegetation:** Grasslands

Distance to Water (m): 40 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open

Site condition: Disturbed

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
1. Artefact	2	1	1				

Description:

scatter of two stone artefacts visible in an area of sheet erosion adjacent to a vehicle access track. Artefacts: 1. grey brown chert flake; 20 x 14 x 3 mm 2. grey white chalcedony flake; 20 x 13 x 4 mm

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
2.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

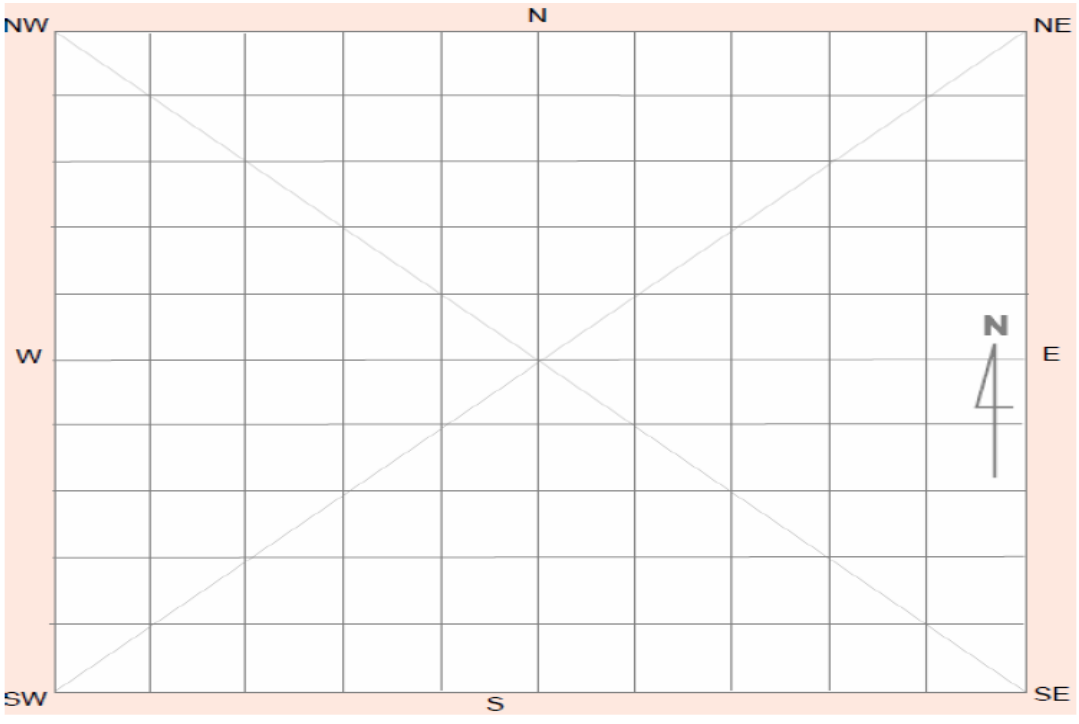
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: location, north

Description: artefacts

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0256 **Date recorded:** 21-06-2018

Site Location Information

Site name: CHD-A25

Easting: 529583 **Northing:** 6850209 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Pastoral/Grazing

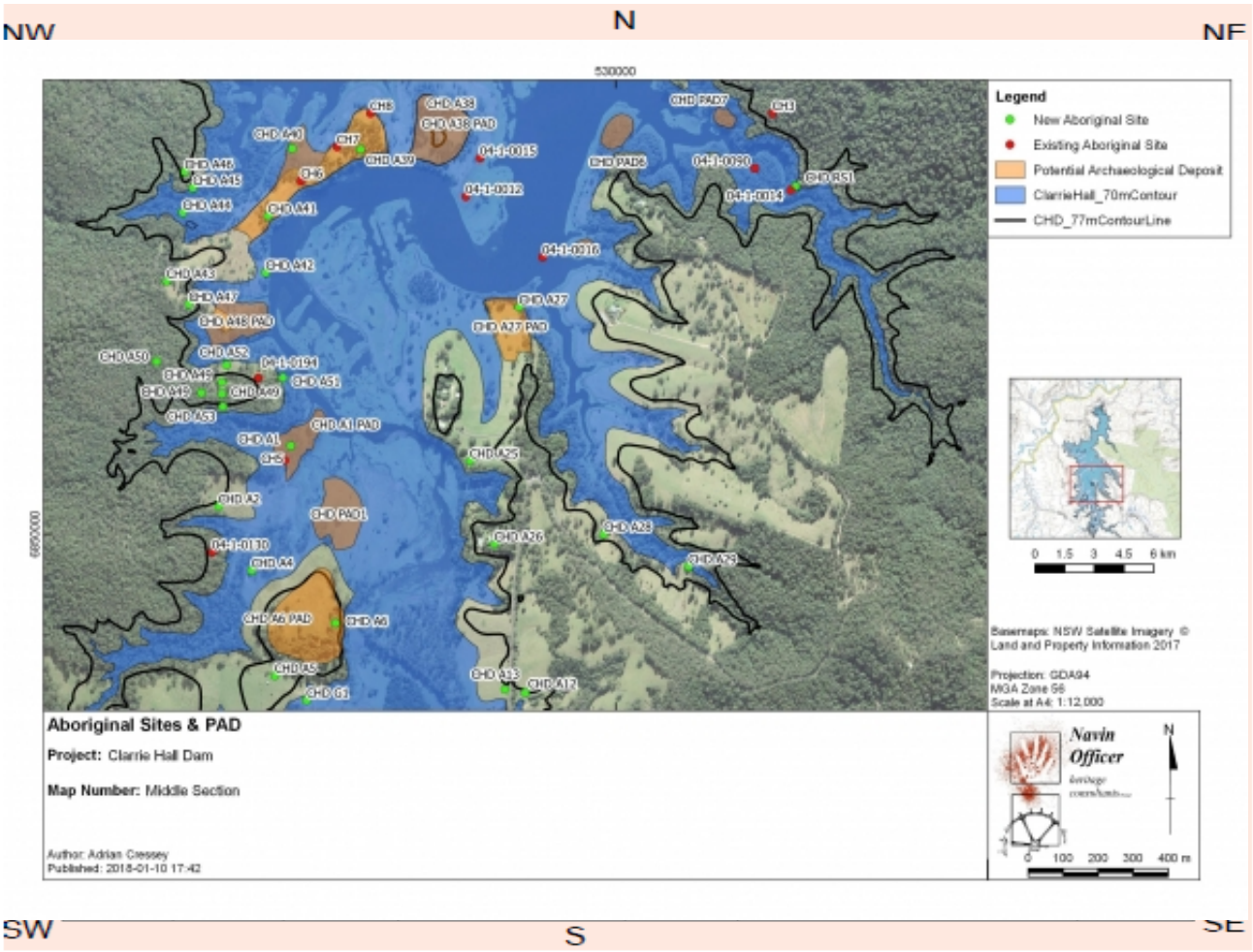
Land Form Unit: Crest **Vegetation:** Grasslands

Distance to Water (m): 40 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open

Site condition: Disturbed

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
1. Artefact	1	1	1				

Description:

isolated find visible in an area of disturbance at the base of a power pole. chalcedony flaked piece; 30 x 21 x 6 mm

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
2.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

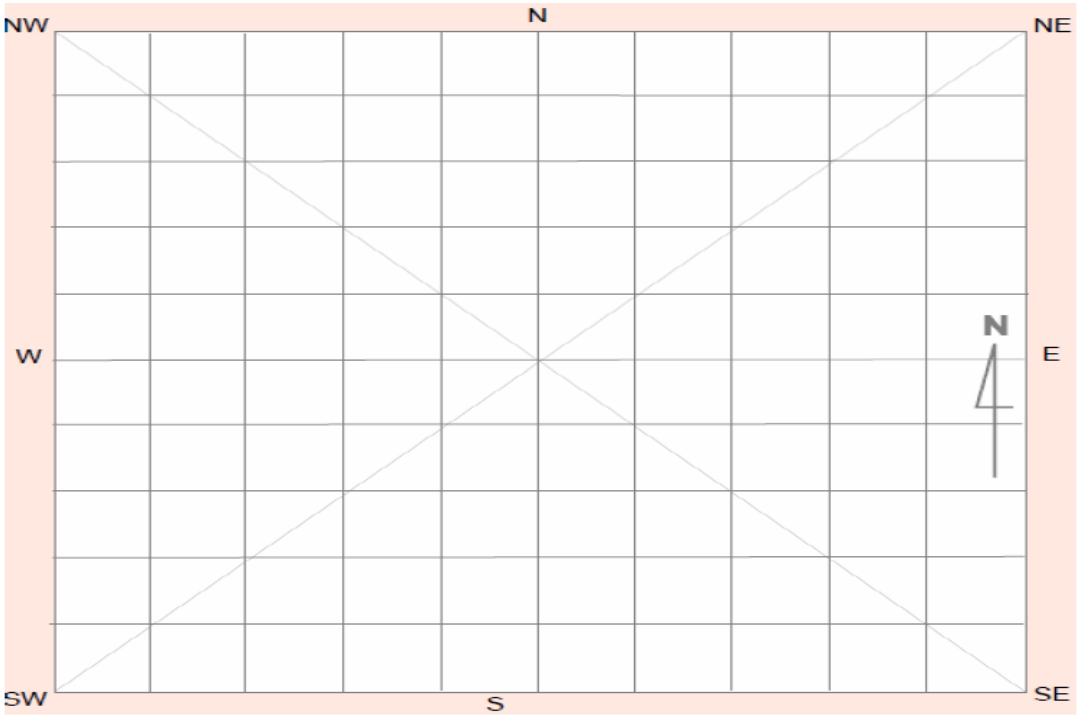
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: artefact

Description: location, north east

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0262 **Date recorded:** 21-06-2018

Site Location Information

Site name: CHD-A19

Easting: 529525 **Northing:** 6848279 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Pastoral/Grazing

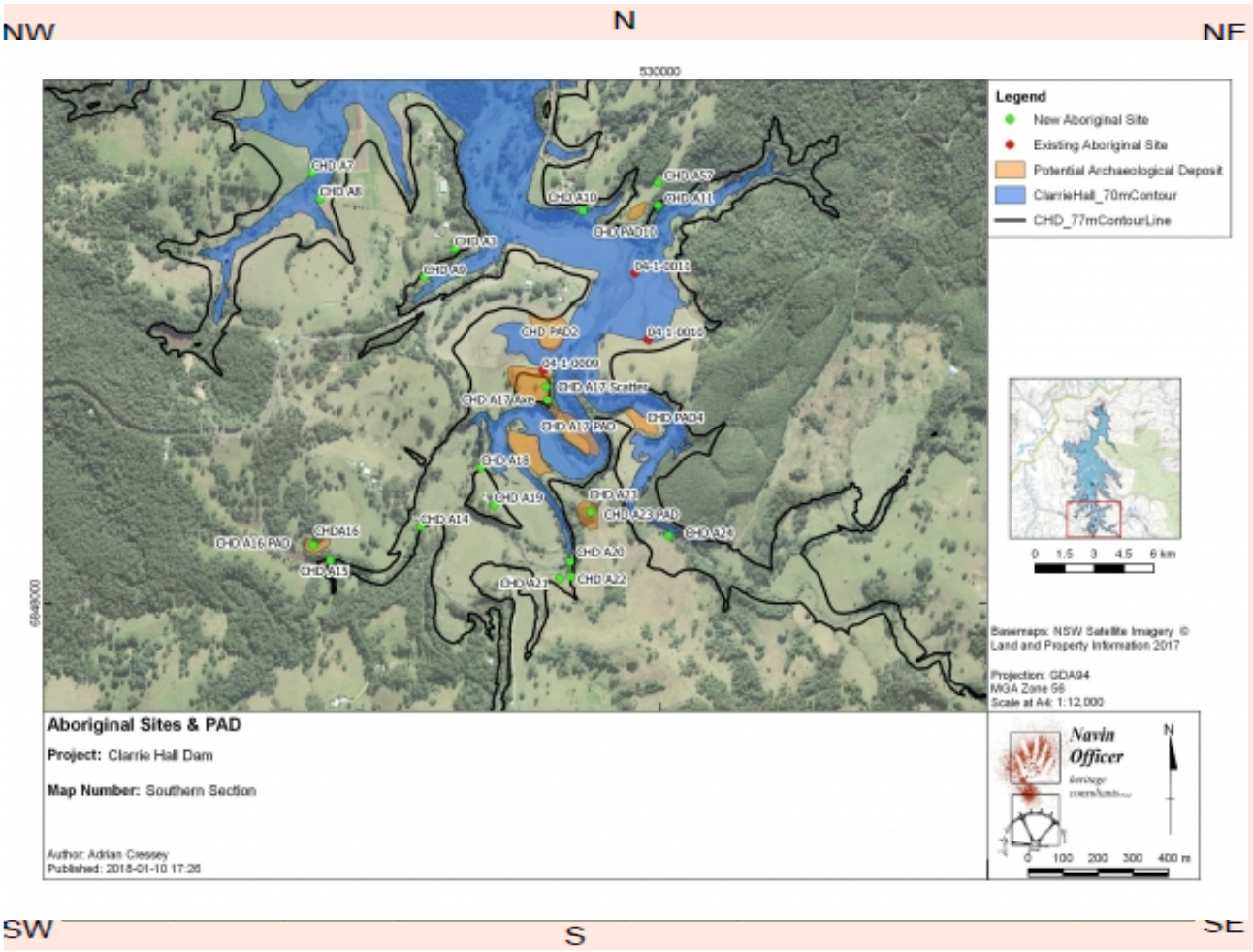
Land Form Unit: Slope **Vegetation:** Cleared

Distance to Water (m): 25 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open

Site condition: Disturbed

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
1. Artefact	3	1	30				

Description:

1. white and grey chalcedony flake; 18 x 13 x 4 mm 2. white and grey chalcedony flake; 12 x 10 x 3 mm 3. grey chert core with at least 7 negative scars; 80 x 75 x 35 mm

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
2.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

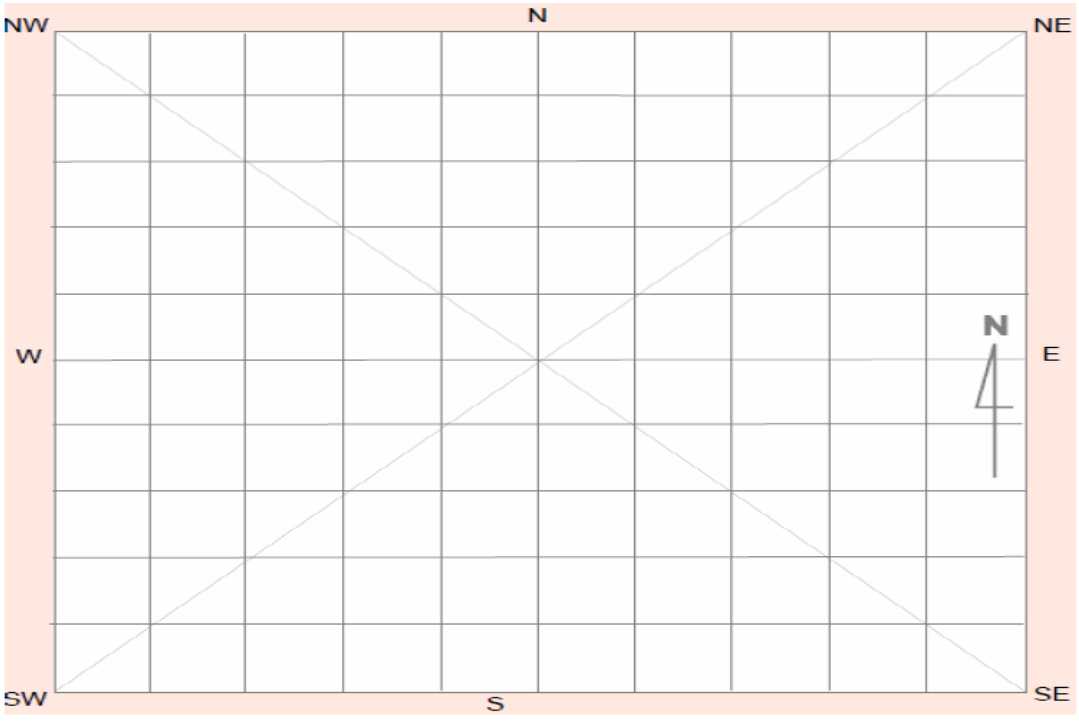
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description:

Description:

Description: location, facing west

Description: artefacts

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0263 **Date recorded:** 21-06-2018

Site Location Information

Site name: CHD-A18

Easting: 529487 **Northing:** 6848386 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Pastoral/Grazing

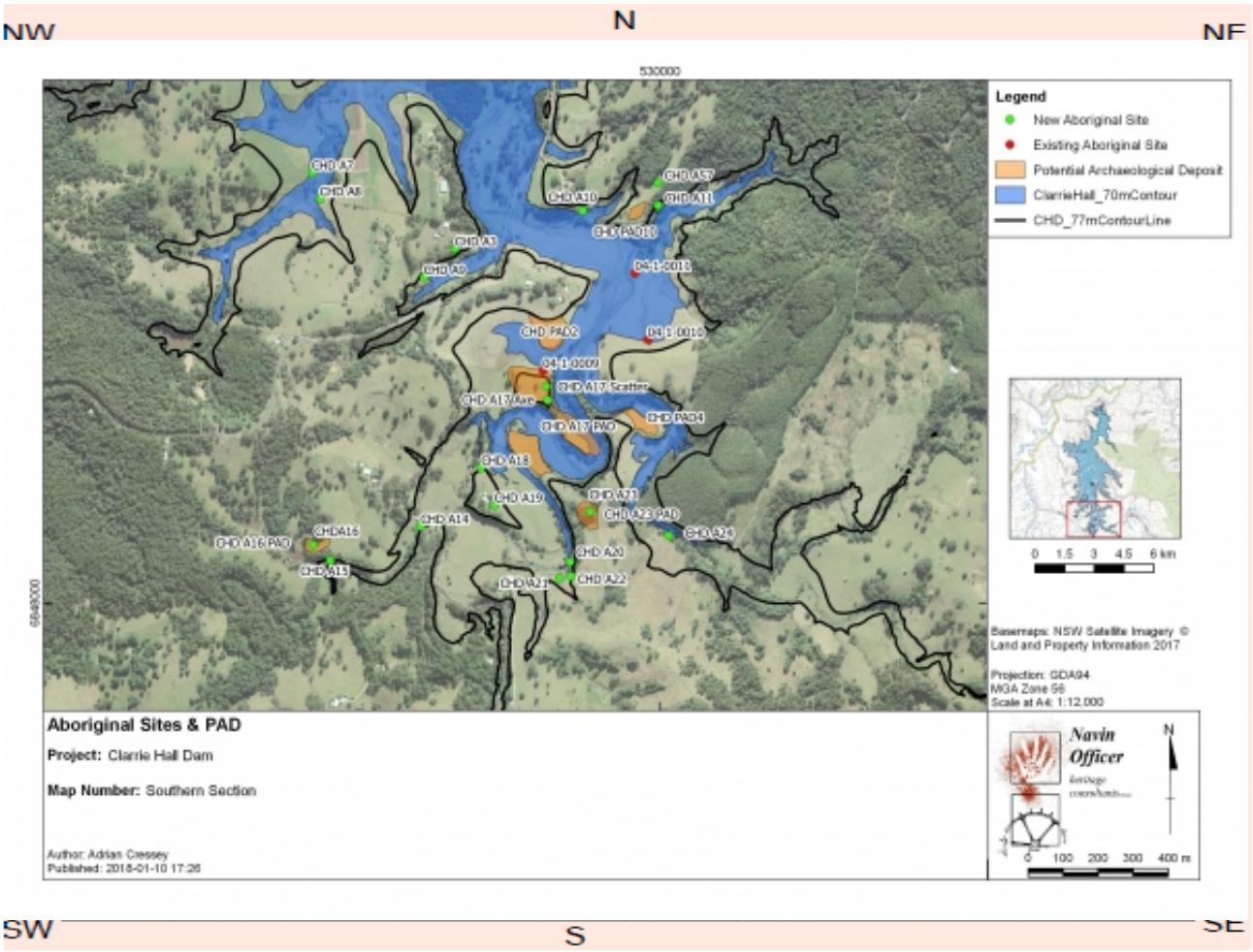
Land Form Unit: Crest **Vegetation:** Isolated clumps of trees

Distance to Water (m): 80 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open

Site condition: Disturbed

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
1. Artefact	1	1	1				

Description:

grey silcrete flake; 10 x 7 x 2 mm. an isolated find visible on a livestock track

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
2.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

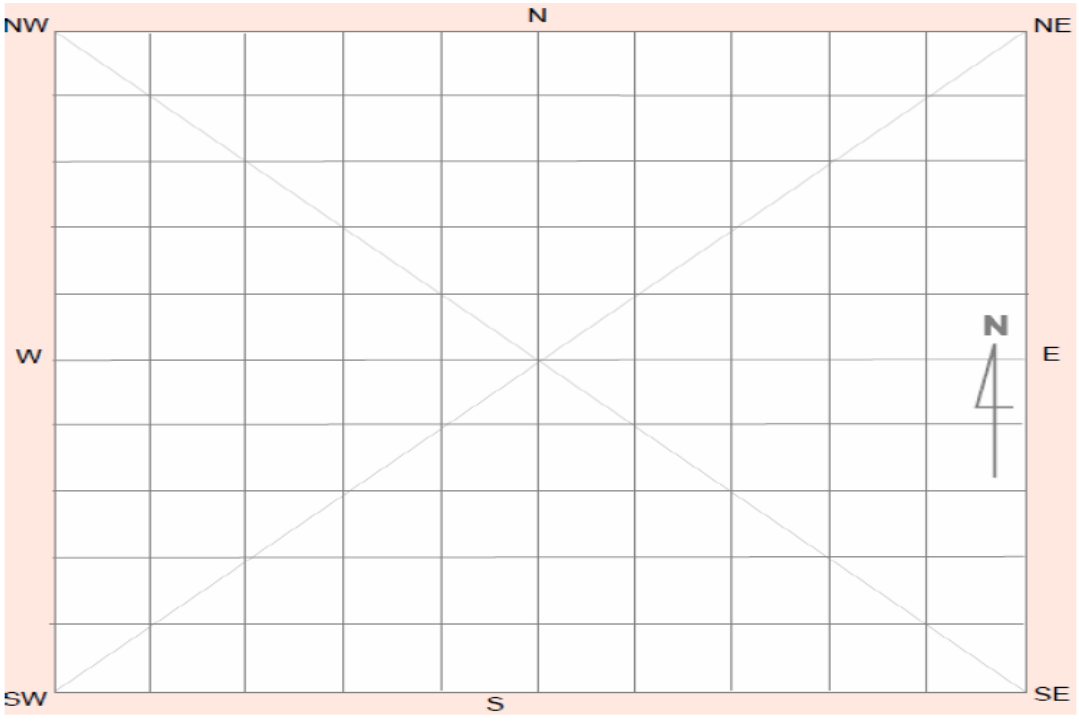
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: location, facing south

Description:

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0267 **Date recorded:** 21-06-2018

Site Location Information

Site name: CHD-A14

Easting: 529314 **Northing:** 6848218 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Pastoral/Grazing

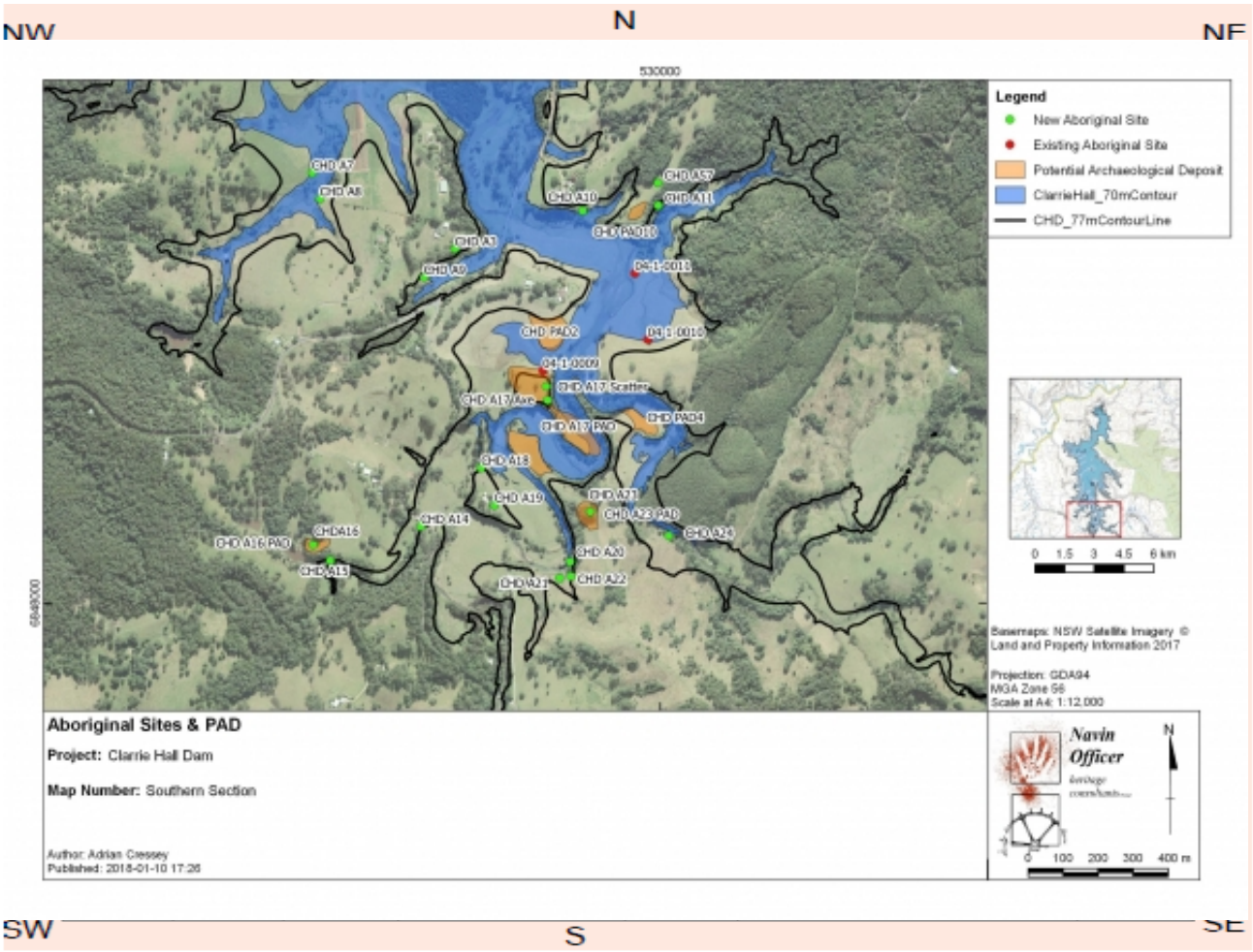
Land Form Unit: Stream Bank **Vegetation:** Cleared

Distance to Water (m): 80 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open

Site condition: Exposed Bone Ma

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
1.	Artefact	1	1	1				

Description:

brown coloured volcanic stone which did not display any artefactual characteristics from a scientific perspective; 130 x 105 x 36

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
2.								

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

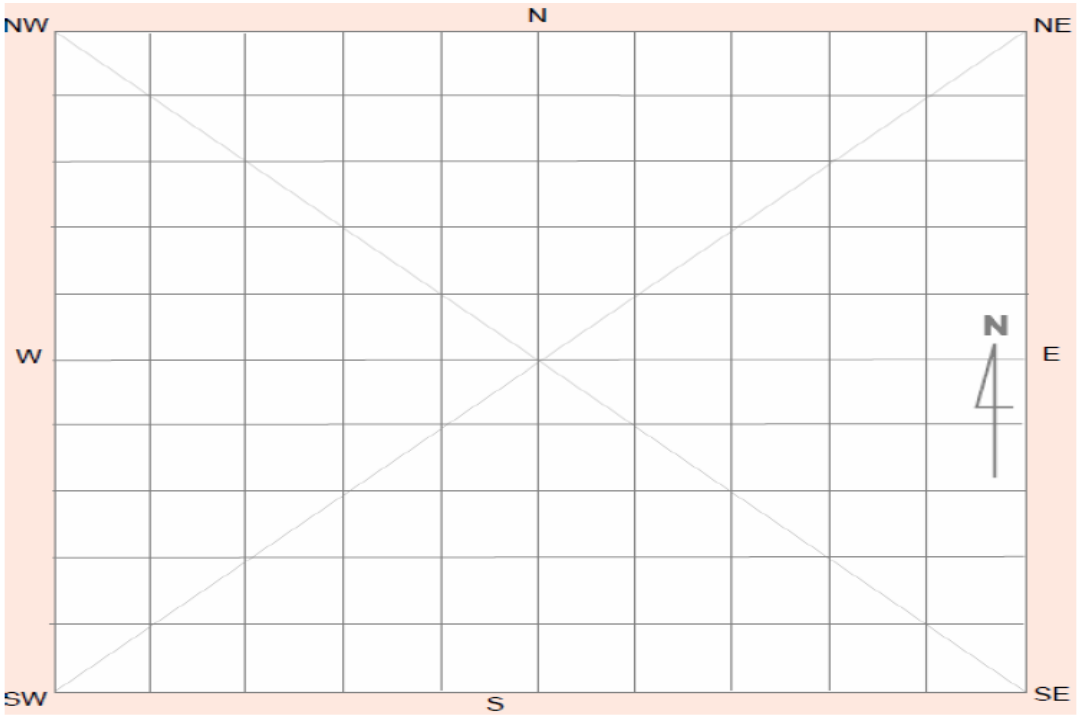
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: artefact

Description: Location, south west

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0268 **Date recorded:** 21-06-2018

Site Location Information

Site name: CHD-A13

Easting: 529683 **Northing:** 6849555 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Pastoral/Grazing

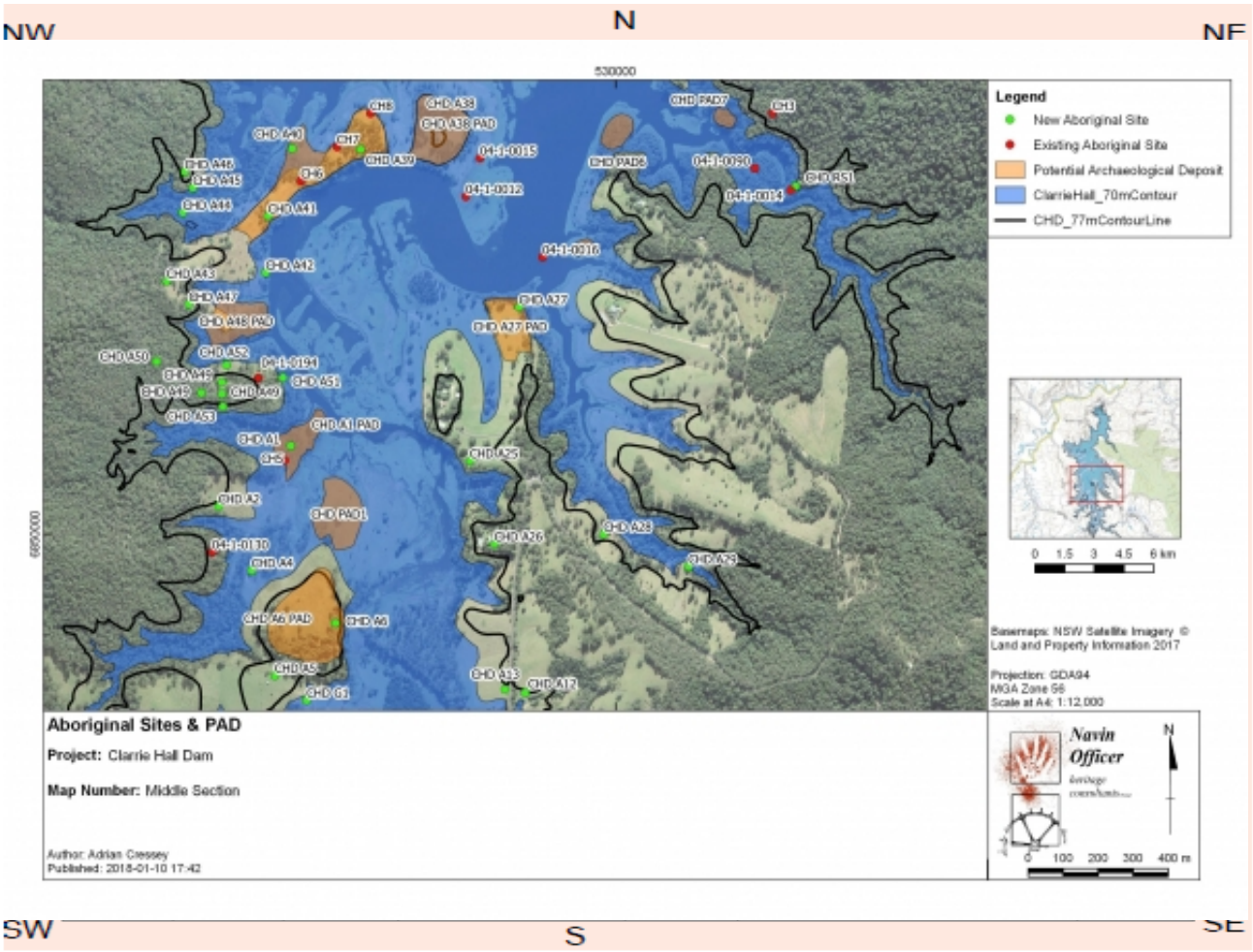
Land Form Unit: Slope **Vegetation:** Cleared

Distance to Water (m): 150 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open

Site condition: Disturbed

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
1.	Artefact	1	1	1				

Description:

chalcedony flake; 36 x 25 x 10 mm

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
2.								

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

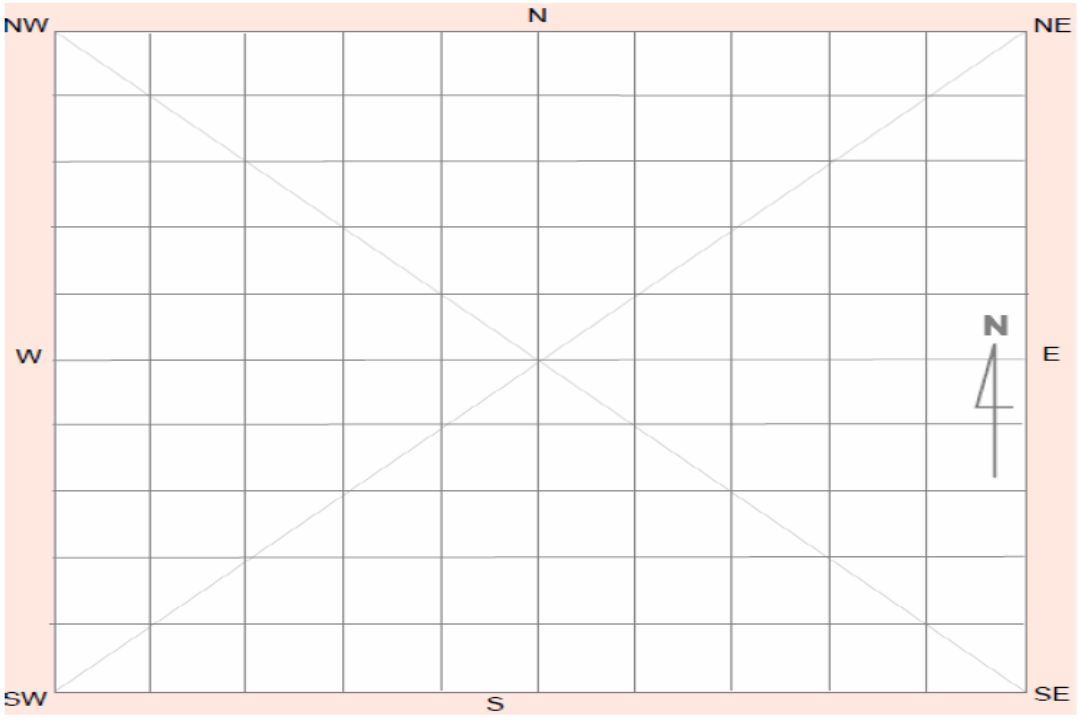
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description:

Description: location, south west

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0269 **Date recorded:** 21-06-2018

Site Location Information

Site name: CHD-A12

Easting: 529741 **Northing:** 6849545 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Pastoral/Grazing

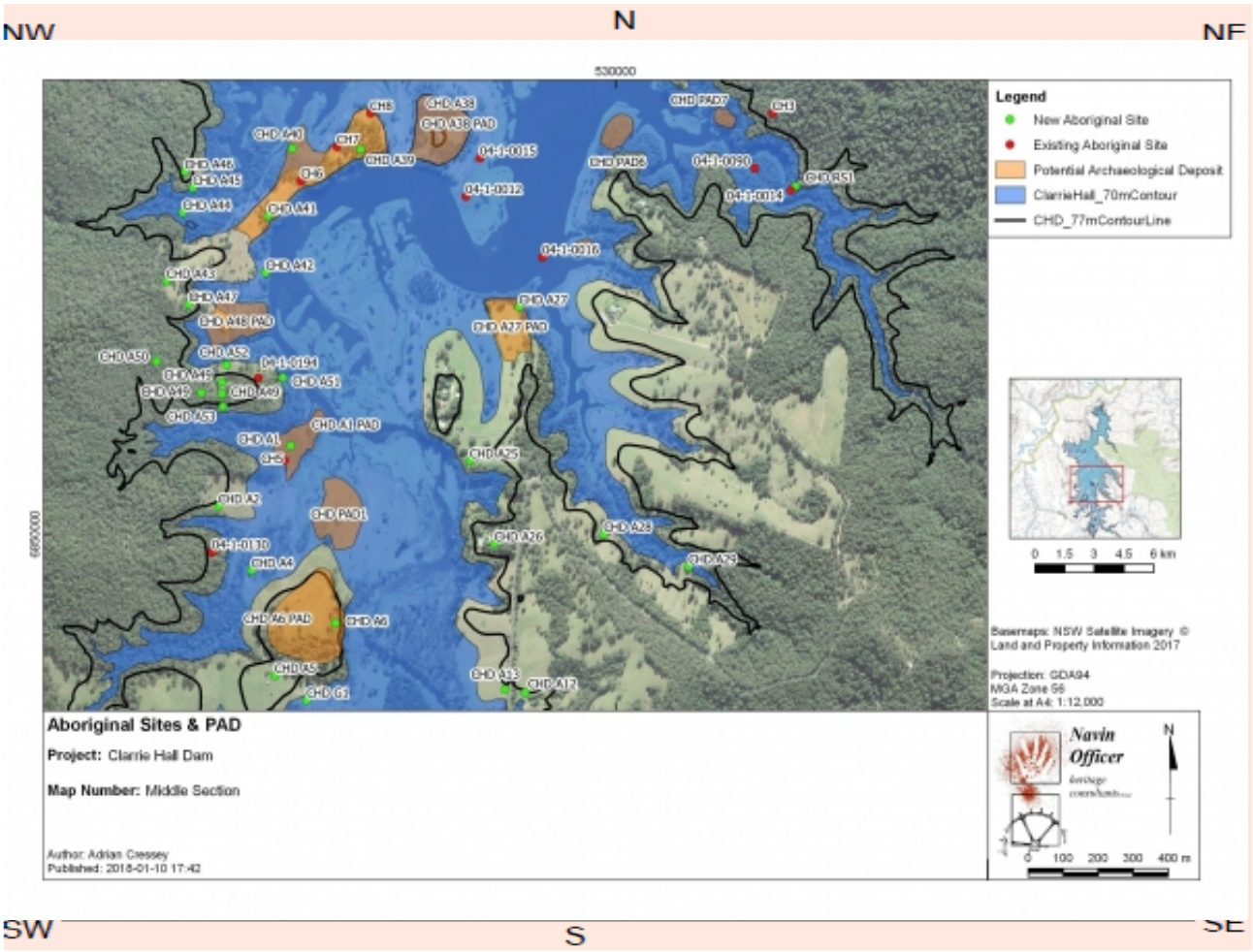
Land Form Unit: Slope **Vegetation:** Cleared

Distance to Water (m): 150 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open

Site condition: Disturbed

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
1. Artefact	1	1	1				

Description:

grey volcanic core with at least two negative scars; 86 x 50 x 36 mm

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
2.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

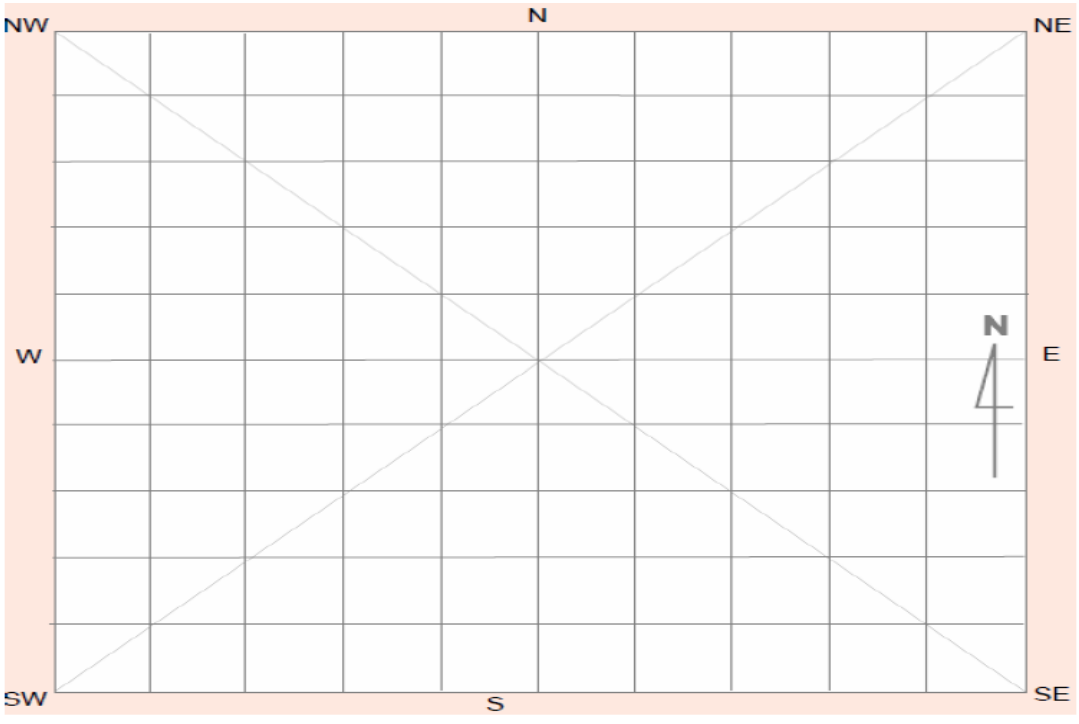
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: location, facing north east

Description: artefact

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0272 **Date recorded:** 21-06-2018

Site Location Information

Site name: CHD-A9

Easting: 529324 **Northing:** 6848931 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Pastoral/Grazing

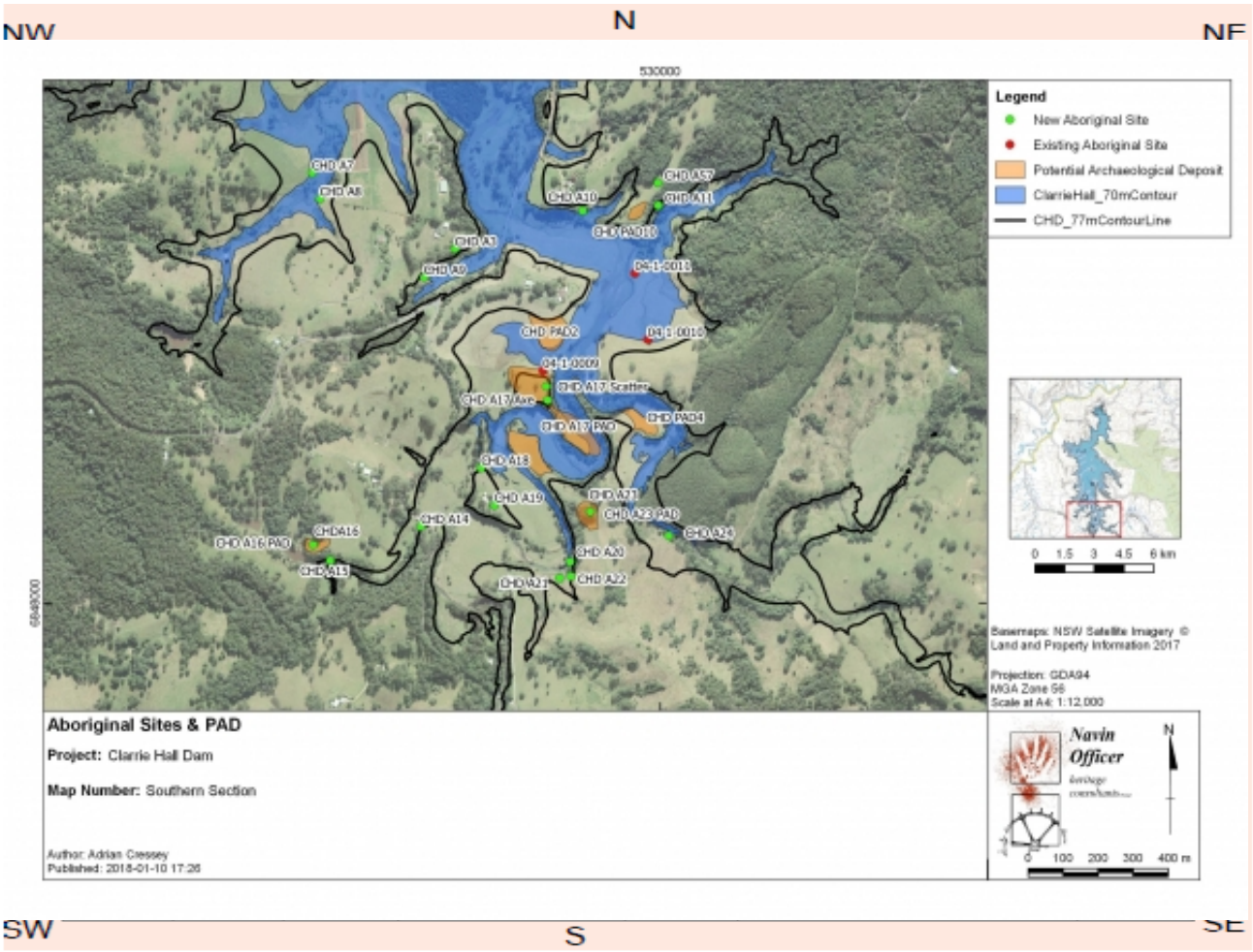
Land Form Unit: Slope **Vegetation:** Cleared

Distance to Water (m): 250 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open

Site condition: Disturbed

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
1.	Artefact	1	1	1				

Description:

Chalcedony core with at least four negative scars; 31 x 28x 26 mm

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
2.								

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

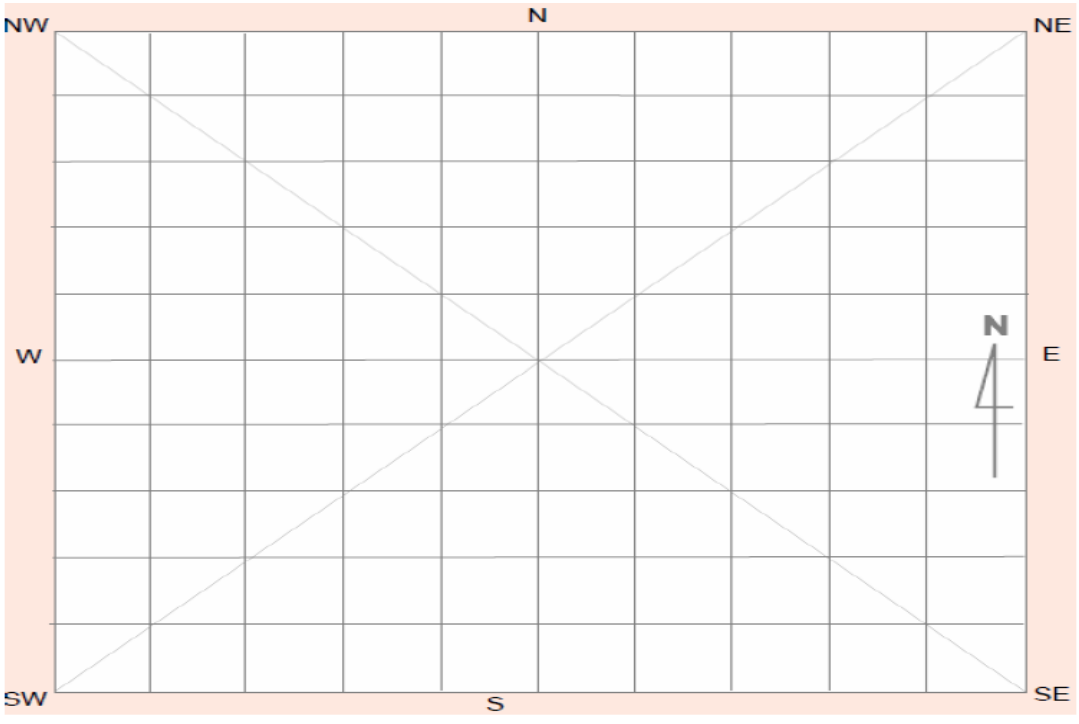
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: artefact

Description: Location, facing north west

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0274 **Date recorded:** 21-06-2018

Site Location Information

Site name: CHD-A7

Easting: 529003 **Northing:** 6849231 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Pastoral/Grazing

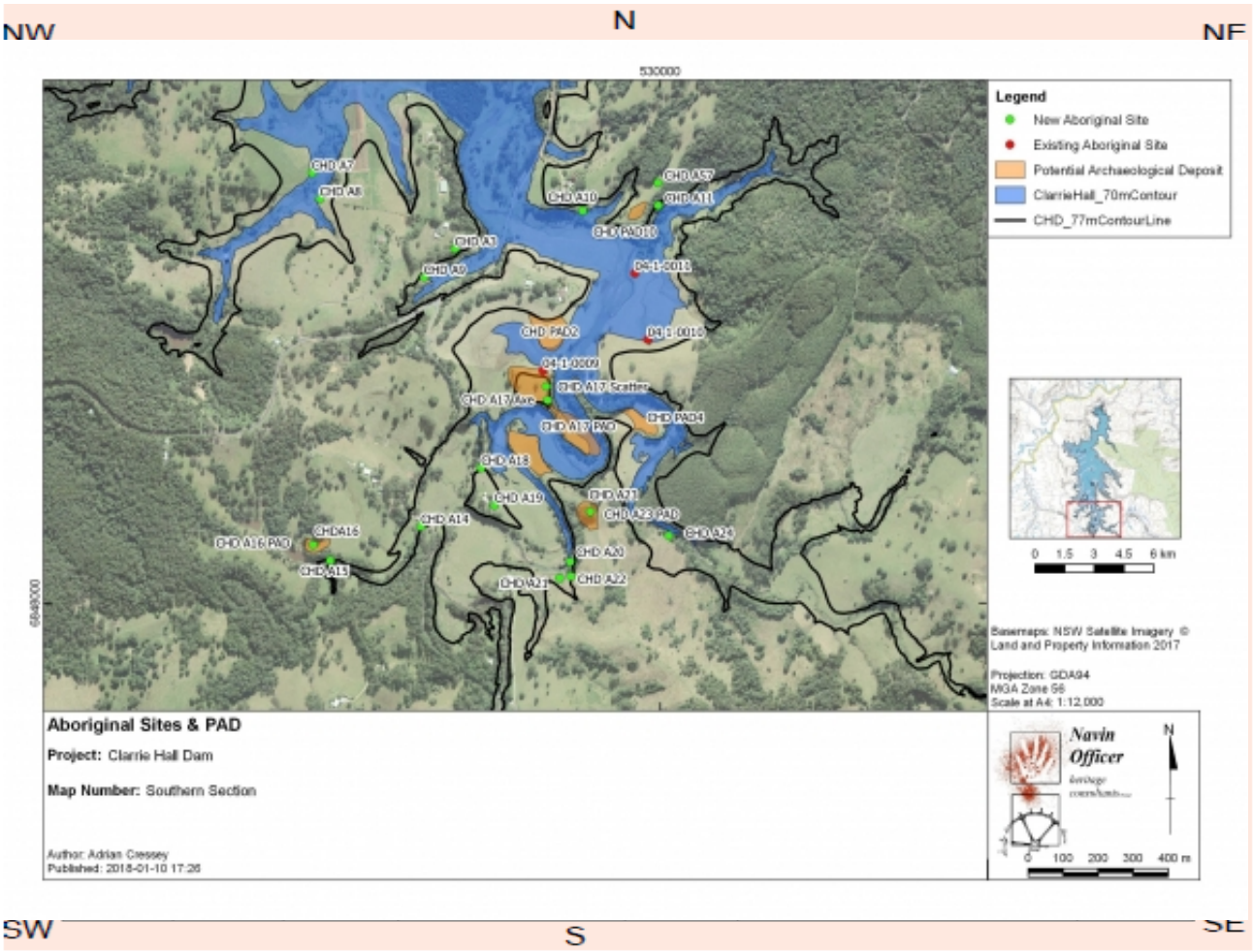
Land Form Unit: Stream Bank **Vegetation:** Cleared

Distance to Water (m): 500 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open

Site condition: Disturbed

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
1.	Artefact	1	1	1				

Description:

rhyolite core with at least four negative scars; 60 x 50 x 30 mm

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
2.								

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

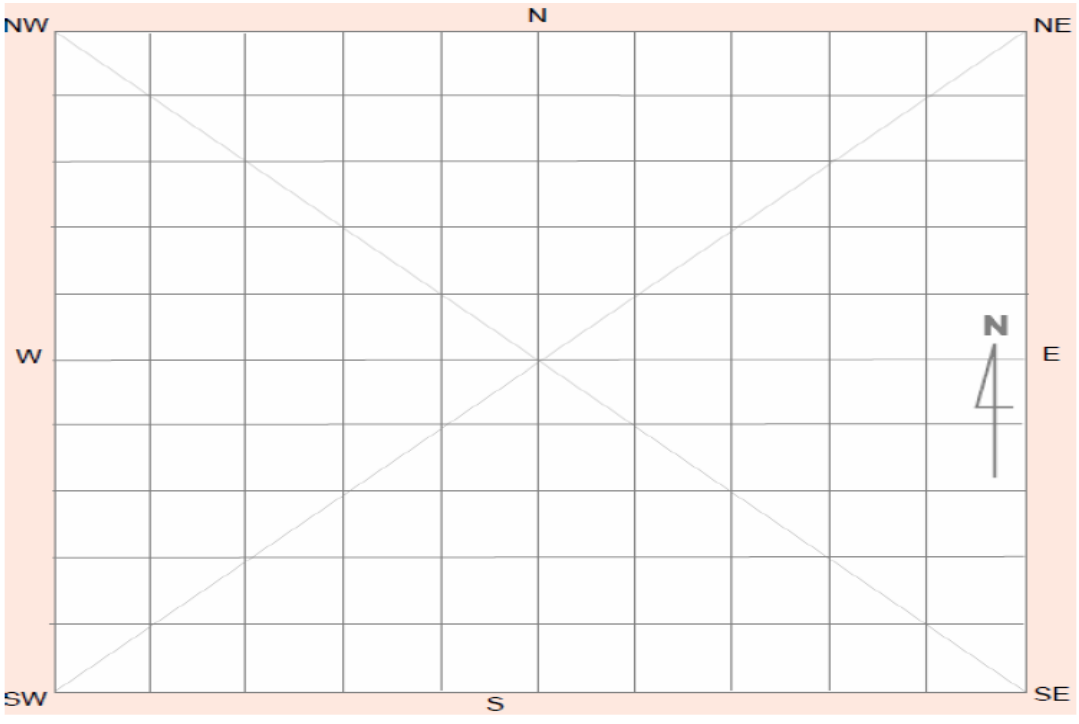
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: Artefact

Description: location, facing north west

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0277 **Date recorded:** 21-06-2018

Site Location Information

Site name: CHD-A4

Easting: 528959 **Northing:** 6849895 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Pastoral/Grazing

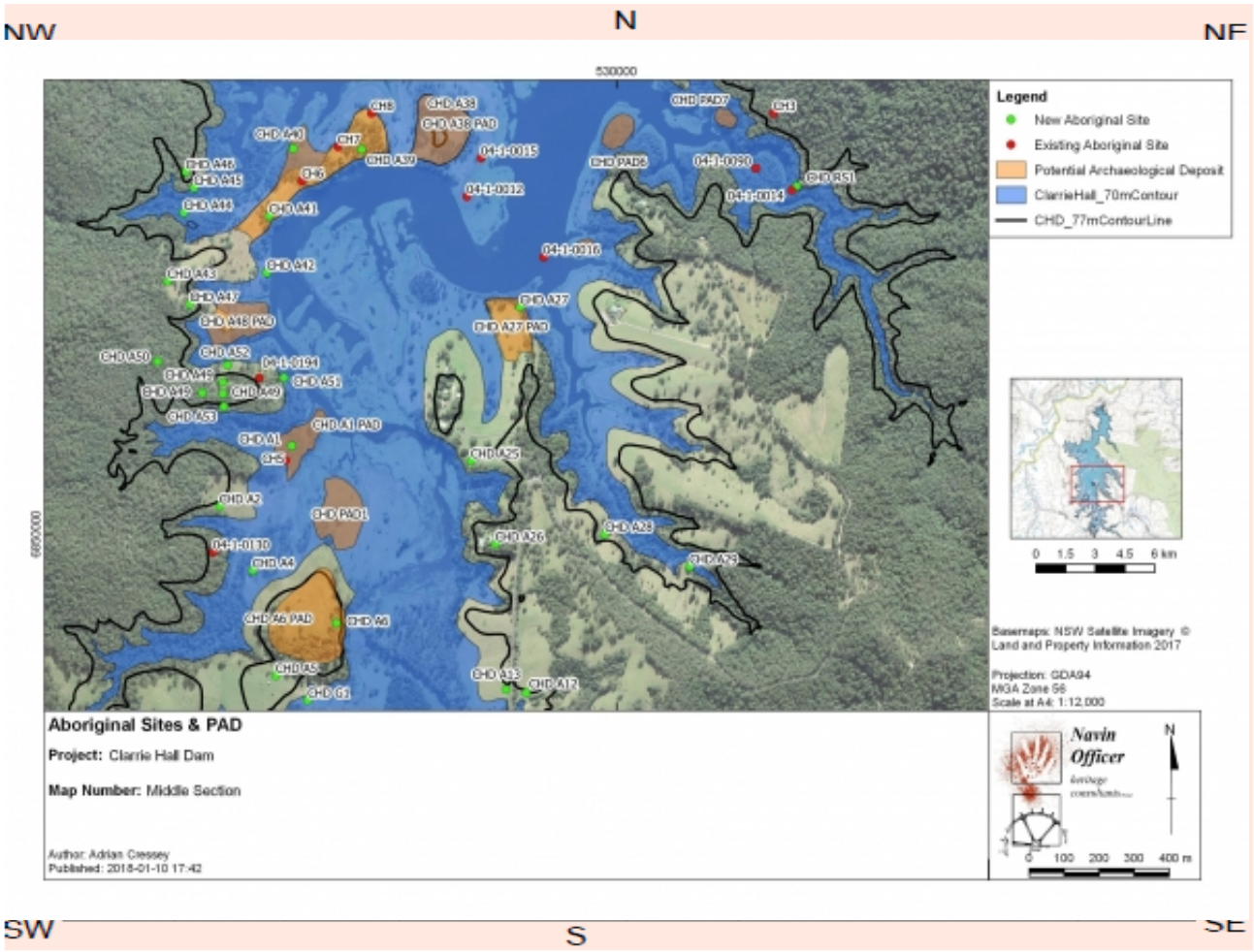
Land Form Unit: Stream Bank **Vegetation:** Cleared

Distance to Water (m): 100 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open

Site condition: Disturbed

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
1. Artefact	2	1	1				

Description:

1. pink white chalcedony core; 40 x 25 x 10 m); and 2. pink white chalcedony flaked piece; 20 x 15 x 10 mm

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
2.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

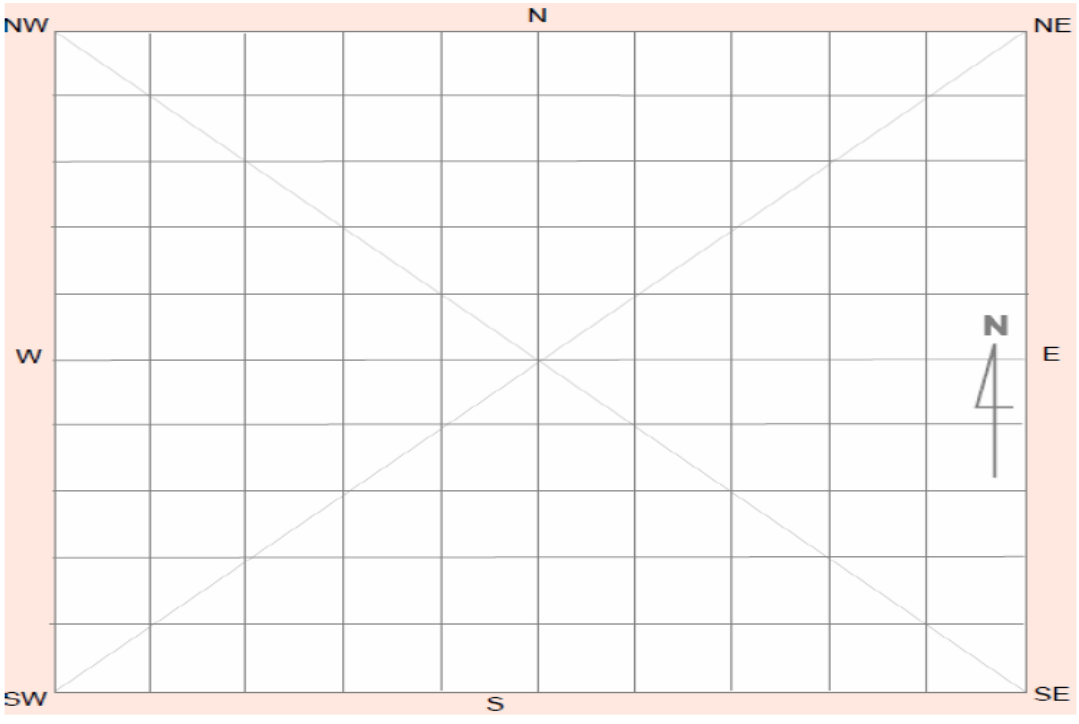
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

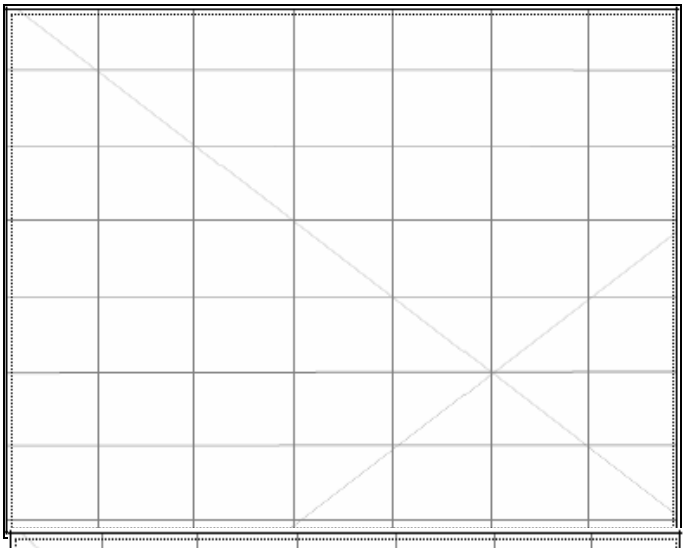
Description:

Other Site Info:

Site plan



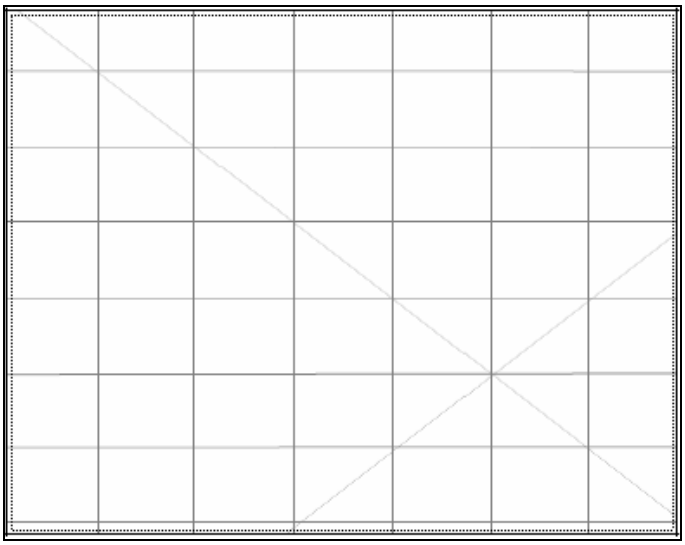
Site photographs



Description:

Description: Location

Description: Artefact



Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0278 **Date recorded:** 21-06-2018

Site Location Information

Site name: CHD-A3

Easting: 529413 **Northing:** 6849013 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Farming Low Intensity

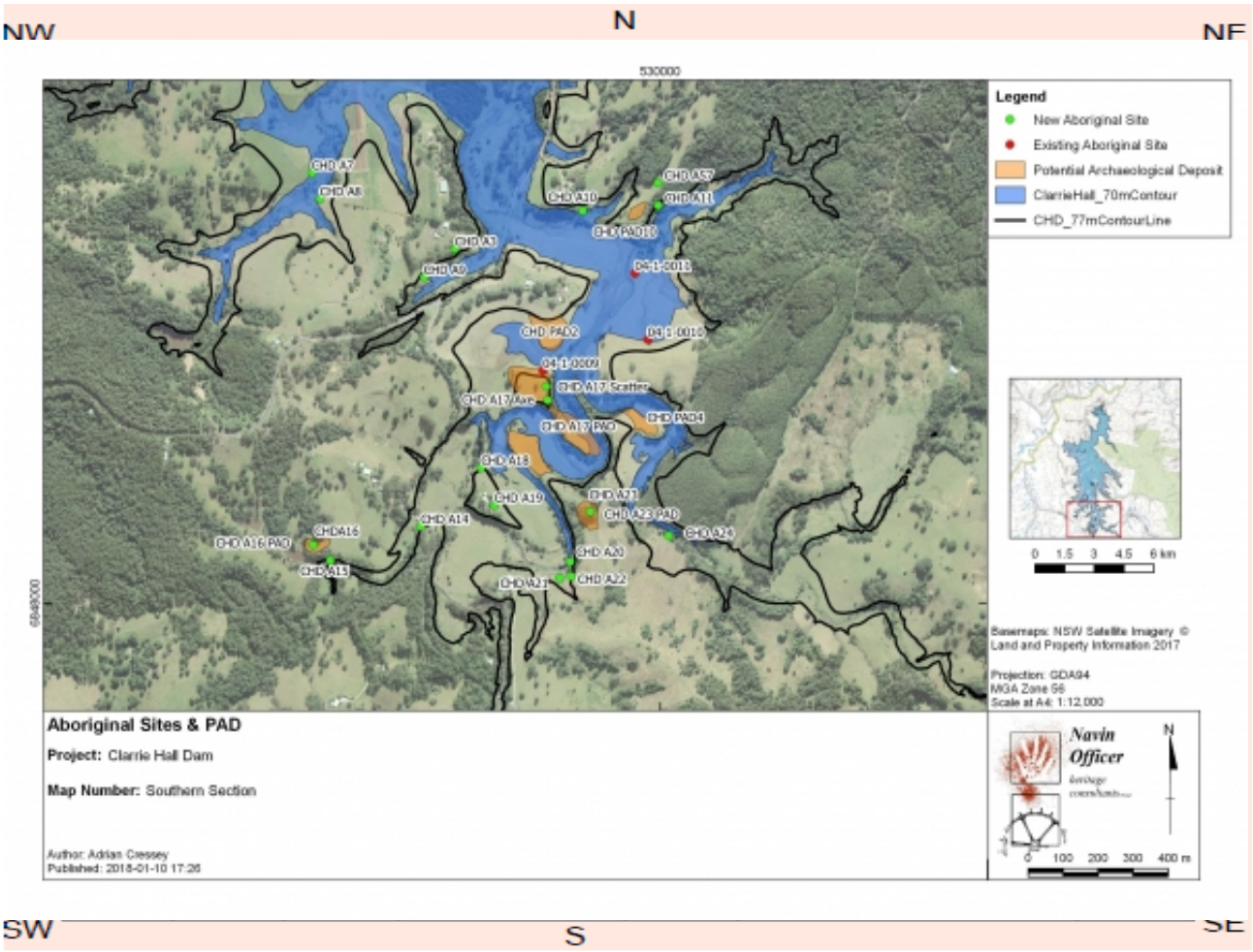
Land Form Unit: Slope **Vegetation:** Isolated clumps of trees

Distance to Water (m): 100 **Primary Report:**

How to get to the site: Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open

Site condition: Erosion

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
1. Artefact	1	1	1				

Description:

light grey volcanic piece of stone with no evidence of having been percussively flaked; 40 x 35 x 20 mm

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
2.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

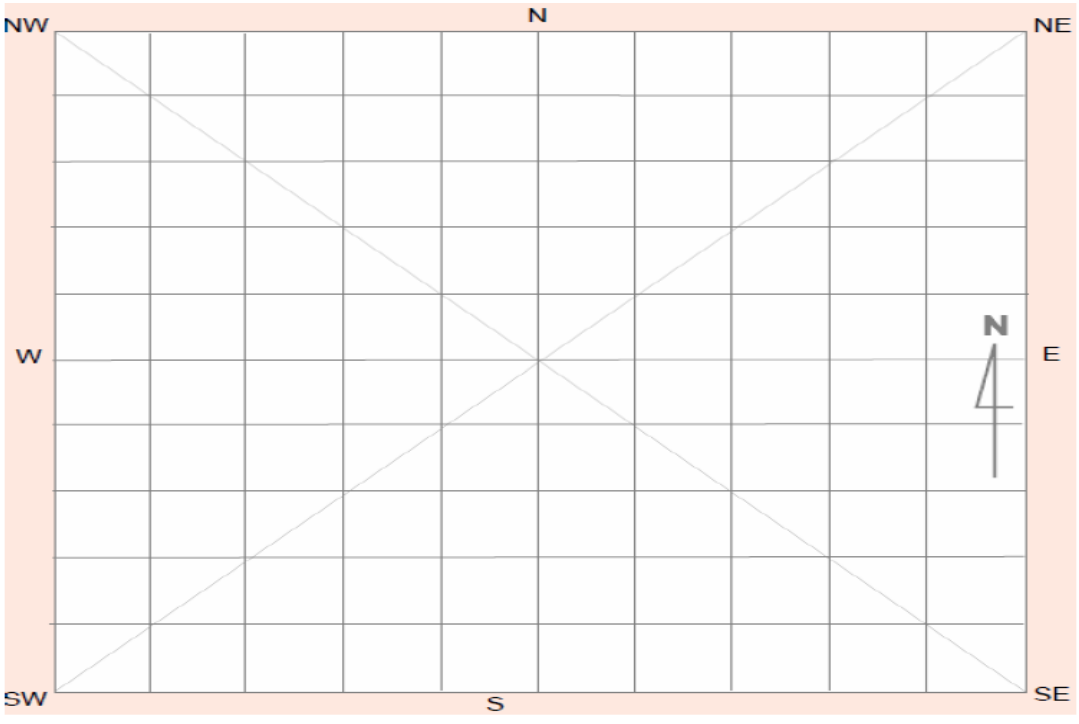
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: Artefact

Description:

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0280 **Date recorded:** 21-06-2018

Site Location Information

Site name: CHD-A1

Easting: 529470 **Northing:** 6850714 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Farming Low Intensity

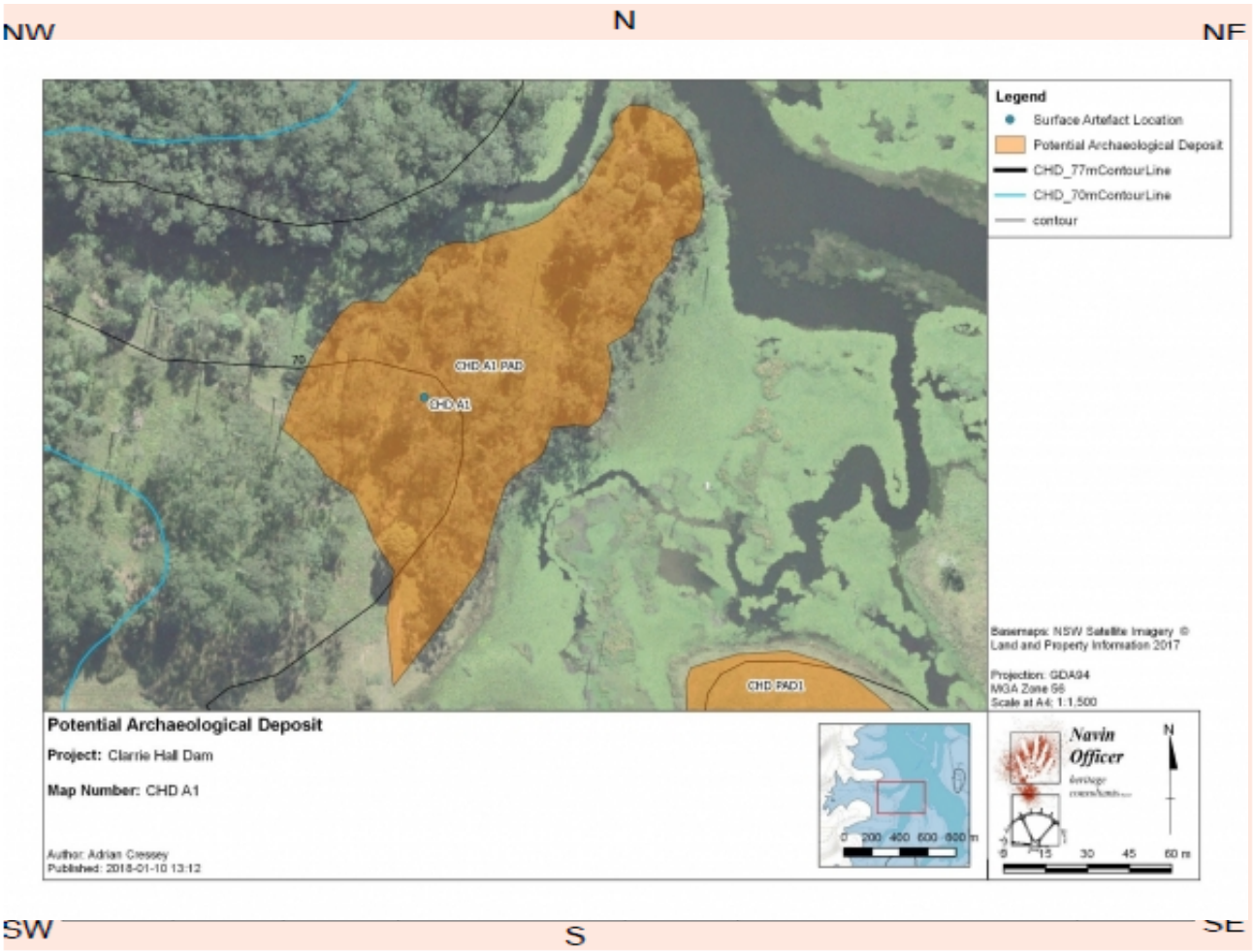
Land Form Unit: Crest **Vegetation:** Isolated clumps of trees

Distance to Water (m): 200 **Primary Report:**

How to get to the site: Clarrie Hall Dam Rd, off Kyogle Rd.

Other site information:

Site location map



Site contents information

open/closed site: Open **Site condition:** Disturbed

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
1. Artefact	1	1.5	1				

Description:

chert core with at least 6 negative scars; 80 x 50 x 35 mm

Features:	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
2.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

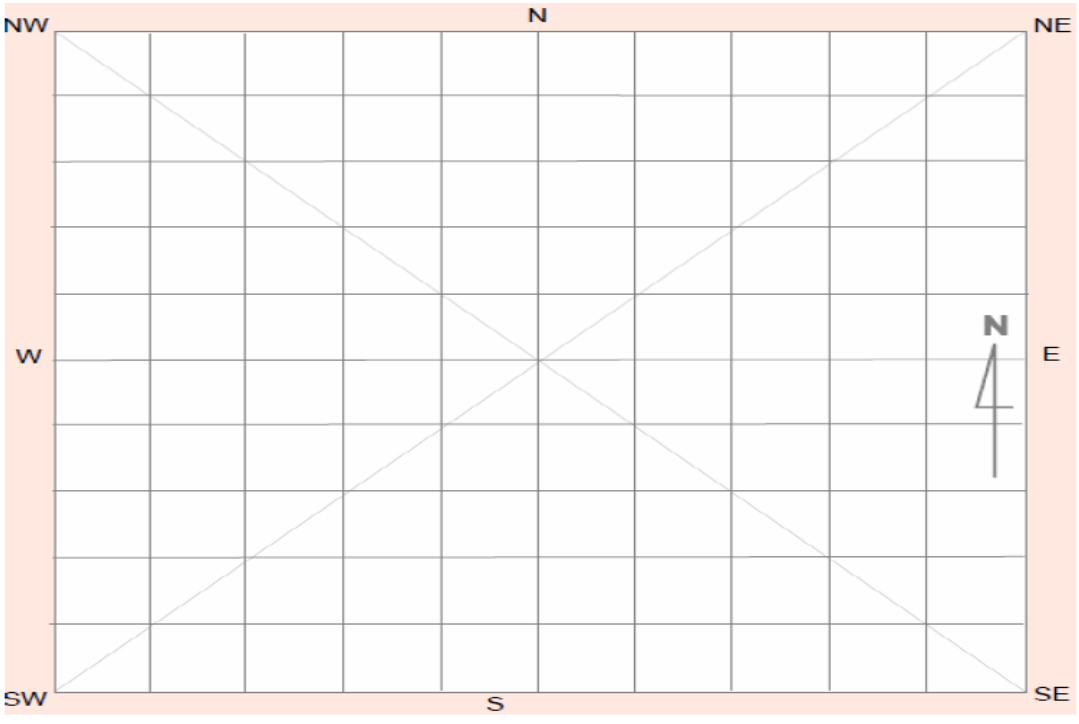
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

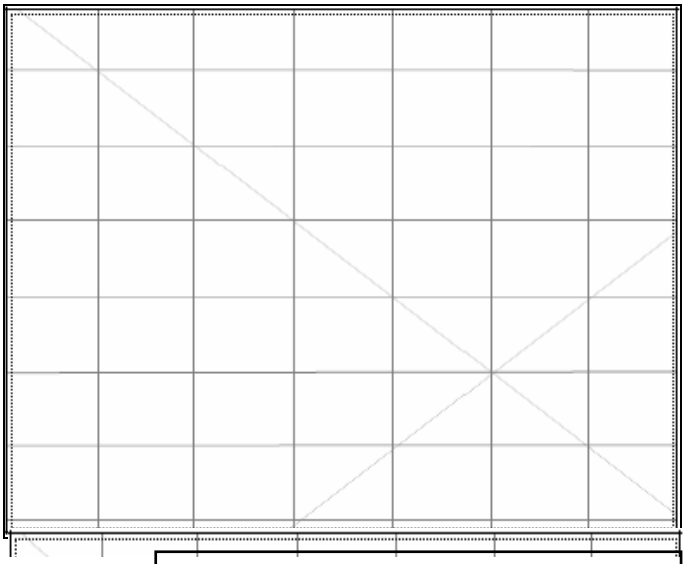
Description:

Other Site Info:

Site plan

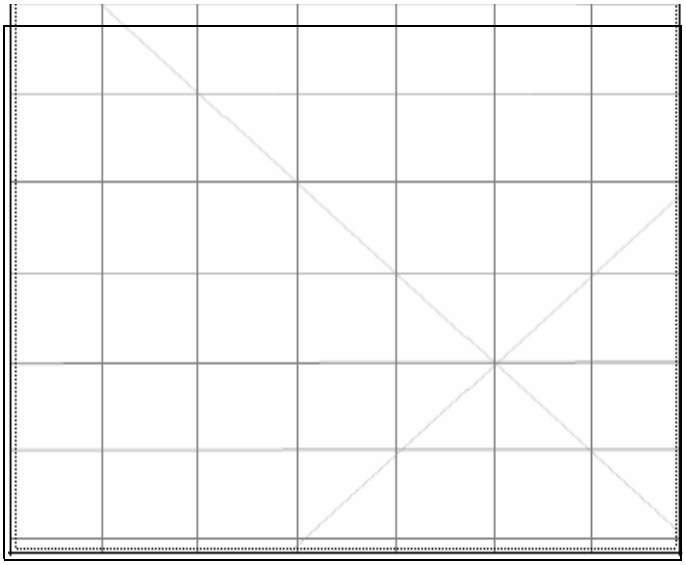


Site photographs

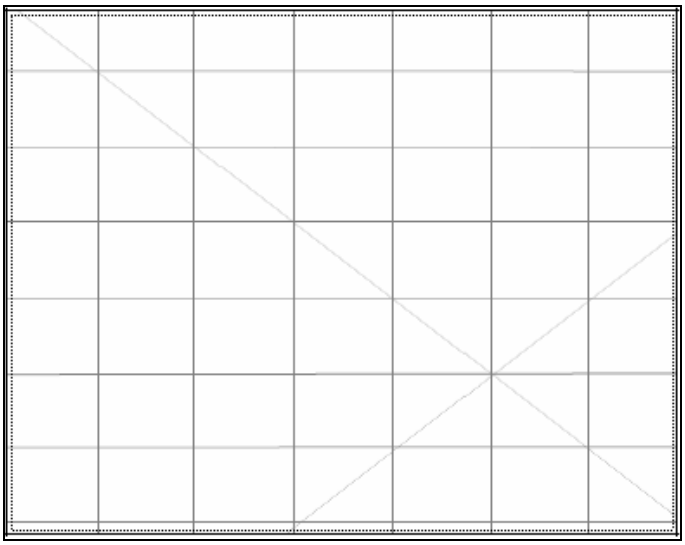


Description:

Description: Location



Description:



Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0284 **Date recorded:** 22-06-2018

Site Location Information

Site name: CHD-G1

Easting: 529116 **Northing:** 6849526 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Pastoral/Grazing

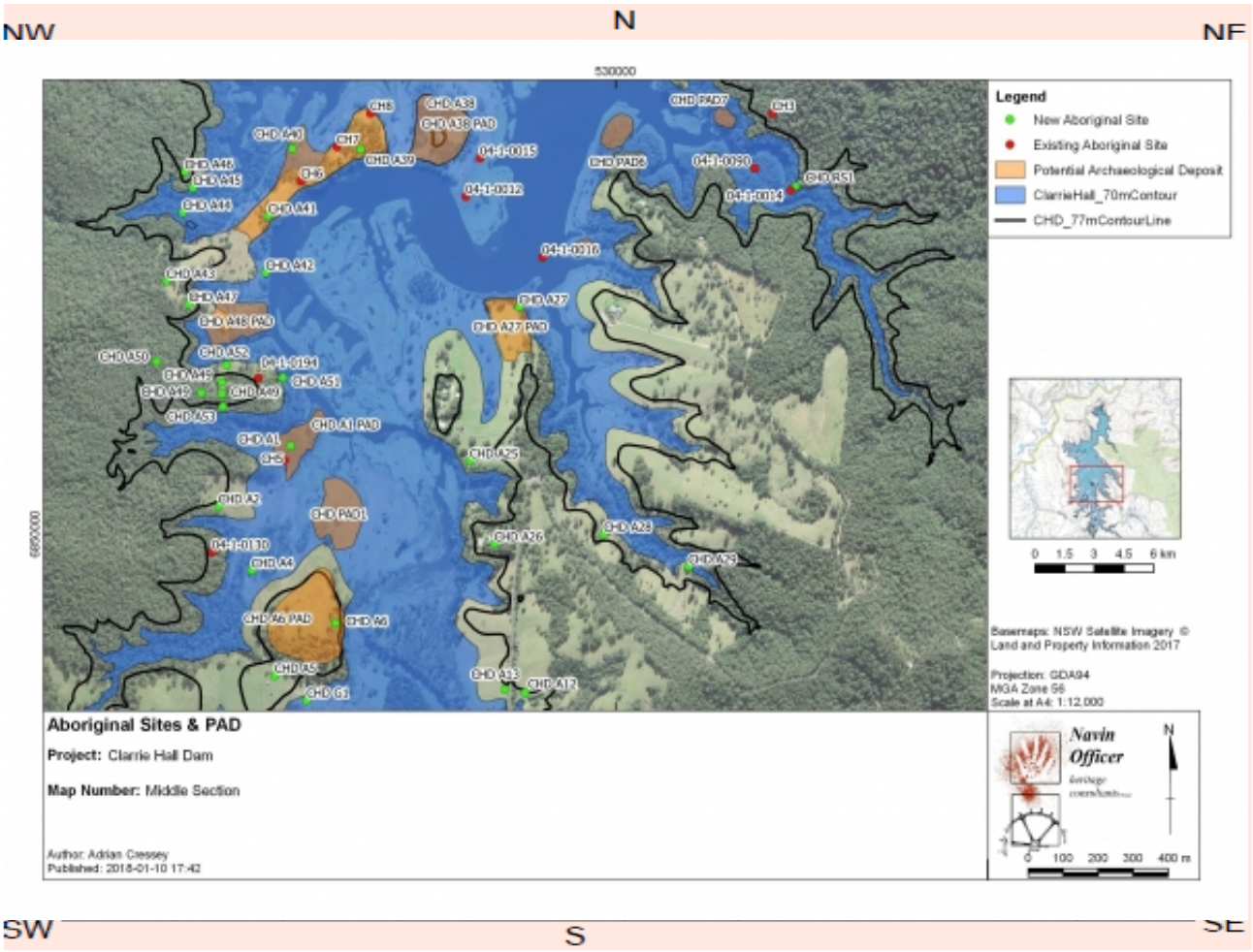
Land Form Unit: Slope **Vegetation:** Cleared

Distance to Water (m): 120 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open

Site condition: Erosion

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
1. Stone Quarry		50	20				

Description:

outcrop of chalcedony. It has been identified as a potential procurement site for chalcedony for knapping purposes

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
2.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

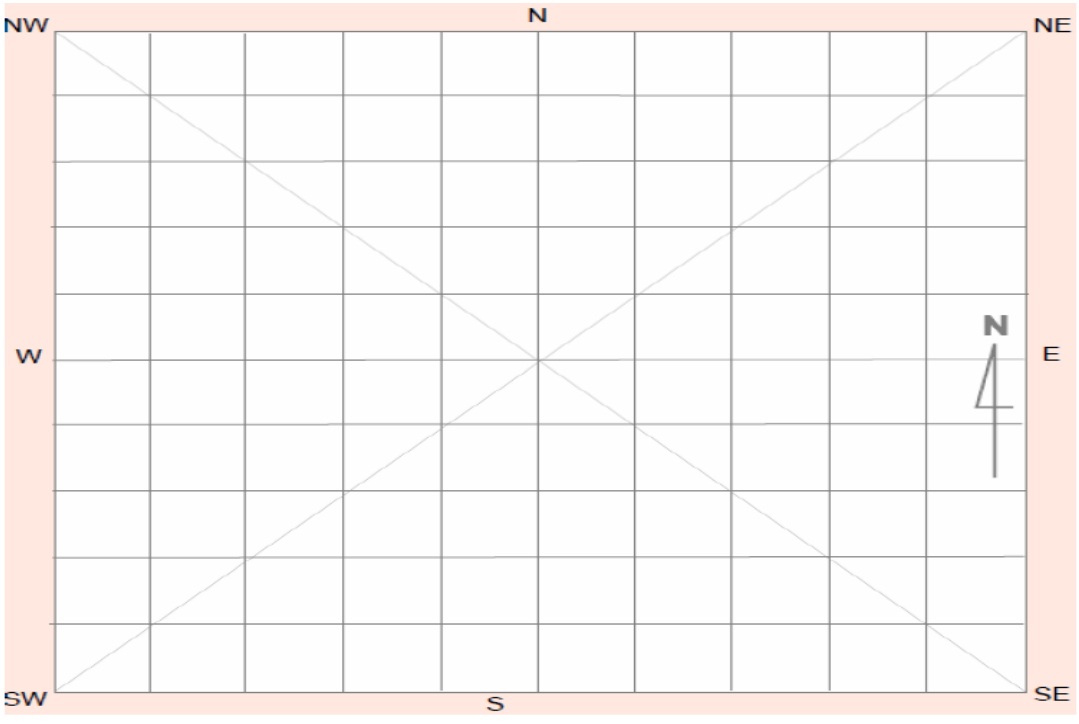
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

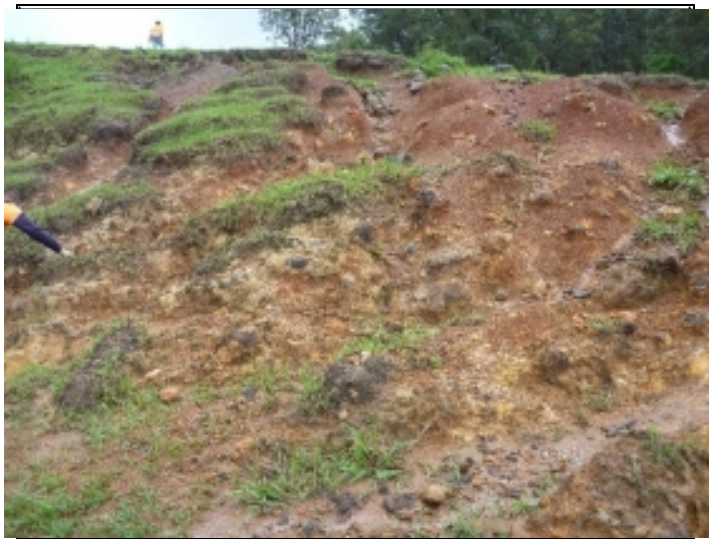
Other Site Info:

Site plan



Site photographs

Description: Example of outcropping chalcedony



Description: View of site CHD-G1 - facing northwest

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0285 **Date recorded:** 22-06-2018

Site Location Information

Site name: CHD-ST1

Easting: 529760 **Northing:** 6854393 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Recreation

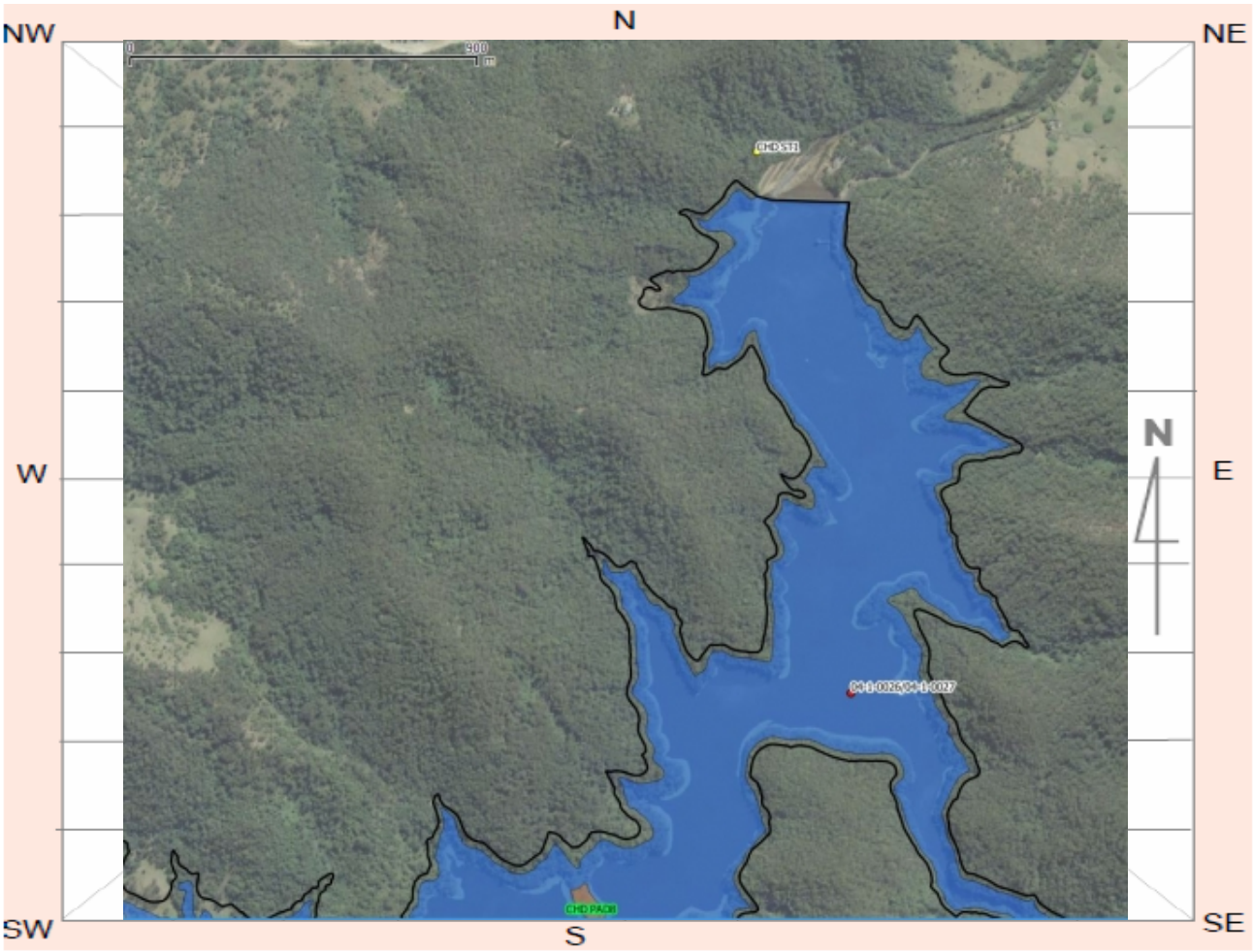
Land Form Unit: Slope **Vegetation:** Open Forest

Distance to Water (m): 100 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open **Site condition:** Good

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
1.	Modified Tree	1			20	20	195	45
					Other			Other Eucalypt

Description:

tree is considerably larger and older than the surrounding vegetation, is assessed as an old growth specimen of considerable age. damage to heartwood suggests scar could have occurred through branch fall. some irregularity on top left of regrowth margin, Scar is symmetrical but slightly twisted

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
2.								

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

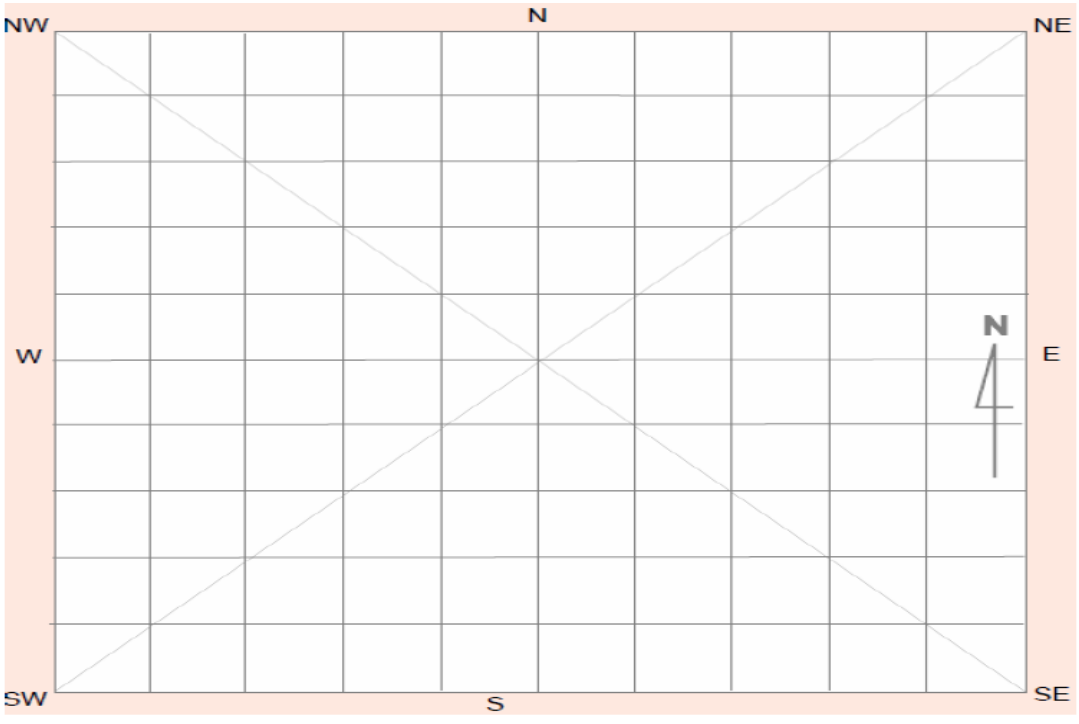
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: Scarred tree site CH-ST1 - facing northwest

Description:

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0286 **Date recorded:** 22-06-2018

Site Location Information

Site name: CHD-RS1

Easting: 530514 **Northing:** 6850995 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Recreation

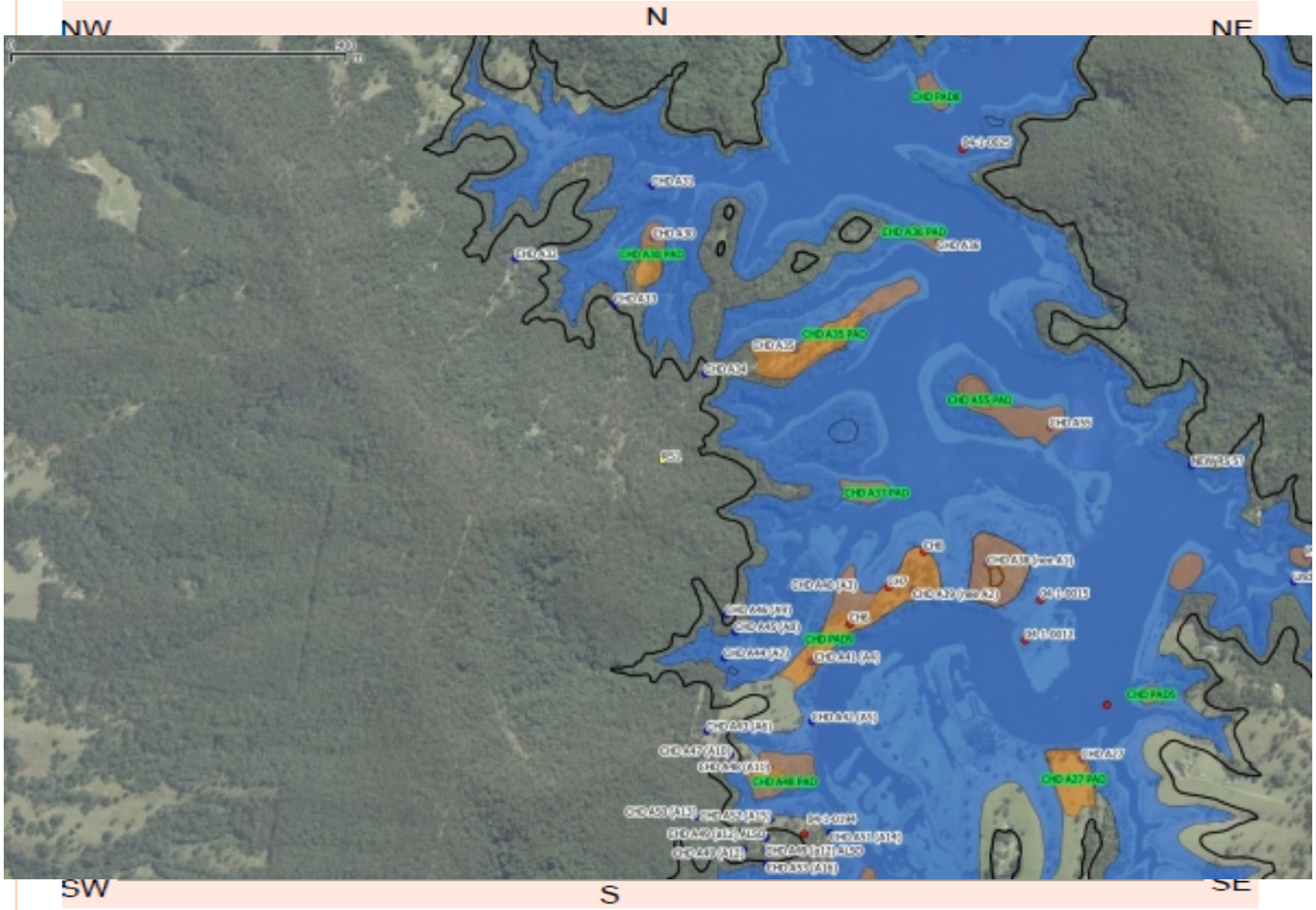
Land Form Unit: Crest **Vegetation:** Cleared

Distance to Water (m): 500 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Closed **Site condition:** Good

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
1. Potential Archaeological Deposit		6	2				

Description:

small rock shelter, The shelter is 5-6 m in length and around 2 m deep. The height of the shelter overhang ranges from 0.5 m at the rear of the shelter to 1.75 m at the front. It is located about 20 m northeast and upslope of AHIMS site #04-1-0014.

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
2.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

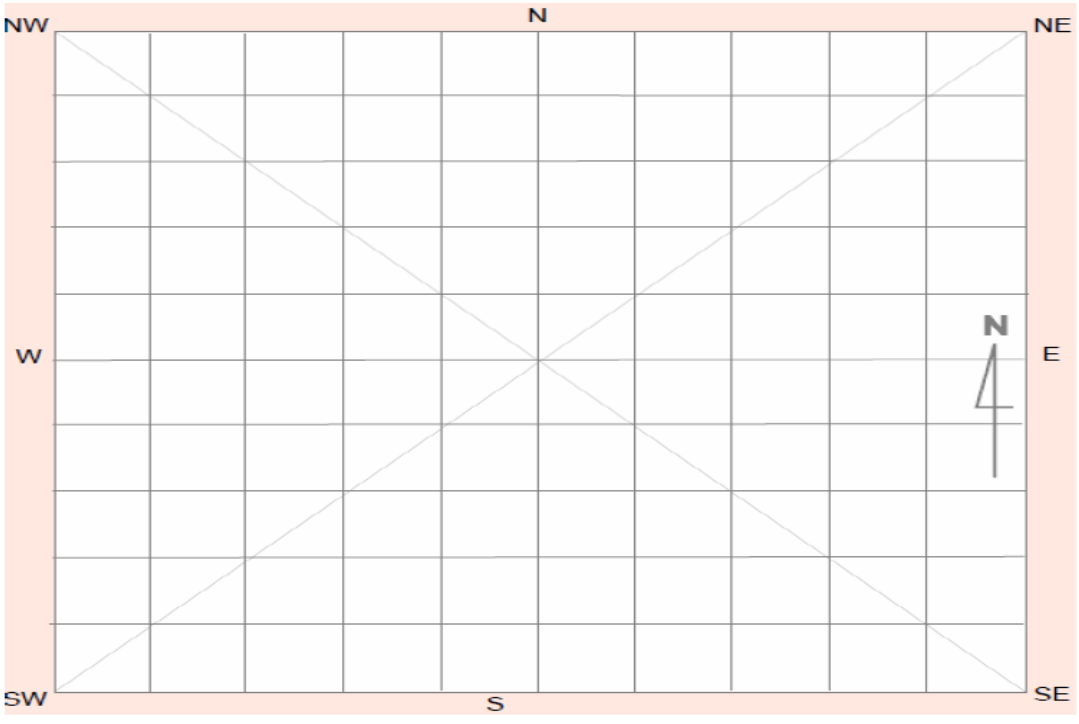
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: Rock shelter, east view

Description:

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0288 **Date recorded:** 22-06-2018

Site Location Information

Site name: CHD-PAD9

Easting: 529149 **Northing:** 6851055 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Recreation

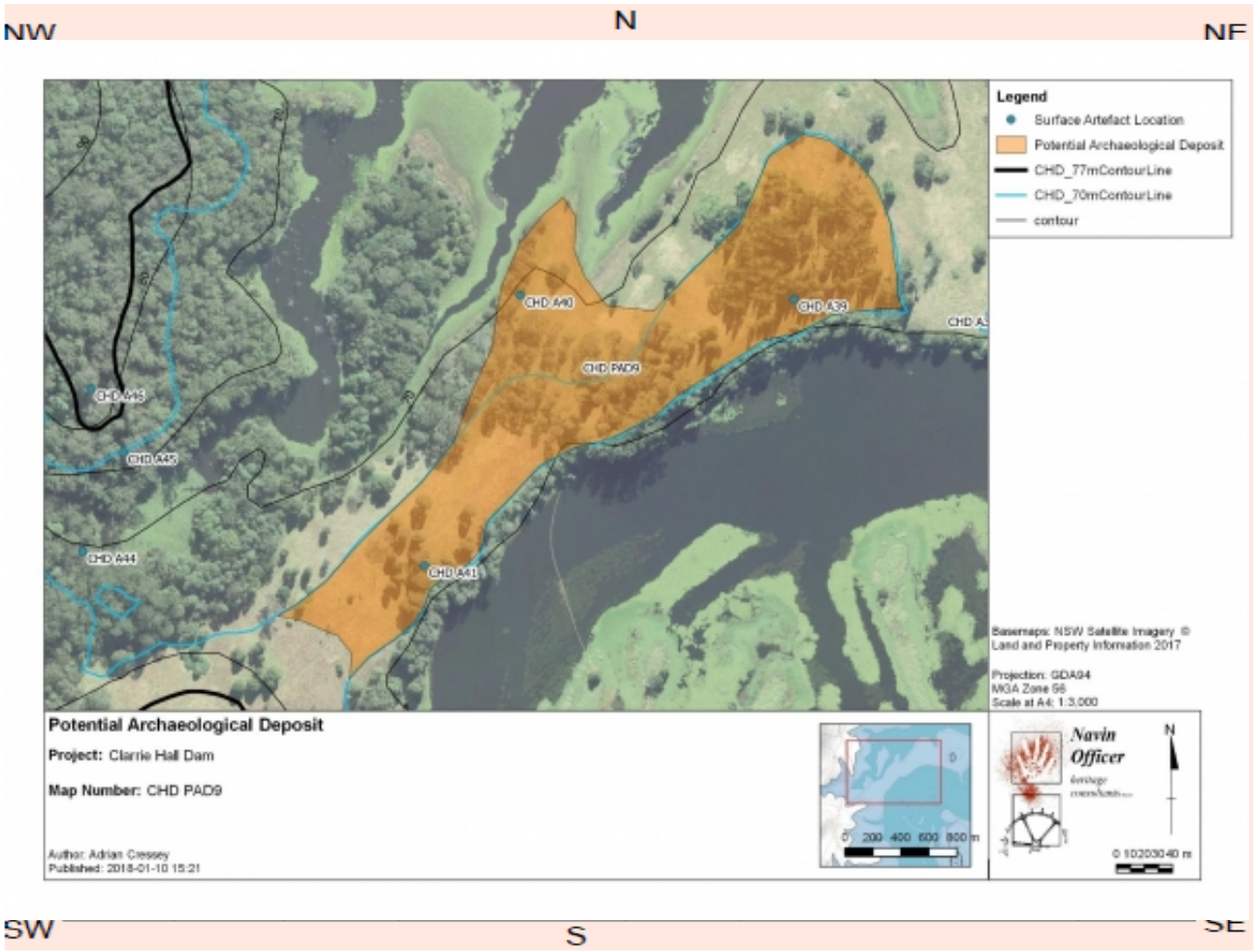
Land Form Unit: Crest **Vegetation:** Isolated clumps of trees

Distance to Water (m): 2 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open **Site condition:** Disturbed

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
1.	Potential Archaeological Deposit		500	100				

Description:

Given the landform, flat/low gradient, proximity to Doon Doon Creek, surface artefacts, and estimated soil depth, this site is assessed as having moderate to high potential for the presence of subsurface archaeological deposits.

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
2.								

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

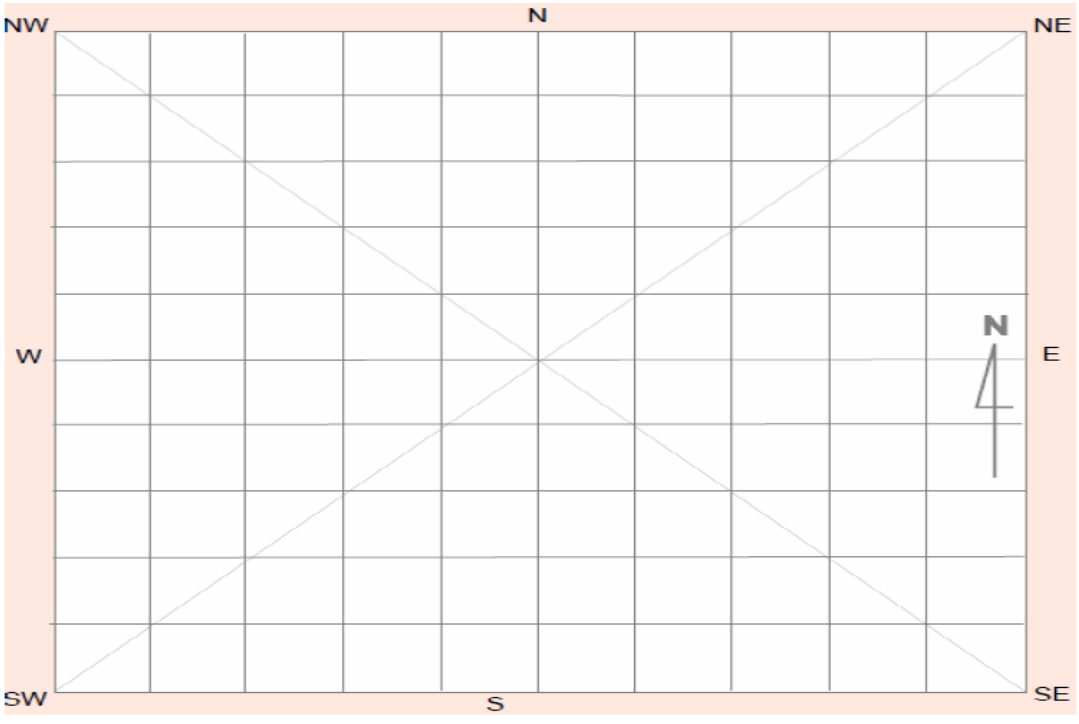
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: Location, west

Description:

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0289 **Date recorded:** 22-06-2018

Site Location Information

Site name: CHD-PAD8

Easting: 529339 **Northing:** 6852422 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Recreation

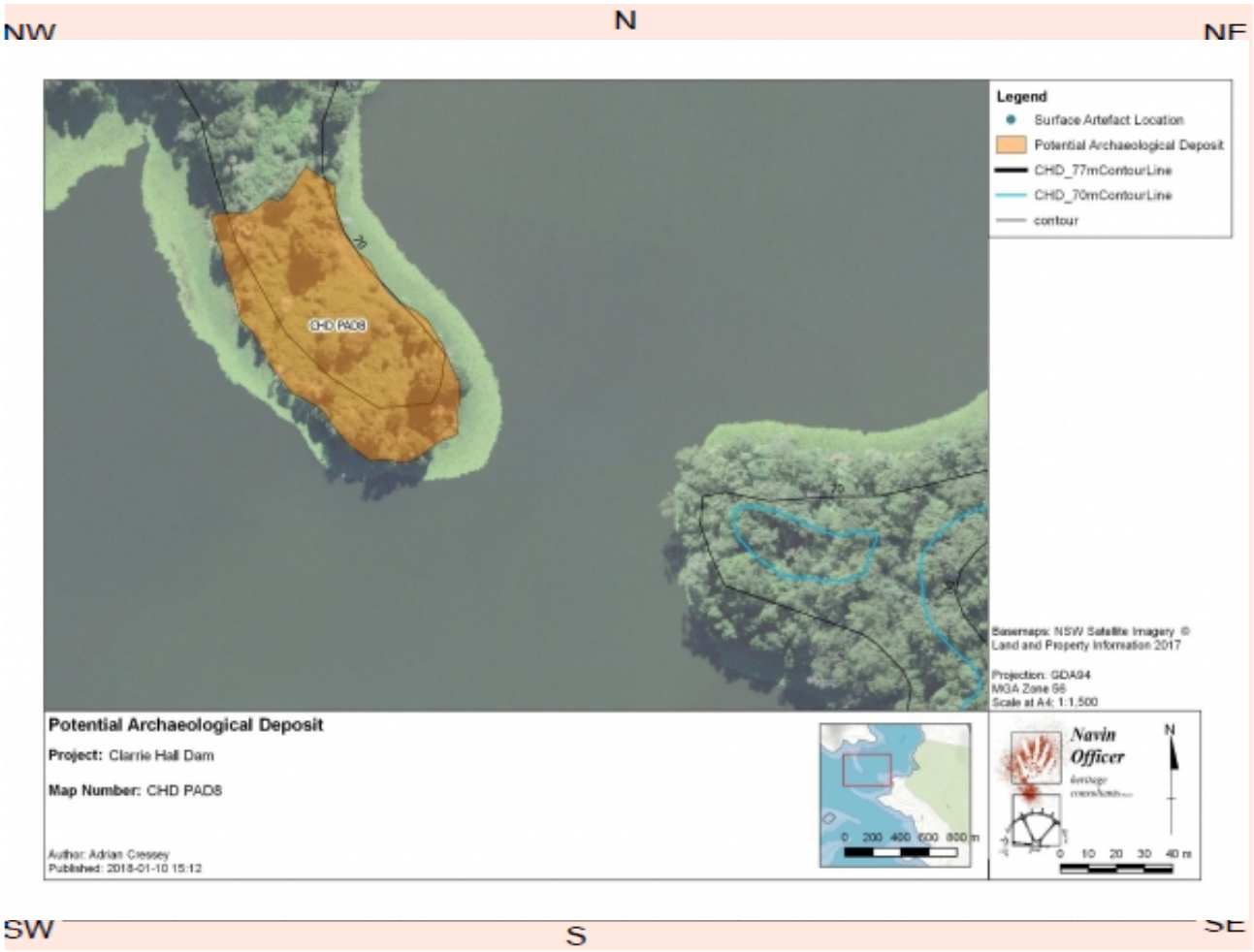
Land Form Unit: Crest **Vegetation:** Closed Forest

Distance to Water (m): 40 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open

Site condition: Disturbed

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
1. Potential Archaeological Deposit		100	50				

Description:

Given the flat gradient of this landform, its proximity to Doon Doon Creek, relatively low levels of disturbance, and its estimated soil depth, this PAD is assessed as having moderate to high potential for the presence of subsurface archaeological deposits

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
2.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

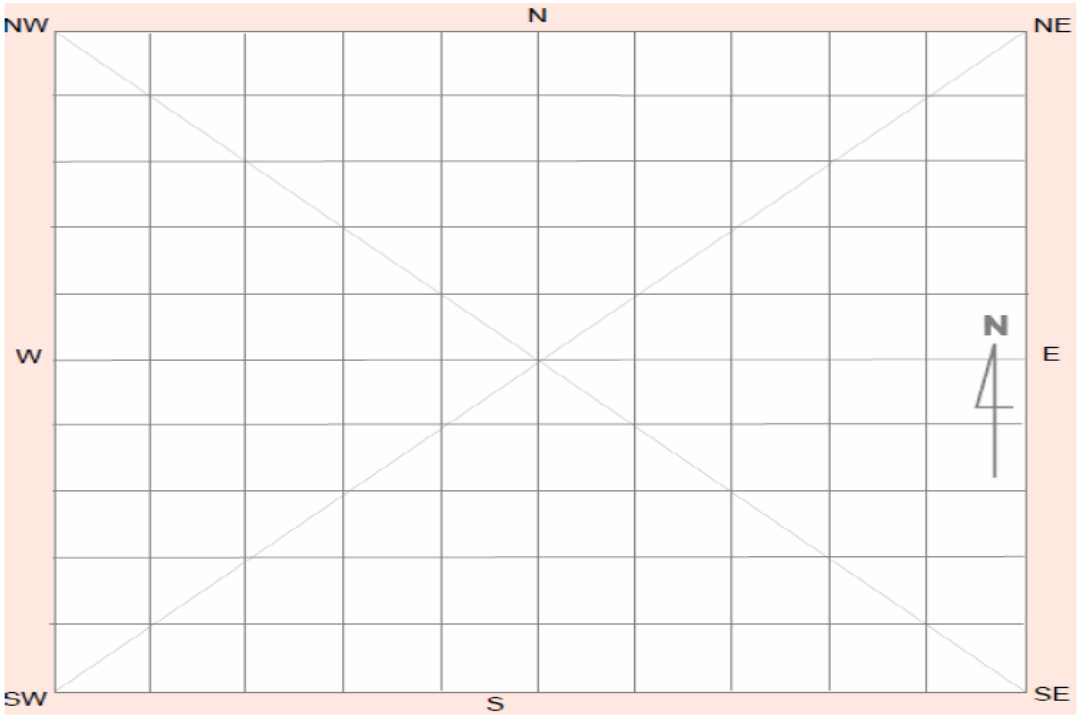
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: location, west

Description:

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0290 **Date recorded:** 22-06-2018

Site Location Information

Site name: CHD-PAD7

Easting: 530326 **Northing:** 6851194 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Forestry

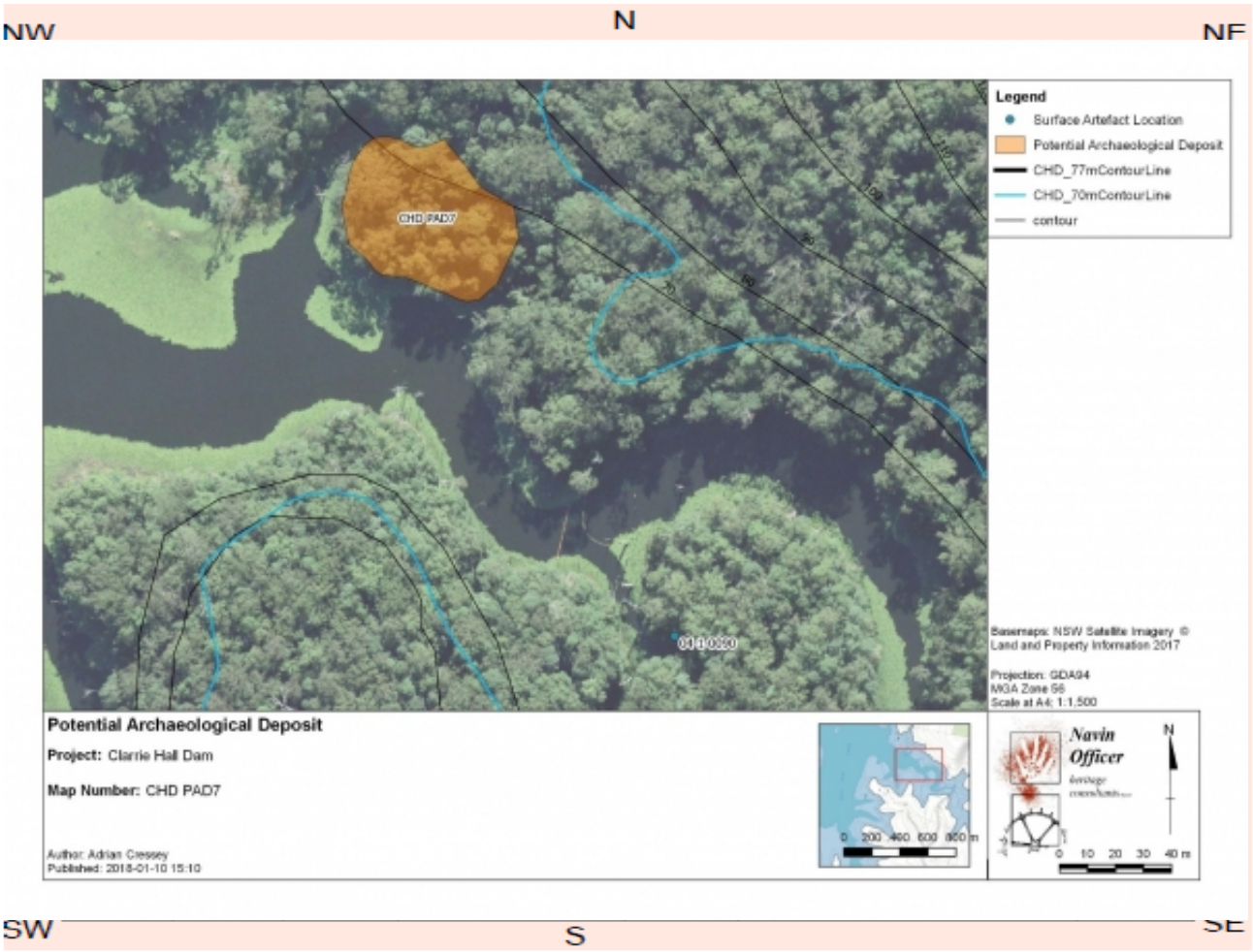
Land Form Unit: Crest **Vegetation:** Closed Forest

Distance to Water (m): 10 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open **Site condition:** Disturbed

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
1.	Potential Archaeological Deposit		65	46				

Description:

Given the locally elevated flat gradient of this landform, its proximity to fresh water, and relatively low levels of disturbance, this PAD is assessed as having moderate to high potential for the presence of subsurface archaeological deposits.

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
2.								

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

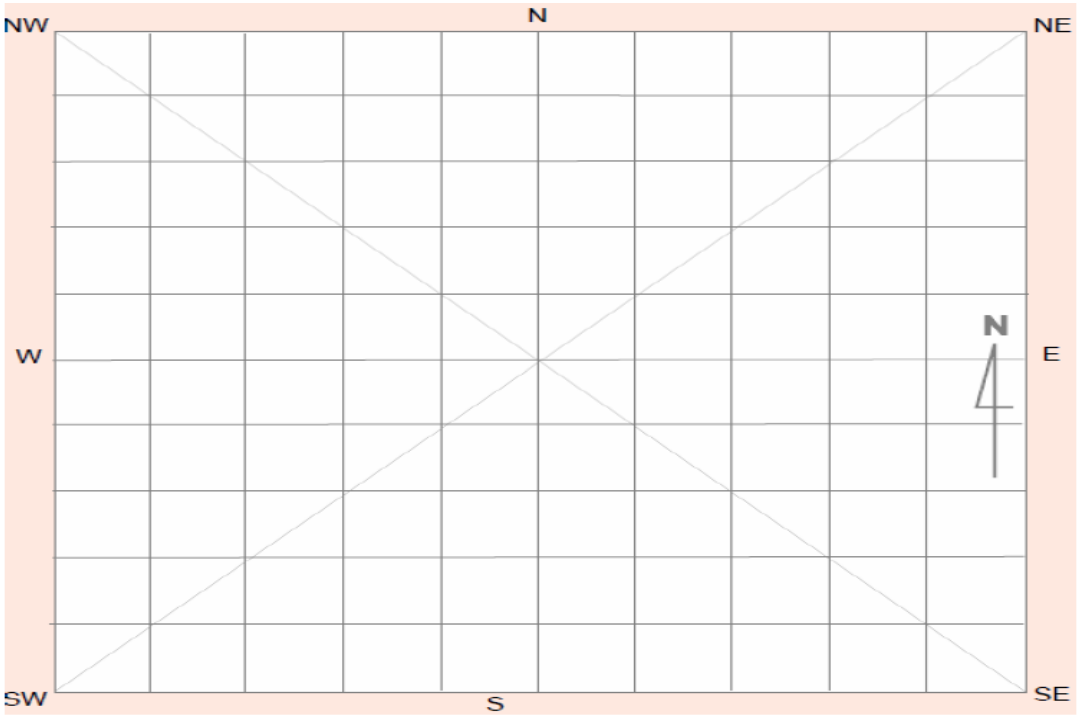
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description:

Description: location, west

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0291 **Date recorded:** 22-06-2018

Site Location Information

Site name: CHD-PAD6

Easting: 530007 **Northing:** 6851148 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Recreation

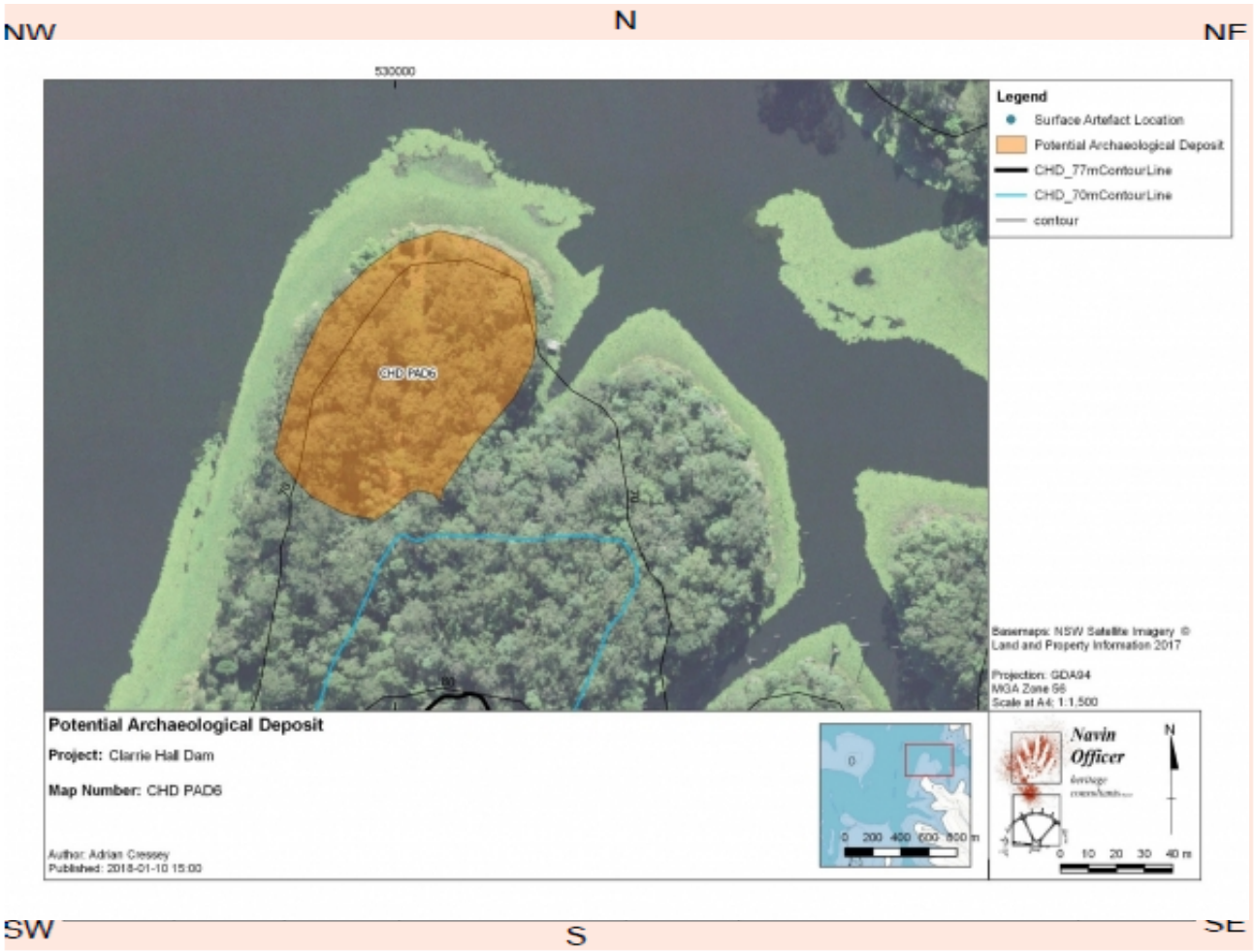
Land Form Unit: Crest **Vegetation:** Closed Forest

Distance to Water (m): 50 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open **Site condition:** Disturbed

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
1.	Potential Archaeological Deposit		60	44				

Description:

Given the locally elevated flat gradient of this landform, its proximity to Doon Doon Creek, and estimated soil depth, this PAD is assessed as having moderate to high potential for the presence of subsurface archaeological deposits.

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
2.								

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

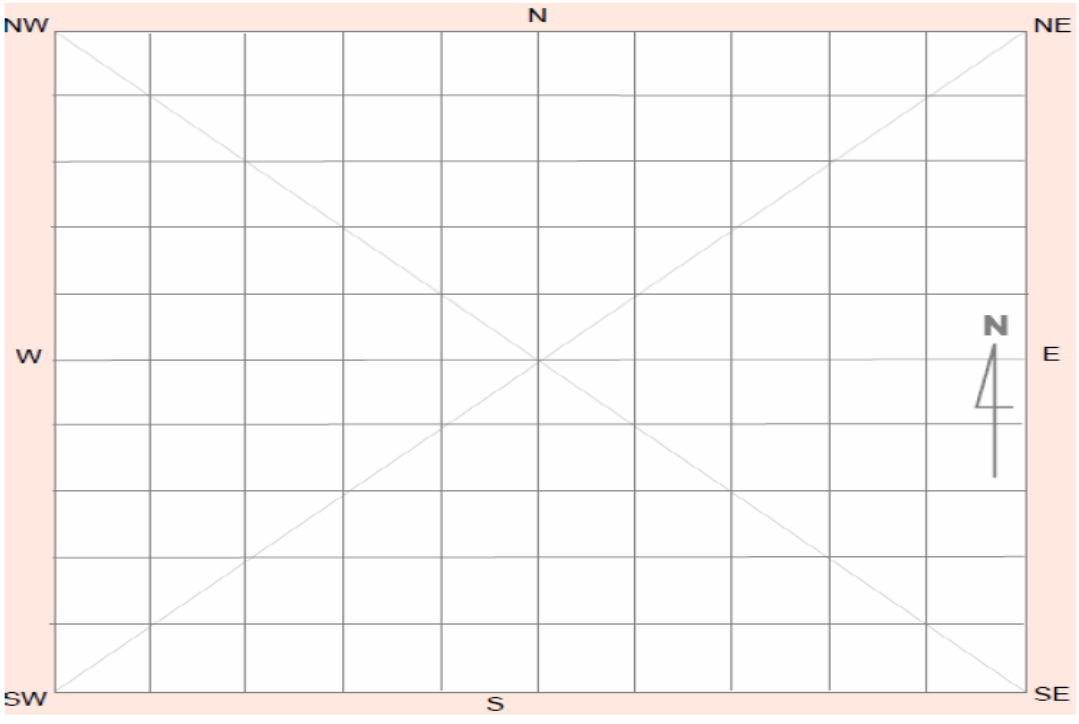
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: location, south

Description:

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0292 **Date recorded:** 22-06-2018

Site Location Information

Site name: CHD-PAD5

Easting: 529903 **Northing:** 6850812 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Recreation

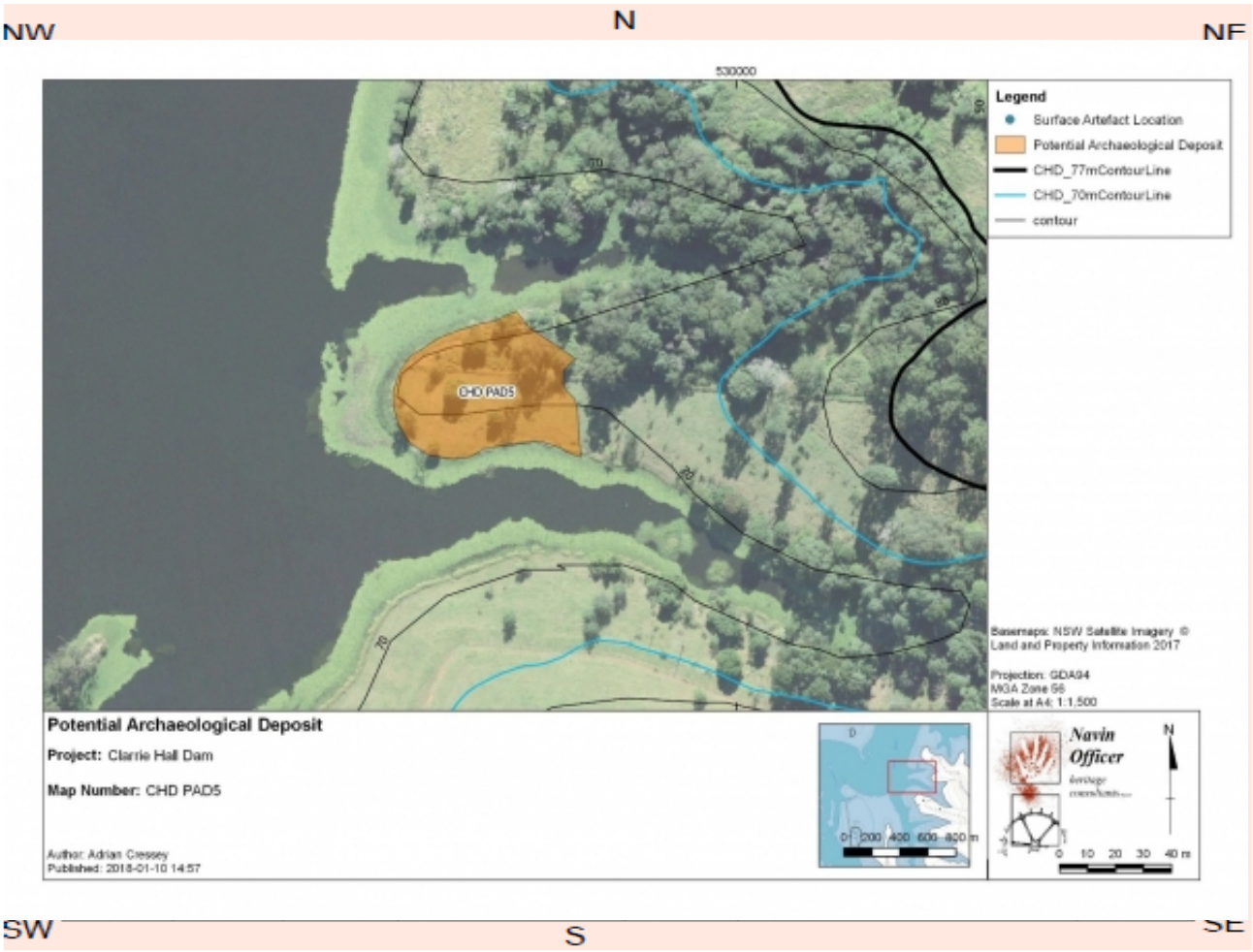
Land Form Unit: Crest **Vegetation:** Open Woodland

Distance to Water (m): 50 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open **Site condition:** Disturbed

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
1.	Potential Archaeological Deposit		60	45				

Description:

Given the locally elevated flat gradient of this landform, its proximity to Doon Doon Creek, and estimated soil depth, this PAD is assessed as having moderate to high potential for the presence of subsurface archaeological deposits

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
2.								

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

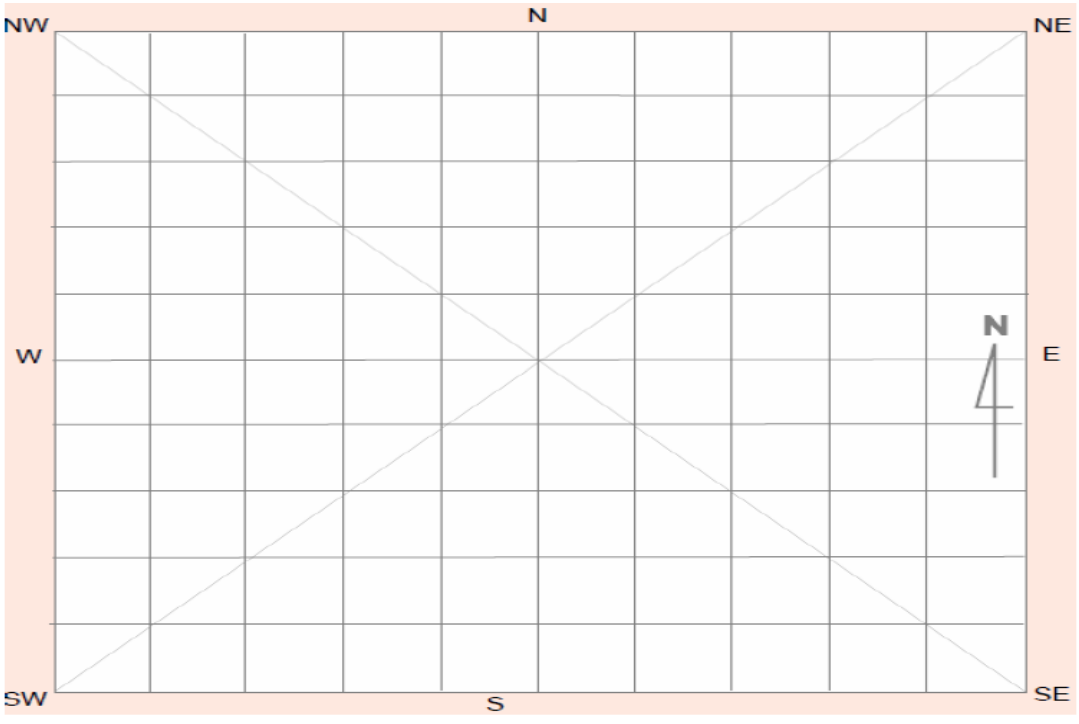
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: location, west

Description:

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Aboriginal Site Recording Form

AHIMS Registrar
PO Box 1967, Hurstville 2220 NSW

AHIMS site ID: 04-1-0296 **Date recorded:** 22-06-2018

Site Location Information

Site name: CHD PAD1

Easting: 529193 **Northing:** 6850030 **Coordinates must be in GDA (MGA)**

Horizontal Accuracy (m): 5

Zone: 56 **Location method:** Non-Differential GPS

Recorder Information

(The person responsible for the completion and submission of this form)

Title	Surname	First name
Ms.	Fenyvesi	Jasmine

Organisation: Navin Officer Heritage Consultants

Address: 4/71 Leichhardt St, Kingston, ACT, 2604

Phone: 0420531645 **E-mail:** jfenyvesi@nohc.com.au

Site Context Information

Land Form Pattern: Mountains **Land Use:** Pastoral/Grazing

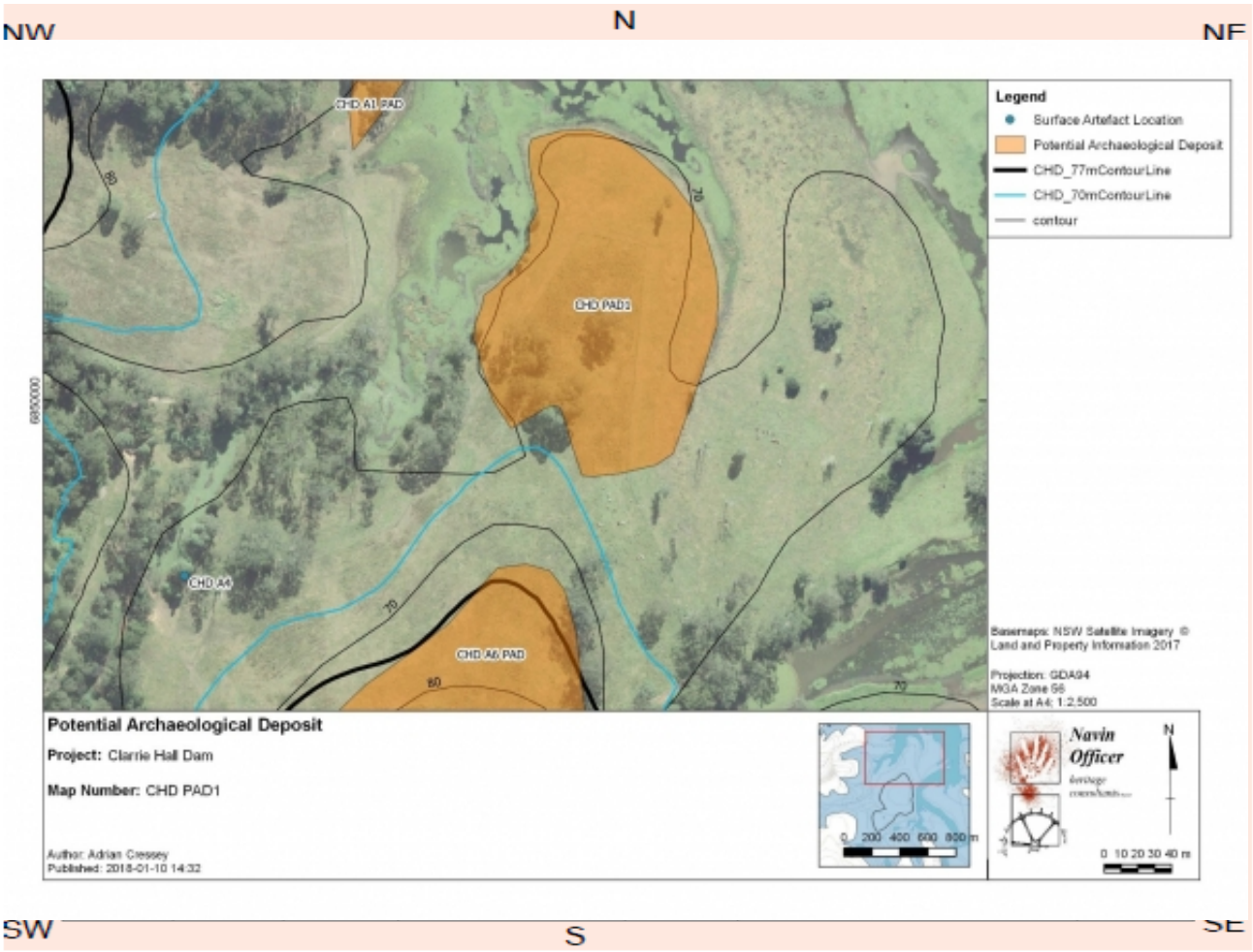
Land Form Unit: Slope **Vegetation:** Grasslands

Distance to Water (m): 2 **Primary Report:**

How to get to the site: Via Clarrie Hall Dam Rd, off Kyogle Rd

Other site information:

Site location map



Site contents information

open/closed site: Open **Site condition:** Disturbed

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
1.	Potential Archaeological Deposit		160	120				

Description:

Given the low and flat gradient of this landform, its proximity to Doon Doon Creek, relatively low levels of disturbance, and its estimated soil depth, this site is assessed as having high potential for the presence of subsurface archaeological deposits

Features:

		Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Regrowth (cm)	Scar shape	Tree Species
2.								

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
3.							

Description:

Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
4.							

Description:

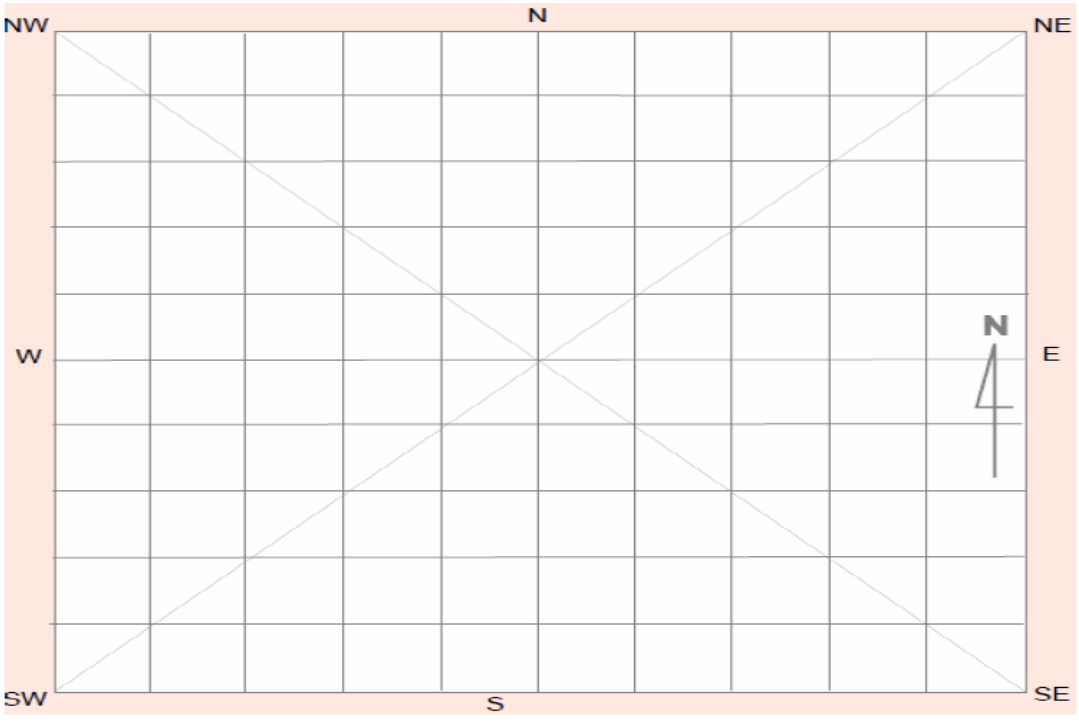
Features:

	Number of features	Length of feature(s) extent (m)	Width of feature (s) extent (m)	Scarred Trees: Scar Depth (cm)	Scarred Trees: Regrowth (cm)	Scarred Trees: Scar shape	Scarred Trees: Tree Species
5.							

Description:

Other Site Info:

Site plan



Site photographs

Description: Location, north

Description:

Description:

Description:

Site restrictions

Do you want to Restrict this site?:

Restriction type: Gender General Location

Why is this site restricted?:

Further information contact

Title **Surname** **First name**

Organisation:

Address:

Phone: **E-mail:**

Appendix E

Cultural values mapping report (confidential)

EMM
creating opportunities

This report is not for public distribution.

Should you or your organisation wish to view the cultural values mapping report, please contact the Tweed Shire Council for their consideration.

Appendix F

Historical research in recovered cultural material in the 1980s

EMM
creating opportunities

FILE NOTE

Artefacts removed from Doon Doon Creek during Clarrie Hall Dam (CHD) construction (early 1980s) - Enquiries made by Tweed Shire Council staff regarding Scar Tree and Grinding Groove

Background

At the request of the Aboriginal Advisory Committee at its meeting 01.04.2011, Tweed Shire Council Water Unit staff pursued information regarding the removal of artefacts of significance to the aboriginal community during construction of the CHD during the early 1980s.

The (1979?) EIS stated on page 54 that the artefacts should be removed and transferred to a local display area under the supervision of NPWS. The artefacts are listed in the EIS. The key artefacts are a scar tree that was situated near the original creek and a grinding grove situated in the exposed rock ledge adjacent to the original creek.

Initial investigations focussed on NPWS staff (past and present) and any knowledge they have about the removal of the artefacts and their current location.

However, each conversation led to further possible sources of information, which were also followed up on. Significant points from the various conversations with the various entities are noted below. A summary of all entities contacted is contained in a separate list at the back.

Enquiries were carried out by and on behalf of Tweed Shire Council by Tim Mackney (NSW Public Works) and Carol Chandler (TSC Water Unit).

Summary

Unfortunately, despite exhausting all possible leads, the whereabouts of the artefacts are still unknown.

According to Mark Yabsley (Public Works Project Engineer during the construction of CHD), the last time the location of the artefacts was known was towards the end of construction of CHD in the early 1980s.

> *"both artefacts were recovered. The groove was carefully cracked out with a small amount of explosive and taken back to the viewing area. The tree was cut down and the scar section was cut out of the tree and also taken back to the viewing area. The viewing area was an open-sided, shingle roofed pavilion (known as the Pizza Hut) with a concrete floor and display boards, on the eastern side of the dam wall. Both artefacts were placed there for viewing."*

Unfortunately, no one contacted has seen the artefacts since that time.

A small number of photographs showing both the grinding groove and the scar tree have been located and digitally scanned. These are stored on Tweed Shire Council's water unit operations drive and records management system (ECM). Electronic copies and hardcopy printouts were also provided to the AAC.

Record of Contacts

23/5/2011
NPWS - Murwillumbah Katrina 6670 8600
Lance Tarvey - Murwillumbah

- No office in Tweed then, was managed out of Kyogle.
- Managed by Greg Croft back then. Regular office was Grafton.
- Harry Crammer @ Nelson Bay NP 02 6588 5521
- John Hunter - ecologist NP (retired), Lance will ask him. 6654 5498
- Guy Holloway was Regional Manager. Lance will ask him.
- Try Ashley Moran (Aboriginal Officer NR Heritage and Conservation) Aboriginal Sites database? 6650 7110 (Coffs)

Harry Cramer NPWS Nelson Bay 6588 5521

- Minjungbal Museum
- Harry was an anthropologist based in Armidale NSW, back then.
- Adrian Piper did the Archaeological, 54 The Quarter Deck, Tweed Heads 07 5599 1341
- Call Cheryl Brown at NPWS Hurstville.

Gary Croft NPWS 6650 7110 was the Senior Ranger, Kyogle.

- John Hunter was a ranger then.
- Supervision probably ran out of Grafton then. Ray Kelly was Senior Site Officer (deceased).
- Hilton Naden (head of Cultural Heritage - Coffs Harbour) 6659 8259, get him to check database.
- Believes database the best place to start. It will record location of any removed artefacts.

24/5/2011
Hilton Naden.

- Cultural Heritage section only started in 1996.
- Would have been responsibility of local office back then, lots of records lost from local offices over the years (floods, fires, etc).
- Often went to universities, back then. Who looked after the artefacts? SCU? More likely Armidale ?UNE. ?Other
- Email Hilton.naden@environment.nsw.gov.au with AHIMS.

Ian Fox 02 6677 0260 or 0403 083 489

- Will ask Minjungbal Museum whether they might have it.
- Scar tree and groove included in AHIMS database register.

Adrian Piper 07 5599 1341 (Archaeologist who prepared the EIS for CHD)

- No idea when, if or where they were removed. He had no direct part in the removal, his involvement ceased after production of the report.
- Grinding groove was in sandstone
- Moreton Bay chestnut
- Lyle Roberts (from Lismore, brother Frank) visited the site with Adrian and knew the groove (was an old man then).
- Doesn't believe that he submitted location record sheets with his report.
- Doesn't believe that it would have been handed over to Minjungbal Museum- he is still locally involved with community and would have heard.

Cheryl Brown (NSW Dept of Environment and Heritage)

- Hurstville (Head Office) - Aboriginal Heritage Section
    - 9585 6470 Cheryl Brown (Site Records), someone may need to do research (library) in Sydney.

Ashley Moran 6627 0205 (Aboriginal Officer NR Heritage and Conservation). Called again on 25/5/2011 0428 262 320.

26/5/2011

Bill Oates, UNE Heritage Centre 6773 6555

- UNE does have a museum & store room of artefacts. woates@une.edu.au
- TM to send email so he can check within UNE.

10/6/2011

Lance Tarvey - Aboriginal Sites database NPWS

- Lance spoke to both John Hunter and Guy Holloway. Unfortunately no leads for us to pursue. They also suggest that the artefacts could have gone to Minjungbal. They don't recall them being removed. Suggest they might have been left and inundated. Lance also suggested the Information Centre in Murwillumbah on Tweed Valley Way has aboriginal relics - might be worth checking. Only other remote possibility would be Murwillumbah Museum. Call Andy Remanis @ info Centre 6677 9009
- Lance will talk to Ashley Moran too.

Murwillumbah Visitor Info centre 6672 1340 - Sunnah?

- Tracey M Has been there the longest - on leave until Tuesday, call her on 6672 4955.

Andy Remanis (Info Centre 6677 9009)

- Has just rationalised & catalogued the store room at the Visitor Info Centre - he is certain that neither artefact is there.
- Lesley Buckley - Arts Cultural Advisor at TSC, suggested talk to Gary Corbett

Gary Corbett (TSC)

- Check with Ron and Helena Duckworth
- Definitely don't have anything like it in TSC's collection
- Queried whether Minjungbal was opened back then, according to the internet it was opened in 1988, but informal museum existed in a local home from 1967.

22/6/2011

Ashley Moran (Aboriginal Officer NR Heritage and Conservation) 6627 0205

- Cheryl Brown had asked him to contact TSC
- Suggests that most communities would not like to hold onto those types of removed artefacts for "superstitious" reasons
- Mr Sabu Dunn (deceased) was in Ashley's position previously. Also involved was Ms Jalanda Gonda who still lives in Ballina. Ashley is unsure how to contact her.
- Suggested contacting other Museums
  → National Museum has displays of artefacts from Tweed (02) 6208 5000
  → Brisbane (07) 3403 8888
  → Sydney (02) 9251 5988

→ Murwillumbah
→ State Library search

- Also worth pursuing landholders who were around then. Ashley knows of several cases where local landholders took it upon themselves to preserve artefacts or "deals" were struck where they were made custodians.

23/6/2011

Ron and Helena Duckworth 6679 9121 (Landholders at Doon Doon when CHD was constructed)

- Spoke to Helena. She did not know anything about either artefact and had no knowledge of their removal or subsequent storage.
- Suggested someone further downstream may have known something if the artefacts were in that direction.

27/6/2011

Charlie and Carolyn Evans 6622 1303 / 0428 221 302 (Landholders at Doon Doon when CHD was constructed)

- Spoke to Carolyn and Charlie. They didn't know anything about either artefact and had no knowledge of their removal or subsequent storage.
- Suggested Council talks to: Gil Evans, Des Cecil, Ron Duckworth, or Tom Kinnear (lived opposite their place on east of creek, now deceased). [Note: spoke to a Mrs Kinnear but not a relative and did not know of any Kinnears still in the area]

Gil and Lynnette Evans 6672 3226 (Landholders at Doon Doon Creek when CHD was constructed)

- They didn't know anything about either artefact and had no knowledge of their removal or subsequent storage.
- Gil remembers:
  - some artefacts near the old dip site that is now under water
  - a university from Sydney inspected a cave at bottom of their property and supposedly took a few finds to Sydney in a sugar bag
- Lyn & Clive Leavy owned property fronting Kyogle road (deceased) told Gil that an old aboriginal giant "Tess" woman was buried there somewhere. He was never able to find evidence or have the story confirmed.
- Suggested Council talks to: Brian Littleford (retired Deputy Engineer who was around when constructed), Barry Harding (earthmoving Uki who undertook some of the clearing works), Lindsey or Allan Cram (now at Commissioner's Creek), the Smith boys.

John Smith 6679 5110 (Landholder at Doon Doon when CHD was constructed)

- Recalls several caves and items on the creek opposite their place. Doesn't know anything about the scar tree.
- He remembers "Maddog" Madden who was the "powder monkey" on the construction site. He was supposed to have blasted out the piece of bedrock containing the grinding groove. John remembers being told that the piece had been taken to the dam wall (to be put on display) but he never saw it himself.
- *NOTE: This account contradicts that of David Williamson (retired Lismore NSW Public Works engineer involved in the construction of the dam) who refuted any suggestion that the groove was blasted, saying that it had been cut out with a concrete saw. David did not know where the grinding groove was removed to.*

Several NSW Public Works engineers who worked on the construction of the dam were consulted.

- George Samios 9372 7804 was a design engineer based in Sydney and only visited the site on a few occasions. He has no recollection of the artefacts. George offered to contact John McCartney who was the Resident Engineer for Public Works on the project and was on the job from the beginning.
- Mark Stahlut 6626 5600, now based at NSW Public Works in Lismore, was a construction engineer on the later stages of the construction. He has no recollection of the scar tree but does recall a large piece of rock with a grinding (?) groove in the workshop on site. He does not know where the artefacts ended up. Mark suggested Barry Harding, based in Uki, who as a contractor did much of the earthworks may be able to provide more information.
- David Williamson - refer comments above.
- *NOTE: George Samios was unable to contact John McCartney or find any current contact details.*

29/6/2011

Des and Donna Cecil (Landholders at Doon Doon when CHD was constructed)

- They didn't know anything about either artefact and had no knowledge of their removal or subsequent storage. They both knew of caves in the area.
- Suggested Council talks to Mr Jarrett who lives in a caravan at the top of the hill to the SW of the dam. Des will talk to him and get back to TM.

Kirsty Andrew (TSC - Tweed River Regional Museum)

- Does not know of any local aboriginal artefacts at the Murwillumbah Museum. There are some generic items, but these are not of local significance.
- Council provided any local aboriginal artefacts of significance to the Minjungbal Museum when Council took over running of the Murwillumbah Museum in 2005/06.
- Ron Johansen - used to be President of the Historical Society - call the Museum on Fridays 6672 1865

Museum of Brisbane (07) 3403 4355

- Information Officer: Diana → unlikely to part of their collection because they only deal with Brisbane. She will check with their collections manager and get back to me if that is not the case. Suggested Qld Museum more likely.

Queensland Museum (07) 3840 7555/4

- Senior Curator Aboriginal Artefacts: Theresa Chelepy. Email sent to Theresa.

Museum of Sydney (02) 9251 5988

- Curator: Anara Walden - left message
- Anara confirmed 30.06.2011 that they did not have any artefacts fitting that description

National Museum (02) 6208 5000

- Duty Curator: Jennifer Wilson. Email sent to Jennifer. See below
- Try Australian Museum (different from NMA) and NSW Powerhouse

Barry Harding 6679 5110 (earthmoving contractor Uki)

- Andrew from Harding's Contractors rang back 30.06.2011. Back then Barry was working machinery from start to finish on the dam construction project, however he didn't know anything about either artefact and had no knowledge of their removal or subsequent storage.

30/6/2011
Allan Cram 6679 9134 (Landholder at Doon Doon when CHD was constructed)

- Construction finalised in first half of 1982 and was to have filled in six months or more, but rained so much it filled in a weekend!
- He didn't know anything about either artefact and had no knowledge of their removal or subsequent storage.
- Max Boyd, Peter Smith and Don Beck were on Council then.
- Ray Brims lived about 1km downstream of the rock ledge where the grinding groove was. He now lives in Murwillumbah.
- Col Small was dam manager back then but is now deceased.

Col Gorrell 6679 9134 (Landholder at Doon Doon when CHD was constructed)

- Spoke to Col. He did not know anything about either artefact and had no knowledge of their removal or subsequent storage.

27/8/12
1. Queensland Museum: Spoke to Theresa Chelepy, Senior Curator Aboriginal Artefacts at Queensland Museum. She checked her database for both artefacts and nothing found.

2. National Museum Canberra: Spoke to Steven Munro, Duty Curator who also spoke to Jennifer Wilson, who said that she had spoken to several people in the National Museum, including David Corrs and she is confident that they do not have the artefacts and that they could more likely be at the Australian Museum.

3. Australian Museum: Left message with Phil Gordon, Aboriginal Heritage Project Officer of the Australian Museum, several times. (27/8, 28/8, 29/8, 12/9) Have emailed him. Received response from Rebecca Fisher, Collections Officer - Culture that they do not have these artefacts. (ECM 56927021). Have also sent an email to Allison Dejanovic, Collections Officer Indigenous Archaeology

28/8/12
1. Spoke to Max Boyd, he has no knowledge of either artefact.

2. Spoke with Ray Brims, he has no knowledge of any aboriginal artefacts on that land. He owned 400 acres there and 300 of them are under water. He knew of other Aboriginal sites in the area, but nothing of the two artefacts.

3. Spoke to Don Beck, he has no knowledge of either artefact.

29/8/12
Sent email to South Australian Museum because when checking the State Library of Qld website, there is information about the Aboriginal collection held by them (Tindale Collection) and the fact that a large part of the research is held in South Australia.
Emails were sent to the Assistant Aboriginal Collections manager (Tara Collier) and they had no artefacts from that area. She suggested that I check with the Archaeology researcher at the SA Museum and Senior Research Fellow Flinders

University (Dr Keryn Walshe) and she was unable to locate any artefacts that belong to this area in their collection.(email ECM 56923746)

7/9/12
Rang Tweed River Regional Museum (Ron Johansen is deceased) and they have promised to look at their database. (Tony Clark or Carol)

12/9/12
1. Spoke to Brian Littleford, Deputy Engineer at the time of the building of the CHD, who remembers nothing of these two artefacts. He suggested speak to John Henley or Mike Rayner. (ex Council staff).

2. Spoke to Peter Smith (on Council with Max Boyd and Don Beck) and he also knew nothing of the artefacts but suggested John Henley.

3. Spoke to John Henley, He said that PW built the dam and then handed it over to Council; hence the day to day issues were not handled by Council staff. If anyone might know of these artefacts it would be Mike Rayner, and probably more likely it would have been Peter Border. He is quite confident in saying that Councillors would not have known. He suggested that if the Work diaries for PW could be found the details would be mentioned in there.

4. Have tried several times to find Ms Jolanda Gonda and cannot find any contact details. There are 3 Gondas living in Tweed Shire, but once again no phone contact details, only addresses. Checked Dataworks and nothing there for Jolanda Gonda.

13/9/12
1. Contacted NSW Powerhouse Museum by email.

2. Contacted Armidale Aboriginal Cultural Centre and Keeping Place by email and sent pictures, as per their request. Received reply that they do not have these artefacts (ECM 56924781)

3. State Library of Queensland: contacted by email. Received reply, they do not have these artefacts. (ECM 56923759)

17/9/12
Received confirmation from Rebecca Fisher, Collections Officer, Australian Museum that they do not have the artefacts.

3/10/12
Searched AHIMs database with no results.

8/10/12
1. Received confirmation from Allison Dejanovic, Collections Officer, Indigenous Archaeology, Australian Museum that the artefacts are not in their indigenous collection.

2. Received confirmation from Information Services, Corporate Services, NSW Dept of Finance and Services that they do not have any Engineers Public Works diaries from the time of the building of Clarrie Hall Dam.

31/10/12

Received confirmation from Converge Heritage and Community that they have had no results in trying to locate the artefacts in the local Minjungbal area.

2/11/12
1. Received confirmation from UNE (Heritage Centre) that the artefacts are not held in the UNE Heritage Centre.

2. Received confirmation from Paul Wilson, Acting Archives Manager and James Wilson-Miller, Curator Powerhouse Museum, Sydney that they do not have these artefacts in their collection.

3. Tim Mackney met Colin Lewis (ex Clarrie Hall Dam construction Project Engineer) at a plant visit in October. Colin has confirmed that he has reports and pictures from that construction and will deliver these to TSC at the beginning of December.

16/11/12
Tweed River Regional Museum has confirmed that they do not have these artefacts.

12/12/12
TM met with Col Lewis from TycoWater. Col was Public Works Construction Project Engineer for the concreting works during construction of the dam.

- Col provided TM with some construction reports and construction photos to be copied for Council's records. None of the documents contained information regarding the artefacts, and Col didn't know anything about the artefacts.
- Clearing and stripping works within the inundation area were completed prior to Col's arrival on site.
- Col suggested either John McCartney (Public Works Resident Engineer during the construction of CHD) or Mark Yabsley (Public Works Project Engineer during the construction of CHD) may be able to provide more information. Mark possibly works for Sinclair Knight Mertz in Newcastle. Col believes John McCartney worked for Sydney 2000, but he is unsure of his current whereabouts.
- Col also remembers a local carpenter named Barry who worked on the job and may have known something about the artefacts. Col seemed to remember Barry had an association with the Brims family, but could not recall any further details.

18/3/2013
After several attempts and several conversations with Gillian, Mark Yabsley's assistant at Sinclair Knight Mertz, I spoke to Mark today. He said that both artefacts had been recovered, and in fact he was in charge of recovering the axe grinding grove. The groove was carefully cracked out with a small amount of explosive and taken back to the viewing area. The tree was cut down and the scar section was cut out of the tree and also taken back to the viewing area. The viewing area was an open-sided, shingle roofed pavilion (known as the Pizza Hut) with a concrete floor and display boards, on the eastern side of the dam wall. Both artefacts were placed there for viewing. Mark also said that he attended school, both primary and secondary in Murwillumbah and it was a source of pleasure to him, to come to Murwillumbah and be part of the major project of the building of the Clarrie Hall Dam.

Summary of entities contacted

Museums contacted
National Museum, Canberra
Queensland Museum, Brisbane
Museum of Brisbane
Museum of Sydney
Tweed River Regional Museum (Murwillumbah)
State Library of Queensland
Australian Museum, Sydney
NSW Powerhouse Museum
Armidale Aboriginal Cultural Centre and Keeping Place
Minjungbal Museum
South Australian Museum

Universities
University of New England (UNE Heritage Centre)
University of Queensland, Fryer Library

Aboriginal Heritage databases
NPWS
Minjungbal Museum
Cultural Heritage Coffs Harbour
Armidale Aboriginal Cultural Centre and Keeping Place
Aboriginal Heritage Information Management System (AHIMS), Office of Environment and Heritage

People contacted
Lance Tarvey NPWS
Harry Cramer NPWS
Gary Croft NPWS
Hilton Naden NSW Dept of Environment and Heritage
Ian Fox Converge Heritage and Community
Adrian Piper retired archaeologist who prepared the EIS for CHD
Cheryl Brown NSW Dept of Environment & Heritage (Aboriginal Heritage section)
Ashley Moran (Aboriginal officer NR Heritage and Conservation)
Bill Oates UNE Heritage Centre
Andy Remanis (Murwillumbah Visitors Centre)
Lesley Buckley resigned, TSC Arts Cultural Advisor
Gary Corbett retired, TSC Manager of Community and Cultural Services
Ron and Helena Duckworth (landholders at Doon Doon when CHD was constructed)
Charlie and Carolyn Evans (landholders, as above)
Gil and Lynette Evans (landholders, as above)
John Smith (landholder, as above)
George Samios, Public Works Design Engineer for construction of Clarrie Hall Dam
Mark Stahlut, Public Works Project Engineer on the construction of Clarrie Hall Dam
Des and Donna Cecil (Landholders, as above)
Kirsty Andrew TSC Museum Assistant
Barry Harding from Hardings Contractors
Allan Cram (landholder, as above)
Col Gorrell (landholder, as above)
Max Boyd TSC Councillor at the time the dam was built
Ray Brims TSC Councillor at the time the dam was built

Don Beck TSC Councillor at the time the dam was built
Peter Smith TSC Councillor at the time the dam was built
Brian Littleford retired, TSC Deputy Engineer at the time CHD was constructed
John Henley retired, TSC staff at the time CHD was constructed
Colin Lewis, ex Project Engineer on the construction of Clarrie Hall Dam
Mark Yabsley ex project engineer on the construction of Clarrie Hall Dam and now at Sinclair Knight Mertz.

Other organisations
Murwillumbah Visitors Centre
NR Heritage and Conservation
Office of Environment and Heritage
Converge Heritage and Community
NSW Public Works

Georgia Burnett

From: Ian Fox <asset@better.net.au>
Sent: Thursday, 6 February 2014 8:58 PM
To: 'Jackie McDonald'
Subject: FW:
Attachments: Artefacts removed from Doon Doon Creek during CHD construction.docx; CHD axe groove.pdf; CHD Scar tree.pdf; CHD axe grinding groove.pdf

Jackie

Read Tim's e-mail below, then the attached document "Artefacts removed from Doon Doon Creek during CHD construction". I think this document speaks for itself about how much work Tim actually did in trying to track the objects down.

FYI, immediately below in green is part of my response to this e-mail from Tim.

Ian.

I have just finished reading your contact list for the CHD Aboriginal artefacts. My, what a task you were set and I think you have done an outstanding job of trying to track the objects down. I can add a little more, but it is not necessary for you to amend your summary.

I have spoken with an old school friend of mine, Graham Cook, who was a junior engineer on the CHD construction project. He corroborates some of your information. (By complete coincidence Teena and I had dinner with him in Canberra weekend before last).

He remembered the axe grinding groove(s) but not the scarred tree. Graham recalls that there were at least two sites of axe grooves along the original Doon Doon Creek watercourse. He remembers that a powder monkey, known for his heavy handed approach, was given the task of blasting one of the sites to enable a recovery before flooding. Unfortunately too much powder was used and the slab flipped up and into the then deepest pool along the creek. He was sure this was very near the dam wall and that another site was further upstream in the vicinity of the present day Crams Farm picnic area. A decision was made not to attempt recovery of the blasted slab and a more cautious approach was used for subsequent recovery of a different site. Graham did not mention any knowledge of objects on display or eventual whereabouts. He did confirm the dam filled very quickly (over one weekend) from when it was completed and reckons there is some machinery next to the wall that quickly became flooded and could not be recovered.

I met Col Gorrel a few years ago and he pointed out where a cave is located under the present dam surface. It is across from his present day home. He remembered that it was inspected but didn't know if artefacts were recovered.

(02) 6677 1026 | 0403 083 489
asset@better.net.au | www.ianfoxassociates.com.au
Postal: PO Box 87 Burringbar NSW 2483
Office: 98 Greenvale Court Burringbar NSW 2483
(Office entrance off Heron Road) ABN: 67 153 240 872

IANFOX & Associates
Paleo-environmental and cultural history consultants.

From: Tim Mackney [mailto:TMackney@tweed.nsw.gov.au]
Sent: Monday, 9 December 2013 3:09 PM
To: David Oxenham
Cc: Anthony Burnham; Sharon Hogan; Ian Fox; Anne McLean
Subject:

David,

After a prolonged period of research and investigation, we have finally reached an unfortunate dead-end regarding the current location of artefacts that were found during the original construction of Clarrie Hall Dam.

Attached is a detailed chronology of our investigations and information gleaned from over 20 organisations & agencies, and over 30 individuals since May 2011.

Unfortunately, despite exhausting all possible leads, the whereabouts of the artefacts are still unknown.

According to one of those contacted: Mark Yabsley (Public Works Project Engineer on site during the construction of Clarrie Hall Dam), the last time the location of the artefacts was known was towards the end of construction of CHD in the early 1980s.

> *"both artefacts were recovered. The groove was carefully cracked out with a small amount of explosive and taken back to the viewing area. The tree was cut down and the scar section was cut out of the tree and also taken back to the viewing area. The viewing area was an open-sided, shingle roofed pavilion (known as the Pizza Hut) with a concrete floor and display boards, on the eastern side of the dam wall. Both artefacts were placed there for viewing."*

Unfortunately, no one contacted has seen the artefacts since that time. The "Pizza Hut" viewing platform was inspected prior to its demolition in October 2013, but did not contain the artefacts nor show any sign of them having previously been placed on exhibition.

A small number of photographs showing both the grinding groove and the scar tree have been located and digitally scanned. These are stored on Tweed Shire Council's water unit operations drive and records management system (ECM). Electronic copies and hardcopy printouts were also provided to the AAC. I have also attached copies to this email.

Given the this investigation was undertaken at the request of the Aboriginal Advisory Committee at its meeting 01.04.2011, it is probably appropriate that this information be provided to AAC in the near future.

Kind regards,

Tim Mackney
Project Manager
NSW Public Works
North Coast Region - Tweed
T: (02) 6670 2506
F: (02) 6670 2557
M: 0408 563 584

Sharon, please register in ECM under:

WATER - CAPITAL WORKS - DAMS
WATER HEADWORKS - DAMS - CLARRIE HALL - GENERAL
WATER HEADWORKS - DAMS - CLARRIE HALL - SPILLWAY UPGRADE
WATER MANAGEMENT - WATER SUPPLY AUGMENTATION
WATER MANAGEMENT - WATER SUPPLY AUGMENTATION - CLARRIE HALL DAM
WATER MANAGEMENT - WATER SUPPLY AUGMENTATION - COMMUNITY CONSULTATION

All official correspondence requiring a formal written response should be addressed to the General Manager, PO Box 816, Murwillumbah, 2484; or emailed to tsc@tweed.nsw.gov.au; or faxed to 02 6670 2429.

This email (including any attachments) is confidential and must only be used by the intended recipient(s) for the purpose(s) for which it has been sent. It may also be legally privileged and/or subject to copyright.

If you are not an intended recipient, any disclosure, distribution, copying or use of or reliance on this email (or any attachment) is strictly prohibited. If you have received this email in error, please promptly notify the sender by return email and then delete all copies of this email (and any attachments).
If you forward or otherwise distribute this email (or any attachment) you may be personally liable for a breach of confidentiality, an infringement of copyright, defamation or other legal liability.
Any opinions, views or conclusions expressed in this email (or any attachment) are those of the individual sender and may not necessarily reflect the official position of the Council.
www.tweed.nsw.gov.au

This email has been scanned by the MessageLabs Email Security System

---

Georgia Burnett

From: Jackie McDonald <mctogo2@gmail.com>
Sent: Tuesday, 5 September 2023 11:09 AM
To: Alan Williams
Cc: 'Paul J Buxton'; 'Grant Buxton'
Subject: Clarrie Hall Dam investigation re scarred tree and artefacts whereabouts
Attachments: FW:

CAUTION: This email originated outside of the Organisation.

Hi Alan,
As promised, I think this is the best communications and photos regarding the investigation we started back in 2011 regarding the whereabouts of the scarred tree and artefacts from the original start of the Clarrie Hall Dam project. It reached a dead end and all we have now are these photos.
Regards Jackie

Message protected by MailGuard: e-mail anti-virus, anti-spam and content filtering.
https://www.mailguard.com.au/mg

Report this message as spam

Appendix G

ELA (2021) Archaeological excavation data

EMM
creating opportunities

Table G.1 Test pit data, including size and artefacts numbers recovered

AHIMS #	Site name	Test pit	Test pit size (m^2)	Artefacts recovered (n)	Extrapolated artefacts recovered (n/m^2)
04-1-0264	CHD A17	B2	0.25	17	68
04-1-0254	CHD A27	D2	0.25	15	60
04-1-0264	CHD A17	B3	0.25	15	60
04-1-0264	CHD A17	B4	0.25	15	60
04-1-0295	CHD PAD 2	C2	0.25	15	60
04-1-0249	CHD-A48	C1	0.25	13	52
04-1-0264	CHD A17	C3	0.25	13	52
04-1-0264	CHD A17	C2	0.25	12	48
04-1-0295	CHD PAD 2	D3	0.25	12	48
04-1-0288	CHD PAD 9	C5	1	45	45
04-1-0281	CHD-A55	B3	0.25	11	44
04-1-0295	CHD PAD 2	B1	0.25	11	44
04-1-0254	CHD A27	D3	0.25	10	40
04-1-0281	CHD-A55	E2	0.25	10	40
04-1-0291	CHD PAD 6	E5	0.25	10	40
04-1-0254	CHD A27	D4	0.25	9	36
04-1-0249	CHD-A48	C5	0.25	8	32
04-1-0264	CHD A17	A5	0.25	8	32
04-1-0264	CHD A17	C1	0.25	8	32
04-1-0264	CHD A17	D2	0.25	8	32
04-1-0264	CHD A17	D4	0.25	8	32
04-1-0280	CHD A1	B1	0.25	8	32
04-1-0281	CHD-A55	B4	0.25	8	32
04-1-0281	CHD-A55	C3	0.25	8	32
04-1-0281	CHD-A55	H3	0.25	8	32
04-1-0296	CHD PAD 1	B9	1	31	31
04-1-0249	CHD-A48	C3	0.25	7	28
04-1-0254	CHD A27	C4	0.25	7	28
04-1-0264	CHD A17	A3	0.25	7	28
04-1-0281	CHD-A55	A2	0.25	7	28

Table G.1 Test pit data, including size and artefacts numbers recovered

AHIMS #	Site name	Test pit	Test pit size (m^2)	Artefacts recovered (n)	Extrapolated artefacts recovered (n/m^2)
04-1-0281	CHD-A55	B2	0.25	7	28
04-1-0288	CHD PAD 9	H2	0.25	7	28
04-1-0288	CHD PAD 9	C11	0.25	7	28
04-1-0295	CHD PAD 2	C3	0.25	7	28
04-1-0296	CHD PAD 1	C5	0.25	7	28
04-1-0264	CHD A17	B1	1	27	27
04-1-0249	CHD-A48	C2	0.25	6	24
04-1-0240	CHD-A38	A1	0.25	6	24
04-1-0254	CHD A27	C5	0.25	6	24
04-1-0254	CHD A27	C8	0.25	6	24
04-1-0264	CHD A17	D3	0.25	6	24
04-1-0264	CHD A17	D6	0.25	6	24
04-1-0281	CHD-A55	G2	0.25	6	24
04-1-0288	CHD PAD 9	D2	0.25	6	24
04-1-0295	CHD PAD 2	A2	0.25	6	24
04-1-0295	CHD PAD 2	C1	0.25	6	24
04-1-0295	CHD PAD 2	D2	0.25	6	24
04-1-0296	CHD PAD 1	B6	0.25	6	24
04-1-0288	CHD PAD 9	A5	0.25	5	20
04-1-0238	CHD A36	A8	0.25	5	20
04-1-0239	CHD-A37	D8	0.25	5	20
04-1-0239	CHD-A37	D11	0.25	5	20
04-1-0254	CHD A27	C3	0.25	5	20
04-1-0254	CHD A27	C7	0.25	5	20
04-1-0264	CHD A17	A4	0.25	5	20
04-1-0264	CHD A17	B6	0.25	5	20
04-1-0264	CHD A17	C5	0.25	5	20
04-1-0264	CHD A17	D1	0.25	5	20
04-1-0281	CHD-A55	A1	0.25	5	20
04-1-0281	CHD-A55	A4	0.25	5	20

Table G.1 Test pit data, including size and artefacts numbers recovered

AHIMS #	Site name	Test pit	Test pit size (m^2)	Artefacts recovered (n)	Extrapolated artefacts recovered (n/m^2)
04-1-0288	CHD PAD 9	A6	0.25	5	20
04-1-0288	CHD PAD 9	D10	0.25	5	20
04-1-0295	CHD PAD 2	A3	0.25	5	20
04-1-0295	CHD PAD 2	B2	0.25	5	20
04-1-0295	CHD PAD 2	B3	0.25	5	20
04-1-0296	CHD PAD 1	B4	0.25	5	20
04-1-0238	CHD A36	A1	1	16	16
04-01-0249	CHD-A48	B1	0.25	4	16
04-01-0249	CHD-A48	B2	0.25	4	16
04-01-0249	CHD-A48	B5	0.25	4	16
04-01-0249	CHD-A48	B11	0.25	4	16
04-1-0235	CHD-A30	B5	0.25	4	16
04-1-0237	CHD-A35	A2	0.25	4	16
04-1-0238	CHD-A36	A1	1	4	16
04-1-0238	CHD-A36	C1	0.25	4	16
04-1-0254	CHD A27	D9	0.25	4	16
04-1-0254	CHD A27	B1	0.25	4	16
04-1-0254	CHD A27	B3	0.25	4	16
04-1-0264	CHD A17	C6	0.25	4	16
04-1-0280	CHD A1	A6	0.25	4	16
04-1-0280	CHD A1	D2	0.25	4	16
04-1-0280	CHD A1	D4	0.25	4	16
04-1-0281	CHD-A55	A3	0.25	4	16
04-1-0281	CHD-A55	C4	0.25	4	16
04-1-0281	CHD-A55	C5	0.25	4	16
04-1-0281	CHD-A55	L2	0.25	4	16
04-1-0281	CHD-A55	N3	0.25	4	16
04-1-0288	CHD PAD 9	A8	0.25	4	16
04-1-0288	CHD PAD 9	A10	0.25	4	16
04-1-0288	CHD PAD 9	B6	0.25	4	16

Table G.1 Test pit data, including size and artefacts numbers recovered

AHIMS #	Site name	Test pit	Test pit size (m^2)	Artefacts recovered (n)	Extrapolated artefacts recovered (n/m^2)
04-1-0288	CHD PAD 9	A5	1	4	16
04-1-0295	CHD PAD 2	A1	0.25	4	16
04-1-0296	CHD PAD 1	B7	0.25	4	16
04-1-0296	CHD PAD 1	B8	0.25	4	16
04-1-0296	CHD PAD 1	B10	0.25	4	16
04-1-0264	CHD A17	C4	1	15	15
04-01-0249	CHD-A48	C6	0.25	3	12
04-01-0249	CHD-A48	C8	0.25	3	12
04-01-0249	CHD-A48	C10	0.25	3	12
04-01-0249	CHD-A48	A2	0.25	3	12
04-1-0237	CHD-A35	A7	0.25	3	12
04-1-0237	CHD-A35	A14	0.25	3	12
04-1-0239	CHD-A37	A13	0.25	3	12
04-1-0239	CHD-A37	A14	0.25	3	12
04-1-0254	CHD A27	D1	0.25	3	12
04-1-0254	CHD A27	C1	0.25	3	12
04-1-0264	CHD A17	A1	0.25	3	12
04-1-0264	CHD A17	A2	0.25	3	12
04-1-0264	CHD A17	A6	0.25	3	12
04-1-0264	CHD A17	B5	0.25	3	12
04-1-0264	CHD A17	D7	0.25	3	12
04-1-0264	CHD A17	E3	0.25	3	12
04-1-0280	CHD A1	B2	0.25	3	12
04-1-0280	CHD A1	C1	0.25	3	12
04-1-0281	CHD-A55	B1	0.25	3	12
04-1-0281	CHD-A55	F3	0.25	3	12
04-1-0281	CHD-A55	G4	0.25	3	12
04-1-0281	CHD-A55	Q3	0.25	3	12
04-1-0281	CHD-A55	Q4	0.25	3	12
04-1-0281	CHD-A55	R4	0.25	3	12

Table G.1 Test pit data, including size and artefacts numbers recovered

AHIMS #	Site name	Test pit	Test pit size (m^2)	Artefacts recovered (n)	Extrapolated artefacts recovered (n/m^2)
04-1-0288	CHD PAD 9	H4	0.25	3	12
04-1-0288	CHD PAD 9	A1	0.25	3	12
04-1-0288	CHD PAD 9	A3	0.25	3	12
04-1-0288	CHD PAD 9	B11	0.25	3	12
04-1-0288	CHD PAD 9	C4	0.25	3	12
04-1-0288	CHD PAD 9	D1	0.25	3	12
04-1-0288	CHD PAD 9	E2	0.25	3	12
04-1-0288	CHD PAD 9	B2	0.25	3	12
04-1-0295	CHD PAD 2	B5	0.25	3	12
04-1-0295	CHD PAD 2	D4	0.25	3	12
04-1-0296	CHD PAD 1	A4	0.25	3	12
04-1-0296	CHD PAD 1	A7	0.25	3	12
04-1-0296	CHD PAD 1	B1	0.25	3	12
04-1-0296	CHD PAD 1	B2	0.25	3	12
04-1-0296	CHD PAD 1	C6	0.25	3	12
04-1-0296	CHD PAD 1	C12	0.25	3	12
04-1-0291	CHD PAD 6	E3	0.25	3	12
04-1-0291	CHD PAD 6	E4	0.25	3	12
04-01-0249	CHD-A48	A8	0.25	2	8
04-01-0249	CHD-A48	C11	0.25	2	8
04-1-0235	CHD-A30	A1	0.25	2	8
04-1-0235	CHD-A30	A5	0.25	2	8
04-1-0235	CHD-A30	A1	0.25	2	8
04-1-0235	CHD-A30	B4	0.25	2	8
04-1-0235	CHD-A30	C3	0.25	2	8
04-1-0237	CHD-A35	B6	0.25	2	8
04-1-0238	CHD-A36	A1	1	2	8
04-1-0238	CHD-A36	A4	0.25	2	8
04-1-0238	CHD-A36	B3	0.25	2	8
04-1-0238	CHD-A36	C2	0.25	2	8

Table G.1 Test pit data, including size and artefacts numbers recovered

AHIMS #	Site name	Test pit	Test pit size (m^2)	Artefacts recovered (n)	Extrapolated artefacts recovered (n/m^2)
04-1-0239	CHD-A37	A15	0.25	2	8
04-1-0239	CHD-A37	A17	0.25	2	8
04-1-0239	CHD-A37	C4	0.25	2	8
04-1-0239	CHD-A37	D5	0.25	2	8
04-1-0239	CHD-A37	D7	0.25	2	8
04-1-0239	CHD-A37	A3	0.25	2	8
04-1-0240	CHD-A38	A4	0.25	2	8
04-1-0254	CHD A27	C10	0.25	2	8
04-1-0254	CHD A27	D10	0.25	2	8
04-1-0254	CHD A27	A1	0.25	2	8
04-1-0254	CHD A27	B4	0.25	2	8
04-1-0254	CHD A27	E2	0.25	2	8
04-1-0254	CHD A27	E4	0.25	2	8
04-1-0254	CHD A27	E1	0.25	2	8
04-1-0264	CHD A17	E5	0.25	2	8
04-1-0280	CHD A1	C3	0.25	2	8
04-1-0280	CHD A1	F2	0.25	2	8
04-1-0280	CHD A1	G1	0.25	2	8
04-1-0281	CHD-A55	D2	0.25	2	8
04-1-0281	CHD-A55	E3	0.25	2	8
04-1-0281	CHD-A55	F1	0.25	2	8
04-1-0281	CHD-A55	F2	0.25	2	8
04-1-0281	CHD-A55	J1	0.25	2	8
04-1-0281	CHD-A55	M3	0.25	2	8
04-1-0281	CHD-A55	N2	0.25	2	8
04-1-0281	CHD-A55	P2	0.25	2	8
04-1-0281	CHD-A55	P3	0.25	2	8
04-1-0281	CHD-A55	Q1	0.25	2	8
04-1-0288	CHD PAD 9	H3	0.25	2	8
04-1-0288	CHD PAD 9	H5	0.25	2	8

Table G.1 Test pit data, including size and artefacts numbers recovered

AHIMS #	Site name	Test pit	Test pit size (m^2)	Artefacts recovered (n)	Extrapolated artefacts recovered (n/m^2)
04-1-0288	CHD PAD 9	J1	0.25	2	8
04-1-0288	CHD PAD 9	J2	0.25	2	8
04-1-0288	CHD PAD 9	J3	0.25	2	8
04-1-0288	CHD PAD 9	K2	0.25	2	8
04-1-0288	CHD PAD 9	L1	0.25	2	8
04-1-0288	CHD PAD 9	L3	0.25	2	8
04-1-0288	CHD PAD 9	A2	0.25	2	8
04-1-0288	CHD PAD 9	A7	0.25	2	8
04-1-0288	CHD PAD 9	A9	0.25	2	8
04-1-0288	CHD PAD 9	A12	0.25	2	8
04-1-0288	CHD PAD 9	B4	0.25	2	8
04-1-0288	CHD PAD 9	C1	0.25	2	8
04-1-0288	CHD PAD 9	C12	0.25	2	8
04-1-0288	CHD PAD 9	D3	0.25	2	8
04-1-0288	CHD PAD 9	E6	0.25	2	8
04-1-0288	CHD PAD 9	F3	0.25	2	8
04-1-0288	CHD PAD 9	F4	0.25	2	8
04-1-0288	CHD PAD 9	G6	0.25	2	8
04-1-0288	CHD PAD 9	E3	0.25	2	8
04-1-0288	CHD PAD 9	D6	0.25	2	8
04-1-0288	CHD PAD 9	M1	0.25	2	8
04-1-0295	CHD PAD 2	B4	0.25	2	8
04-1-0295	CHD PAD 2	D1	0.25	2	8
04-1-0295	CHD PAD 2	D5	0.25	2	8
04-1-0296	CHD PAD 1	A2	0.25	2	8
04-1-0296	CHD PAD 1	C3	0.25	2	8
04-1-0296	CHD PAD 1	C4	0.25	2	8
04-1-0291	CHD PAD 6	C1	0.25	2	8
04-1-0291	CHD PAD 6	E6	0.25	2	8
04-1-0291	CHD PAD 6	E7	0.25	2	8

Table G.1 Test pit data, including size and artefacts numbers recovered

AHIMS #	Site name	Test pit	Test pit size (m^2)	Artefacts recovered (n)	Extrapolated artefacts recovered (n/m^2)
04-1-0292	CHD PAD 5	A3	0.25	2	8
04-1-0292	CHD PAD 5	B7	0.25	2	8
04-01-0249	04-1-0249	A3	0.25	1	4
04-01-0249	04-1-0249	A11	0.25	1	4
04-01-0249	04-1-0249	A12	0.25	1	4
04-01-0249	04-1-0249	B3	0.25	1	4
04-01-0249	04-1-0249	B4	0.25	1	4
04-01-0249	04-1-0249	B6	0.25	1	4
04-01-0249	04-1-0249	B10	0.25	1	4
04-01-0249	04-1-0249	B12	0.25	1	4
04-01-0249	04-1-0249	C4	0.25	1	4
04-01-0249	04-1-0249	C13	0.25	1	4
04-1-0235	CHD-A30	A2	0.25	1	4
04-1-0235	CHD-A30	A3	0.25	1	4
04-1-0235	CHD-A30	A7	0.25	1	4
04-1-0235	CHD-A30	D1	0.25	1	4
04-1-0235	CHD-A30	E2	0.25	1	4
04-1-0237	CHD-A35	A15	0.25	1	4
04-1-0237	CHD-A35	D1	0.25	1	4
04-1-0237	CHD-A35	D3	0.25	1	4
04-1-0238	CHD-A36	A2	0.25	1	4
04-1-0238	CHD-A36	A3	0.25	1	4
04-1-0238	CHD-A36	A5	0.25	1	4
04-1-0238	CHD-A36	A6	0.25	1	4
04-1-0238	CHD-A36	A9	0.25	1	4
04-1-0238	CHD-A36	B2	0.25	1	4
04-1-0238	CHD-A36	B1	0.25	1	4
04-1-0238	CHD-A36	C3	0.25	1	4
04-1-0238	CHD-A36	D2	0.25	1	4
04-1-0239	CHD-A37	A9	0.25	1	4

Table G.1 Test pit data, including size and artefacts numbers recovered

AHIMS #	Site name	Test pit	Test pit size (m^2)	Artefacts recovered (n)	Extrapolated artefacts recovered (n/m^2)
04-1-0239	CHD-A37	A16	0.25	1	4
04-1-0239	CHD-A37	B1	0.25	1	4
04-1-0239	CHD-A37	A1	0.25	1	4
04-1-0239	CHD-A37	A5	0.25	1	4
04-1-0240	CHD-A38	A3	0.25	1	4
04-1-0240	CHD-A38	A5	0.25	1	4
04-1-0240	CHD-A38	B1	0.25	1	4
04-1-0254	CHD A27	D5	0.25	1	4
04-1-0254	CHD A27	D6	0.25	1	4
04-1-0254	CHD A27	D7	0.25	1	4
04-1-0254	CHD A27	D8	0.25	1	4
04-1-0254	CHD A27	D13	0.25	1	4
04-1-0254	CHD A27	A2	0.25	1	4
04-1-0254	CHD A27	B8	0.25	1	4
04-1-0254	CHD A27	B11	0.25	1	4
04-1-0254	CHD A27	B12	0.25	1	4
04-1-0254	CHD A27	B13	0.25	1	4
04-1-0254	CHD A27	C11	0.25	1	4
04-1-0254	CHD A27	C12	0.25	1	4
04-1-0254	CHD A27	E3	0.25	1	4
04-1-0254	CHD A27	E5	0.25	1	4
04-1-0254	CHD A27	E6	0.25	1	4
04-1-0254	CHD A27	E7	0.25	1	4
04-1-0264	CHD A17	E4	0.25	1	4
04-1-0280	CHD A1	A4	0.25	1	4
04-1-0280	CHD A1	B7	0.25	1	4
04-1-0280	CHD A1	B11	0.25	1	4
04-1-0280	CHD A1	C2	0.25	1	4
04-1-0280	CHD A1	E4	0.25	1	4
04-1-0280	CHD A1	F1	0.25	1	4

Table G.1 Test pit data, including size and artefacts numbers recovered

AHIMS #	Site name	Test pit	Test pit size (m^2)	Artefacts recovered (n)	Extrapolated artefacts recovered (n/m^2)
04-1-0281	CHD-A55	C1	0.25	1	4
04-1-0281	CHD-A55	D1	0.25	1	4
04-1-0281	CHD-A55	D3	0.25	1	4
04-1-0281	CHD-A55	E1	0.25	1	4
04-1-0281	CHD-A55	G3	0.25	1	4
04-1-0281	CHD-A55	H2	0.25	1	4
04-1-0281	CHD-A55	K1	0.25	1	4
04-1-0281	CHD-A55	K2	0.25	1	4
04-1-0281	CHD-A55	P4	0.25	1	4
04-1-0288	CHD PAD 9	H1	0.25	1	4
04-1-0288	CHD PAD 9	J4	0.25	1	4
04-1-0288	CHD PAD 9	K1	0.25	1	4
04-1-0288	CHD PAD 9	K3	0.25	1	4
04-1-0288	CHD PAD 9	K5	0.25	1	4
04-1-0288	CHD PAD 9	L5	0.25	1	4
04-1-0288	CHD PAD 9	A4	0.25	1	4
04-1-0288	CHD PAD 9	A11	0.25	1	4
04-1-0288	CHD PAD 9	B3	0.25	1	4
04-1-0288	CHD PAD 9	B8	0.25	1	4
04-1-0288	CHD PAD 9	C3	0.25	1	4
04-1-0288	CHD PAD 9	C6	0.25	1	4
04-1-0288	CHD PAD 9	C7	0.25	1	4
04-1-0288	CHD PAD 9	C13	0.25	1	4
04-1-0288	CHD PAD 9	D4	0.25	1	4
04-1-0288	CHD PAD 9	E4	0.25	1	4
04-1-0288	CHD PAD 9	E7	0.25	1	4
04-1-0288	CHD PAD 9	F2	0.25	1	4
04-1-0288	CHD PAD 9	G1	0.25	1	4
04-1-0288	CHD PAD 9	G5	0.25	1	4
04-1-0288	CHD PAD 9	A5(B)	1	1	4

Table G.1 Test pit data, including size and artefacts numbers recovered

AHIMS #	Site name	Test pit	Test pit size (m^2)	Artefacts recovered (n)	Extrapolated artefacts recovered (n/m^2)
04-1-0288	CHD PAD 9	B1	0.25	1	4
04-1-0288	CHD PAD 9	D10	0.25	1	4
04-1-0288	CHD PAD 9	F1	0.25	1	4
04-1-0295	CHD PAD 2	A4	0.25	1	4
04-1-0295	CHD PAD 2	A5	0.25	1	4
04-1-0295	CHD PAD 2	C4	0.25	1	4
04-1-0296	CHD PAD 1	A6	0.25	1	4
04-1-0296	CHD PAD 1	B11	0.25	1	4
04-1-0296	CHD PAD 1	B12	0.25	1	4
04-1-0296	CHD PAD 1	C2	0.25	1	4
04-1-0296	CHD PAD 1	C8	0.25	1	4
04-1-0289	CHD PAD 8	B2	0.25	1	4
04-1-0291	CHD PAD 6	B1	0.25	1	4
04-1-0291	CHD PAD 6	D4	0.25	1	4
04-1-0291	CHD PAD 6	E2	0.25	1	4
04-1-0292	CHD PAD 5	A5	0.25	1	4
04-1-0292	CHD PAD 5	A6	0.25	1	4
04-1-0292	CHD PAD 5	B5	0.25	1	4
04-1-0294	CHD PAD 4	A4	0.25	1	4
04-1-0294	CHD PAD 4	B2	0.25	1	4
04-1-0294	CHD PAD 4	C1	0.25	1	4

Table G.2 Test pits containing the highest cultural materials, and used to develop a threshold for occupation in the past

AHIMS #	Site name	Test pit	Test pit size (m^2)	Artefacts recovered (n)	Extrapolated artefacts recovered (n/m^2)
04-1-0238	CHD A36	A1	1	16	16
04-1-0238	CHD A36	A8	0.25	5	20
04-1-0239	CHD-A37	D8	0.25	5	20
04-1-0239	CHD-A37	D11	0.25	5	20
04-1-0240	CHD-A38	A1	0.25	6	24
04-1-0249	CHD-A48	C1	0.25	13	52
04-1-0249	CHD-A48	C2	0.25	6	24
04-1-0249	CHD-A48	C3	0.25	7	28
04-1-0249	CHD-A48	C5	0.25	8	32
04-1-0254	CHD A27	C3	0.25	5	20
04-1-0254	CHD A27	C4	0.25	7	28
04-1-0254	CHD A27	C5	0.25	6	24
04-1-0254	CHD A27	C7	0.25	5	20
04-1-0254	CHD A27	D2	0.25	15	60
04-1-0254	CHD A27	D3	0.25	10	40
04-1-0254	CHD A27	D4	0.25	9	36
04-1-0264	CHD A17	A3	0.25	7	28
04-1-0264	CHD A17	A4	0.25	5	20
04-1-0264	CHD A17	A5	0.25	8	32
04-1-0264	CHD A17	B1	1	27	27
04-1-0264	CHD A17	B2	0.25	17	68
04-1-0264	CHD A17	B3	0.25	15	60
04-1-0264	CHD A17	B4	0.25	15	60
04-1-0264	CHD A17	B6	0.25	5	20
04-1-0264	CHD A17	C1	0.25	8	32
04-1-0264	CHD A17	C2	0.25	12	48
04-1-0264	CHD A17	C3	0.25	13	52
04-1-0264	CHD A17	C4	1	15	15
04-1-0264	CHD A17	C5	0.25	5	20
04-1-0264	CHD A17	D1	0.25	5	20

Table G.2 Test pits containing the highest cultural materials, and used to develop a threshold for occupation in the past

AHIMS #	Site name	Test pit	Test pit size (m^2)	Artefacts recovered (n)	Extrapolated artefacts recovered (n/m^2)
04-1-0264	CHD A17	D2	0.25	8	32
04-1-0264	CHD A17	D3	0.25	6	24
04-1-0264	CHD A17	D4	0.25	8	32
04-1-0264	CHD A17	D6	0.25	6	24
04-1-0280	CHD A1	B1	0.25	8	32
04-1-0281	CHD-A55	A1	0.25	5	20
04-1-0281	CHD-A55	A2	0.25	7	28
04-1-0281	CHD-A55	A4	0.25	5	20
04-1-0281	CHD-A55	B2	0.25	7	28
04-1-0281	CHD-A55	B3	0.25	11	44
04-1-0281	CHD-A55	B4	0.25	8	32
04-1-0281	CHD-A55	C3	0.25	8	32
04-1-0281	CHD-A55	E2	0.25	10	40
04-1-0281	CHD-A55	G2	0.25	6	24
04-1-0281	CHD-A55	H3	0.25	8	32
04-1-0288	CHD PAD 9	A5	1	20	20
04-1-0288	CHD PAD 9	A6	0.25	5	20
04-1-0288	CHD PAD 9	C5	1	45	45
04-1-0288	CHD PAD 9	C11	0.25	7	28
04-1-0288	CHD PAD 9	D2	0.25	6	24
04-1-0288	CHD PAD 9	D10	0.25	6	24
04-1-0288	CHD PAD 9	H2	0.25	7	28
04-1-0291	CHD PAD 6	E5	0.25	10	40
04-1-0295	CHD PAD 2	A2	0.25	6	24
04-1-0295	CHD PAD 2	A3	0.25	5	20
04-1-0295	CHD PAD 2	B1	0.25	11	44
04-1-0295	CHD PAD 2	B2	0.25	5	20
04-1-0295	CHD PAD 2	B3	0.25	5	20
04-1-0295	CHD PAD 2	C1	0.25	6	24
04-1-0295	CHD PAD 2	C2	0.25	15	60

Table G.2 Test pits containing the highest cultural materials, and used to develop a threshold for occupation in the past

AHIMS #	Site name	Test pit	Test pit size (m^2)	Artefacts recovered (n)	Extrapolated artefacts recovered (n/m^2)
04-1-0295	CHD PAD 2	C3	0.25	7	28
04-1-0295	CHD PAD 2	D2	0.25	6	24
04-1-0295	CHD PAD 2	D3	0.25	12	48
04-1-0296	CHD PAD 1	B4	0.25	5	20
04-1-0296	CHD PAD 1	B6	0.25	6	24
04-1-0296	CHD PAD 1	B9	1	31	31
04-1-0296	CHD PAD 1	C5	0.25	7	28

Appendix H

Aboriginal cultural heritage management plan guiding principles

EMM
creating opportunities

H.1 Guiding principles

The key recommendation of Section 9 of this report is the development of an Aboriginal Cultural Heritage Management Plan (ACHMP) to guide the management and mitigation of cultural materials within the Proposal. While specific approaches and methodology would be developed as part of the ACHMP, the below section provides over-arching guiding principles for the management of key content requirements and each site type that may be adversely affected by the project.

H.1.1 Avoidance and/or impact minimisation approaches

The specific methods for avoiding or minimising impacts to identified Aboriginal sites and places would typically be highly specific to the cultural materials in question and the development activities occurring nearby. Currently, two sites are proposed for avoidance or partial avoidance, including CHD-RS1 (#04-1-0285) and CHD-ST1 (#04-1-0285). Guiding principles for these sites as well as some general approaches that can be applied with site specific options developed and applied as part of the ACHMP include:

- Incorporation of the sites, cultural deposits, curtilages, and obligations for their protection into cultural inductions for site personnel.
- Where available, incorporation of the sites and curtilage into 'no-go' and/or constraint layers within the development document packages and their inclusion into ground disturbance permit/approval requirements for the Proposal.
- Establishment of fencing and/or signage during works in and around identified sites and cultural deposits. These should be developed in conjunction with an Aboriginal heritage specialist and/or RAPs.
- Where necessary, establishment of surface protection such as heavy duty ground protection mats, or equivalent. These should be developed in conjunction with an Aboriginal heritage specialist and/or RAPs.
- The installation of underground/detectable tape at suitable depths below current ground surface across the surface of the cultural deposits.
- Establishment of permanent (non-intrusive) signage to indicate cultural deposits and to contact an Aboriginal heritage specialist prior to development activity.

In relation to CHD-RS1 (#04-1-0286), the following guiding principles should be considered:

- development of suitable engineering interventions where required and in discussion with the registered Aboriginal parties to ensure the upper overhang is unaffected by inundation
- the implementation of cultural monitoring of the upper overhang during the initial filling of the reservoir to ensure it remains unaffected and processes and procedures in place to stop flooding in the event it is observed.

In relation to CHD-ST1 [#04-1-0285], the following guiding principles should be considered:

- establishment of fencing and/or signage during works should be developed in conjunction with an Aboriginal heritage specialist and/or RAPs
- the implementation of cultural monitoring of spillway works when working within 50 metres of the site.

H.1.2 Methods for identified site types

In terms of each site type, the following provides a number of guiding principles that should be adopted in the ACHMP and other relevant documents where sites and/or cultural deposits would be adversely affected (direct and indirect), including the following:

- Management of high and moderate density artefact scatters (CHD-AS36 [#04-1-0238], CHD-AS48 [#04-1-0249], CHD-AS27 [#04-1-0254], CHD-AS17 [#04-1-0264], CHD-A1 [#04-1-0280], CHD-AS55 [#04-1-0281], CHD PAD 9 [#04-1-0288], CHD PAD 6 [#04-1-0291], CHD PAD 2 [#04-1-0295], CHD PAD1 [#04-1-0296]):
    - Detailed field survey should be undertaken to identify the curtilage of the site and all observable surface cultural materials. Once identified, cultural materials should be spatially documented, collected and subject to detailed lithic analysis.
    - Where subsurface potential is identified, it should be subjected to archaeological excavations as outlined below.
- Management of grinding grooves (CHD-A20 [#04-1-0261]):
    - Suitable field survey to ensure all individual grooves are identified. This may include additional surveys at dawn or dusk to ensure appropriate lighting to further identify such features. This should be followed by detailed spatial documentation and archival recording of each individual groove.
    - Residue analysis should be undertaken of each groove by a specialist to determine whether any past dietary information can be obtained from the feature. Other specialist techniques that explore geological make up, formation history of the feature, age, and other relevant information may also be considered.
    - Where required, methods for protection in situ and/or relocation of the grooves (and associated sandstone outcrop) should be included.
- Management of culturally modified trees (CHD-ST2 [#04-1-0303]):
    - Archival recording of the tree both in its landscape context and the specific features of the modifications prior to disturbance.
    - Methods for protection in situ and/or suitable relocation of the tree, either in its entirety and/or via the removal of the ‘scar’ portion of the tree. It should be dictated that these approaches should be overseen by a qualified arboriculturist.
    - Where left in situ, the processes and methods for long term monitoring of the culturally modified tree to ensure its ongoing preservation.
    - Where relocated, methods for the long-term curation and conservation of the removed tree or tree fragment, including suitable conditions and preservation agents as required.
- Management of rockshelters (CHD-RS1 [#04-1-0286], CHD BMP 05-0036 [#04-1-0090]):
    - Archival recording of the site both in its landscape context and the specific features of the modifications prior to disturbance, including a focus on any rock art if present.

- Archaeological excavation of any cultural deposits to inform the significance of the site and provide information on the past use by Aboriginal people. Excavations should include an investigative phase and if needed a salvage phase:

    - Investigative phase –Where cultural deposits are to be adversely affected, additional investigation in the form of high-resolution systematic grids of test pits should be undertaken. These should be suitably spaced based on the confines and extent of the rockshelter and deposits, but typically ≤5 m apart. The talus slope where present should also be encompassed in these investigations. Excavations should be undertaken manually in discrete test pits (1 m^2), use 5 cm spits for recovery, sieve all sediment through a 3 mm mesh, recover suitable palaeo environmental and chronological sampling, and undertake appropriate recording.

    - Salvage phase – once the extent and nature of the cultural deposits are known, additional salvage excavation (conservation *ex situ*) of the area/s should be undertaken. Excavation should focus on contiguous open area excavations using the same approaches as the test excavation phase, with the aim being to recover a substantive portion of the cultural deposit.

- Where relevant, development methods for the long-term stabilisation and protection of the rockshelters, as well as future monitoring activities.

- Where relevant and feasible, methods for protection in situ and/or relocation of any rock art panels (and associated sandstone outcrop) should be included.

- Management of high-density stone artefact cultural deposits (CHD-AS48 [#04-1-0249], CHD-AS27 [#04-1-0254], CHD-AS17 [#04-1-0264], CHD-A55 [#04-1-0281], CHD PAD 9 [#04-1-0288], CHD PAD2 [#04-1-0295], CHD PAD 1 [#04-1-0296]):

    - Where test pit/s containing the highest significance are identified, archaeological salvage excavation (conservation *ex situ*) of the area/s should be undertaken. Depending on the number of high value locales and the nature of the impacts, salvage excavation may focus on some or all of these test pits. In accordance with current best practice, all salvage works should consist of initially 25 m^2 of contiguous open area excavation centred on the test pit/s of interest and expanding up to 100 m^2 where suitable thresholds are met (e.g. continuing high density of artefact numbers, unique characteristics, etc). Excavations should be undertaken manually in discrete test pits (0.25–1 m^2), use 5 cm spits for recovery, sieve all sediment through a 3 mm mesh, recover suitable palaeo environmental and chronological sampling, and undertake appropriate recording.

- Management of low-density background artefact scatter cultural materials (CH background scatter):

    - No further mitigation measures are recommended. It has been demonstrated that ~1–23 artefacts/m^2 would be expected disparately and intermittently across the project area, which reflects the ephemeral use of the region by Aboriginal people for several millennia. It is considered that further investigation of these areas would not alter the significance or understanding of these cultural deposits.

    - Targeted surface collection may be considered for cultural materials where requested by the RAPs.

- Analysis and reporting:

    - All additional investigation, mitigation and monitoring activities should ensure suitable reporting and lodgement with relevant repositories, such as the Heritage NSW AHIMS database.

- In the case of excavations, post- excavation analysis should be undertaken for all recovered sedimentological and cultural materials. Analysis should include processing of chronological samples (e.g. optically stimulated luminescence, radiocarbon), palaeo environmental samples (e.g. particle size, geochemistry, pollen analysis, etc), and stone tool analysis.

- Identification of short and long-term repositories for recovered cultural materials and other collected samples.

H.1.3 Contents and methods for interpretation strategy, plan and implementation

The following points provide some guiding principles for consideration in the development of heritage interpretation of the Proposal:

- Initially an interpretation strategy should be developed to identify key and over-arching themes. Subsequently, a plan would refine the strategy with content (visual and textual) and design details to inform the implementation stage.

- The documents should be co-designed and closely developed with local Bundjalung traditional owners, specifically Tweed Byron LALC and descendants of apical ancestors from the immediate area of the Proposal. This includes identification of initial aims and ideas, content and structure.

- Given the nature of the Proposal, these documents may consider off-site public outreach opportunities at nearby townships such as Uki, Murwillumbah, etc.

- The content should include, but not be limited to:

  - the ethnographic and historical record, which includes post-Contact and contemporary associations with the site and immediate environs

  - consultation and input from the Bundjalung traditional owners

  - information obtained from the archaeological excavations and findings undertaken for the project on the cultural and environmental landscape within which past Aboriginal people interacted with in the past.

Australia

SYDNEY
Ground floor 20 Chandos Street
St Leonards NSW 2065
T 02 9493 9500

NEWCASTLE
Level 3 175 Scott Street
Newcastle NSW 2300
T 02 4907 4800

BRISBANE
Level 1 87 Wickham Terrace
Spring Hill QLD 4000
T 07 3648 1200

CANBERRA
Suite 2.04 Level 2
15 London Circuit
Canberra City ACT 2601

ADELAIDE
Level 4 74 Pirie Street
Adelaide SA 5000
T 08 8232 2253

MELBOURNE
Suite 8.03 Level 8
454 Collins Street
Melbourne VIC 3000
T 03 9993 1900

PERTH
Suite 9.02 Level 9
109 St Georges Terrace
Perth WA 6000
T 08 6430 4800

Canada

TORONTO
2345 Yonge Street Suite 300
Toronto ON M4P 2E5
T 647 467 1605

VANCOUVER
60 W 6th Ave
Vancouver BC V5Y 1K1
T 604 999 8297

linkedin.com/company/emm-consulting-pty-limited

emmconsulting.com.au