ILLABO TO STOCKINBINGAL (I2S)
SECTION OF THE INLAND RAIL PROJECT

Aboriginal Archaeological Salvage Excavation Methodology

Prepared for John Holland Group
on behalf of Inland Rail

LGAs: Junee & Cootamundra-Gundagai

November 2025

APEX ARCHAEOLOGY

PO Box 236, Nowra, NSW 2541 | heritage@apexarchaeology.com.au | www.apexarchaeology.com.au

ABN 56 625 618 993

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Apex Archaeology acknowledges and pays respect to the past, present and future Traditional Custodians and Elders of this nation and in whose land this assessment took place, and to the continuation of cultural, spiritual and educational practices of Aboriginal and Torres Strait Islander peoples.

Document Control

The following register documents the development and issue of the document entitled 'Illabo to Stockinbingal (I2S) Section of the Inland Rail Project: Aboriginal Archaeological Salvage Excavation Methodology', prepared by Apex Archaeology in accordance with its quality management system.

Revision	Prepared by	Reviewed by	Comment	Issue Date
1 – Draft	Jenni Bate	Leigh Bate	Draft issued to Client	18 July 2025
2 – Draft	Jenni Bate	JHG	Draft issued to IRPL	12 August 2025
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0 – Final	Jenni Bate	JHG	Minor updates	13 Nov 2025

GLOSSARY OF TERMS

AASEM	Aboriginal Archaeological Salvage Excavation Methodology
Aboriginal Object	An object relating to the Aboriginal habitation of NSW (as defined in the NPW Act), which may comprise a deposit, object or material evidence, including Aboriginal human remains.
ACHAR	Aboriginal Cultural Heritage Assessment Report
AHIMS	Aboriginal Heritage Information Management System maintained by Heritage NSW, detailing known and registered Aboriginal archaeological sites within NSW
AHIP	Aboriginal Heritage Impact Permit
ASIRF	Aboriginal Site Impact Recording Form
BP	Before Present, defined as before 1 January 1950.
COA	The Minister's Conditions of Approval for the project
Code of Practice	The DECCW September 2010 *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*
Consultation	Aboriginal community consultation in accordance with the DECCW April 2010 *Aboriginal cultural heritage consultation requirements for proponents 2010.*
DCCEEW	Department of Climate Change, Energy, the Environment and Water
EIS	The Environmental Impact Statement referred to in Condition A1 submitted to the Planning Secretary seeking approval to carry out the CSSI described in it, as revised if required by the Planning Secretary under the EP&A Act, and including any additional information provided by the Proponent in support of the application for approval of the project
GSV	Ground Surface Visibility
GTAs	General Terms of Approval
Harm	To destroy, deface or damage an Aboriginal object; to move an object from land on which it is situated, or to cause or permit an object to be harmed
Heritage NSW	Heritage NSW in the Department of Climate Change, Energy, the Environment and Water – responsible for heritage matters in NSW
LALC	Local Aboriginal Land Council
LGA	Local Government Area
LEP	Local Environmental Plan
Mitigation	Mitigation in the archaeological context refers to specific measures to mitigate the potential harm arising from works within or adjacent to archaeological sites. This may include avoidance, surface collection/salvage, or salvage excavations, among other measures
NPW Act	NSW *National Parks and Wildlife Act* 1974
OEH	The Office of Environment and Heritage – now Heritage NSW
RAPs	Registered Aboriginal Parties
Unmitigated impact	Unmitigated impact in the archaeological context refers to development works proceeding with no further archaeological mitigation measures necessary prior to commencement of work.

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1.0 INTRODUCTION

Inland Rail Pty Ltd (IRPL - the Proponent) has engaged John Holland Group to undertake construction works for the Illabo to Stockinbingal (I2S) section of the Inland Rail Project (the Project). Mountains Heritage and Apex Archaeology have joined together to assist John Holland Group in the additional archaeological work required for the Project prior to construction commencing. Approval for the Project was granted on 4 September 2024 by the Minister for Planning (SSI-9406) and was subject to a number of Conditions of Approval (CoA). This work builds on the work undertaken previously by GML Heritage Pty Ltd (GML) and is required to meet the CoA for the Project.

The I2S Rail Corridor is located between Illabo in the south and Stockinbingal in the north, and falls within two Local Government Areas (LGAs), being Junee LGA in the south and Cootamundra-Gundagai LGA in the north. It is located within the Wagga Wagga Local Aboriginal Land Council (LALC) boundaries to the south, and Young LALC to the north. The study area varies in width for operational reasons such as construction compounds and stockpiles.

Key features of the proposal include:

- Connection to other rail lines, including Stockinbingal to Parkes line, Lake Cargelligo line and Main Southern Railway;
- One crossing loop and maintenance siding;
- Level crossing and stock crossings;
- Bridges over river and other watercourses, floodplains and roads;
- Upgrade of around 3.5km of existing track for the tie-in works to the existing Main South Line at Illabo;
- New Track to maintain Lake Cargelligo line connection either side of the proposal;
- Realignment and road-over bridge for a section of the Burley Griffin Way at Stockinbingal;
- Realignment of Ironbong Road to allow for safe sight lines at the new active level crossing;
- Ancillary infrastructure to support the proposal, inclusive of signalling and communications, drainage, drainage control areas, signage and fencing and services and utilities; and
- Construction infrastructure, including ancillary facilities, and a temporary workforce accommodation facility.

Figure 1: Study Area (Source: I2S EIS)

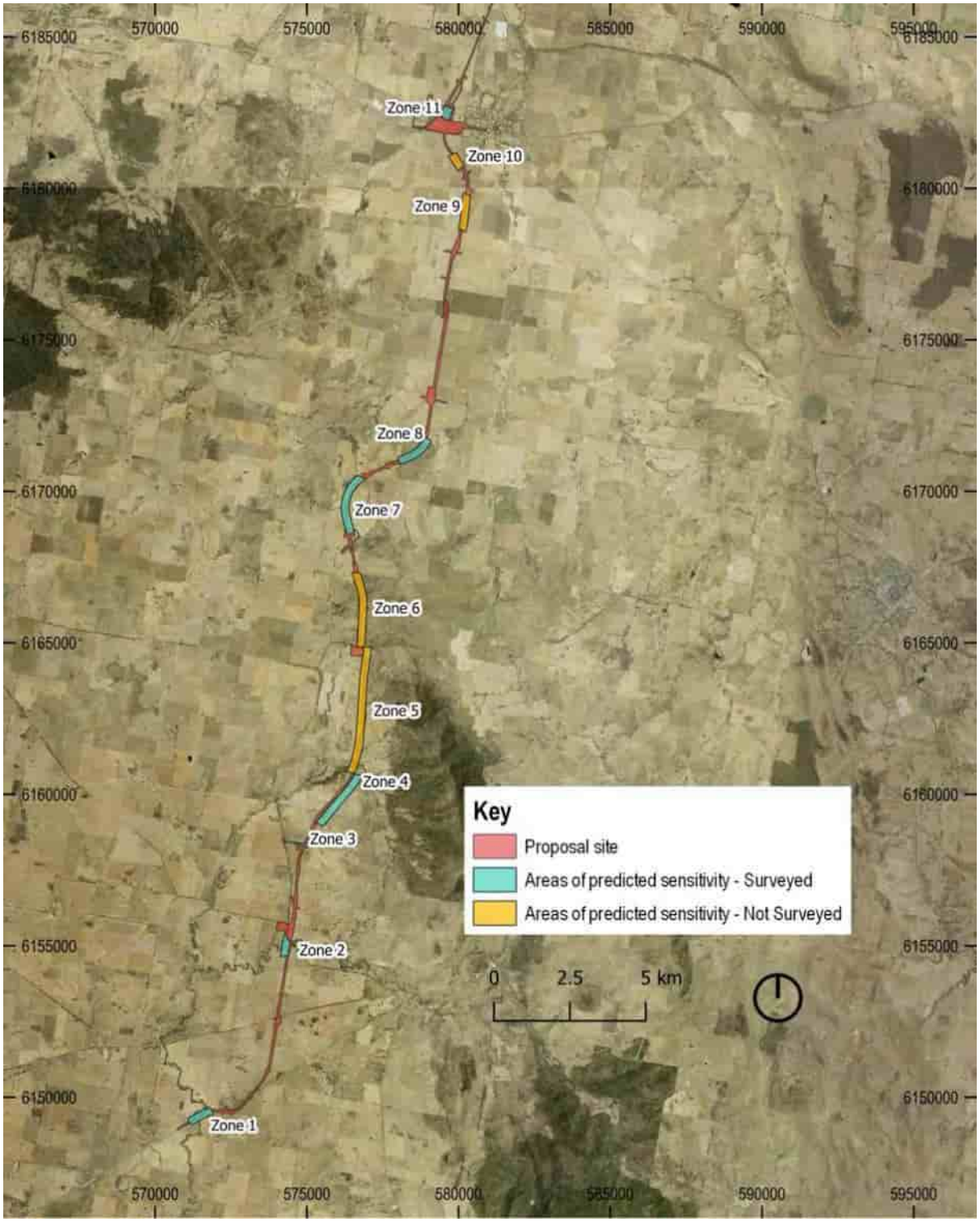


Figure 2: Survey Zones established by GML in 2022 (Source: Figure 5.1 of GML, 2022: 57). Note Zone 11 East is not shown on this figure and is located just west of Zone 11.

1.1 PROJECT BACKGROUND

GML prepared an Aboriginal Cultural Heritage Assessment Report (ACHAR) to inform the Environmental Impact Statement (EIS) for the project in August 2022. As part of their assessment, they undertook consultation with the Aboriginal community, as well as surveying accessible portions of the study area, and completing test excavations within areas that were considered likely to have subsurface potential archaeological deposits (PAD).

The study area has been separated into zones for assessment purposes, and GML undertook test excavations within Zones 1, 2, 4, 7 South, 7 North, 8, 11 and 11 East. Some parts of these zones and test excavation areas are located outside the formal EIS boundaries defined for the project as the ACHAR considered a wider corridor that was later reduced to form the EIS curtilage.

Areas of sensitivity were predicted to be located within Zones 5 and 6 but were not tested by GML due to lack of access.

A total of 231 test excavation units were excavated by GML within those zones, with 133 stone artefacts recovered from subsurface deposits during the test excavations. Zones 7 and 8 did not contain artefacts within the test excavation units excavated.

GML then finalised their ACHAR which detailed the assessment they had completed for the project. Subsequent to the submission of the ACHAR as a part of the EIS for the project, Heritage NSW reviewed the ACHAR and issued a letter of advice on 22 October 2022 with a number of concerns regarding the test excavation and surface collection that were undertaken.

During preparation of the ACHAR, the zones of sensitivity/PAD initially identified within Zones 5 and 6 were refined following completion of the GML test excavations in other zones, based on the results obtained within the other zones which allowed refinement of the predictive modelling within the entire area. Additionally, GML did not consider that Zones 9 and 10 were likely to contain areas of potential and this also contributed to this area not being subject to archaeological survey during preparation of the ACHAR as part of the EIS process.

Subsequent to completion and approval of the EIS, the NSW Department of Planning, Housing and Infrastructure issued Conditions of Approval (CoA) for the project on 6 September 2024. CoA E135 requires these zones to be archaeologically surveyed and test excavation undertaken as necessary within the zones to determine the nature and extent of any archaeological sites present within the areas.

Apex Archaeology have now completed the survey and test excavation within these additional zones as required under CoA E135. This document presents preliminary results of this additional assessment, and provides further information regarding the next steps required for the management of Aboriginal archaeological sites within the overall I2S EIS boundary.

1.2 CONDITIONS OF APPROVAL

As part of the project approval, a number of CoA relating to Aboriginal heritage were included, with these required to be met prior to construction works commencing within specific zones. The CoAs relevant to Aboriginal cultural heritage are outlined below.

CoA #	CoA Requirement
E133	An Aboriginal Cultural Values Plan must be prepared to inform how Aboriginal Cultural Values will be integrated into the broader design of the SSI including design elements (form and fabric), landscaping (the collection, propagation and replanting of traditional plant resources), language; and cultural design principles. The Plan must identify how interpretive themes and cultural values will be implemented and provide a timeframe for their provision during construction. The Plan must recognise the spiritual, intangible, linguistic and cultural values of the sites to Aboriginal people and address the full story of the place (s) (i.e. landscape through the eyes of Aboriginal people); Aboriginal design and story elements, patterns and motifs or other appropriate visual interpretations. The Plan will be developed in conjunction with the Aboriginal Community and Stakeholder Engagement Strategy. The Strategy will detail the consultation process with Aboriginal stakeholders and identify the Aboriginal Cultural Values to be incorporated into the design of the CSSI. The Aboriginal Cultural Values Plan shall be submitted for the approval of the Planning Secretary one (1) month prior to commencing construction. The Aboriginal Cultural Values Plan must be implemented.
E134	Aboriginal cultural heritage artefacts and culturally modified trees that are to be retained within the rail corridor are to be protected during routine maintenance and repair activities during operation in accordance with ARTC's standard operational environmental management procedures.
E135	Prior to the commencement of any ground disturbance work within areas identified as requiring archaeological investigation or salvage identified in documents listed in Condition A1, the Proponent must prepare and implement an Additional Aboriginal Archaeological Survey Methodology and an Aboriginal Archaeological Test Excavation Methodology. The methodology must include procedures for additional archaeological survey of Zones 5, 6, 9, and 10, and management protocols including consultation with the Registered Aboriginal Parties, for any Aboriginal objects and sites identified during the survey.
E136	Following analysis of the test excavation results, the Proponent must prepare and implement an Aboriginal Archaeological Salvage Excavation Methodology.
E137	Following additional survey, test and salvage excavation, if sites are identified that exceed the expected level of significance identified in the Aboriginal Cultural Heritage Assessment Report, further consultation with Heritage NSW and the RAPs must be undertaken and consideration given, where feasible, for avoidance by the project.
E138	The Additional Aboriginal Archaeological Survey Methodology, Aboriginal Archaeological Test Excavation Methodology and Aboriginal Archaeological Salvage Methodology must be prepared by a suitably qualified expert in consultation with Heritage NSW and RAPs, and provided to the Planning Secretary for information at least one month prior to test or salvage excavation.
E139	At the completion of Aboriginal cultural heritage survey and test and salvage excavations, an Aboriginal Cultural Heritage Excavation Report(s) must be prepared by a suitably qualified expert. The Aboriginal Cultural Heritage Excavation Report(s) must:

CoA #	CoA Requirement
	a) Be prepared in accordance with the Guide to Investigating, assessing and reporting on Aboriginal cultural heritage in NSW, OEH 2011 and the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales, DECCW 2010a; and b) Document the results of the archaeological survey and test excavations and any subsequent salvage excavations (with artefact analysis and identification of a final repository for finds). The RAPs must be given a minimum of 28 days to consider the report and provide comments before the report is finalised. The final report must be provided to the Planning Secretary, Heritage NSW, the relevant Councils, relevant LALCs and the RAPs within 24 months of the completion of the Aboriginal archaeological excavations (both test and salvage).
E140	Ground disturbance works and construction work may not commence in those areas where archaeological excavation and surface collection of Aboriginal objects is required (including areas identified as requiring further assessment) until the archaeological works described in the Aboriginal Cultural Heritage Assessment reports listed in Condition A1 have been completed.
E141	At the completion of surface collection, test excavations, and salvage excavations, Aboriginal Site Impact Recording Forms (ASIRF) must be submitted to the Aboriginal Heritage Information Management System (AHIMS) and evidence provided of submission to the AHIMS Registrar.
E142	Where previously unidentified Aboriginal objects or Aboriginal Places are discovered, all work must immediately stop in the vicinity of the affected area. Works potentially affecting the previously unidentified objects or places must not recommence until Heritage NSW has been informed. The measures to consider and manage this process must be specified in the Unexpected Heritage Finds and Human Remains Procedure required by Condition E143 and include registration in the Aboriginal Heritage Information Management System.
E143	An Unexpected Heritage Finds and Human Remains Procedure must be prepared to manage unexpected heritage finds in accordance with any guidelines and standards prepared by Heritage NSW and submitted to the Planning Secretary for information before the commencement of Work.
E144	The Unexpected Heritage Finds and Human Remains Procedure, as submitted to the Planning Secretary, must be implemented for the duration of Work.

This methodology has been prepared in accordance with Conditions of Approval E136, E137, E138, E140 and E141.

1.3 Revised Mitigation Measures

The following Revised Mitigation Measures (RMMs) are relevant to Aboriginal Cultural Heritage.

Ref	Issue	Mitigation
AH-1	Avoiding and minimising impacts on Aboriginal heritage	Detailed design and construction planning would avoid direct impacts on identified items/sites of Aboriginal heritage significance as far as reasonably practicable. The location of construction compounds and associated access routes would be reviewed to ensure, as far as practicable, they are not located in areas of medium or high archaeological potential.
AH-2	Management of salvaged items	A detailed salvage methodology would be prepared by a suitably qualified archaeologist in consultation with relevant registered Aboriginal parties. The methodology would be

Ref	Issue	Mitigation
		included in the Aboriginal cultural heritage management plan (mitigation measure AH-9) to ensure any artefacts salvaged are managed in accordance with the requirements of the *National Parks and Wildlife Act 1974*). This includes artefacts within the areas of Zone 1 and Zone 2. The methodology would include the process for consultation with Heritage NSW and registered Aboriginal parties in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW, 2010a) the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, 2010b), and the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH, 2011a). It would also include requirements in relation to the management of, and care and control plans for, salvaged objects. Registered Aboriginal parties would be engaged to assist in the salvage, which would be managed by an appropriately qualified archaeologist engaged to support the process. Detailed analysis and reporting of cultural material collected would be provided to the NSW Department of Planning and Environment.
AH-3	Management of salvaged items	Archaeological survey and test excavation (if required) would be performed prior to the commencement of impact works at Zone 5, 6, 9 and 10, to confirm the precise nature and extent of the archaeological resource and to inform the selection of the applicable mitigation measures.
AH-4	Management of salvaged items	Additional mitigation and management measures would be developed, in consultation with the registered Aboriginal parties, for areas or items of Aboriginal cultural heritage significance identified during the archaeological survey (mitigation measure AH-3). The additional measures would be included in the Aboriginal cultural heritage management plan (mitigation measure AH-9).
AH-6	Impacts on artefact scatters	Surface collection (salvage) of artefacts that were identified in Zones 1, 2, 4, 7 and 11 would occur prior to construction in accordance with the approved salvage methodology.
AH-9	Protecting Aboriginal heritage and minimising impacts during construction	An Aboriginal cultural heritage management plan would be prepared prior to construction and implemented as part of the CEMP. The plan would include measures to minimise the potential for impacts and manage Aboriginal heritage, including: • **A salvage methodology (mitigation measure AH-2)** • An unexpected finds procedure (mitigation measure AH-11) • Plans and installation procedures for fencing and protective coverings • Induction package for construction workers and supervisors • Erosion and sediment controls in accordance with Managing Urban Stormwater: Soils and construction – Volume 1 (Landcom, 2004) to minimise the potential for erosion impacts to Aboriginal sites located close to watercourses/drainage lines

Ref	Issue	Mitigation
		• Investigation of the anthropogenic nature of scarred trees within the project area by a specialist in Aboriginal cultural heritage • Measures to manage the potential for impacts to potential Aboriginal heritage items (including burial sites) located in sensitive landscapes (such as alluvium landscapes) • **Measures to protect sites close to the proposal site from inadvertent impacts** • **Outcomes of further investigations (mitigation measures AH-3 and AH-5)** • **A repatriation process for collected artefacts** The plan would be prepared in consultation with registered Aboriginal parties and the NSW Department of Planning and Environment.

This methodology has been prepared in accordance with RMMs AH-1, AH-2, AH-3, AH-4, AH-6 and AH-9, specifically those shown in **bold** above.

1.4 PURPOSE

This Aboriginal Archaeological Salvage Excavation Methodology (AASEM) has been prepared to address the requirement of cultural heritage management to be considered in the construction and development of the study area, and ensure sites are managed appropriately during the construction period.

The document has been designed to minimise impacts from development activities within the study area on Aboriginal cultural heritage by describing strategies for the management of Aboriginal sites during the undertaking of these activities.

Specifically, the AASEM has been developed in order to:

- Establish appropriate measures to avoid, minimise, or mitigate identified impacts;
- Outline the protection that will be established for sites which should be avoided;
- Provide a methodology for undertaking salvage works at sites that cannot be avoided and require salvage, whether surface collection or salvage excavation;
- Document the roles and responsibilities of the proponent, their contractors, the community, and RAPs, during each stage of the development and into the future;
- Detail the results of the Aboriginal community consultation undertaken for the project, and to provide guidelines for future consultation with RAPs for the project; and
- Document the tasks that must be completed to ensure long term protection of the Aboriginal cultural heritage values of the area designated for praotection.

1.5 CONSULTATION

Consultation has been undertaken for the project with both Registered Aboriginal Parties (RAPs) and Heritage NSW, and methodologies along with management and mitigation measures have been prepared in consultation with RAPs and Heritage NSW.

A draft of this document was circulated to all RAPs, and any feedback or comments have been incorporated into the AASEM as appropriate. The draft was sent to all RAPs on 29 September 2025. Comments were received from two RAPs and are detailed below.

[redacted] noted some minor errors in text which were corrected (names had been inadvertently transposed), and additionally asked two questions as follows:

- *5.2 Mitigation measures – were there any Scar Trees in the pathway of the new Rail?*
- *5.7 Artefacts & Chain of Custody – did all RAPs agree to the Reburial? Some may be held in the LALC for teaching purpose/s. (I just wanted to clarify this as I wouldn't like someone to come back and say they were not asked.)*

Jenni Bate responded with thanks for identifying the minor errors, and stated the following:

> *This document is essentially asking all RAPs what they would like to see happen, with the most feasible option included in the draft methodology for comment. However, if anyone says that they do not want to see items reburied and say they have alternative requests, this will absolutely be considered for long term management of the artefacts.*
>
> *There are no Scar Trees in the rail pathway itself. There are a number on the outskirts of the corridor but these will all be avoided with high vis fencing around them to make sure they aren't impacted. There are a number of management plans for the work and known scar trees have been included in a separate plan – this current document is specifically about the remaining salvage works and management of newly identified sites after the test excavation.*

[redacted] a lengthy discussion of the AASEM, essentially providing a summary of the document and emphasising the need for RAP engagement and involvement. No specific cultural information or amendments to the AASEM were included in the document. Jenni Bate provided a response to [redacted], acknowledging the comments and confirming that they either have or will be implemented in the process moving forward.

No other responses were received from any of the RAPs. Copies of the consultation are attached to this document.

2.0 Additional Survey and Test Excavation Results

An Additional Survey and Test Excavation Methodology (ASTEM) was developed and provided to the Registered Aboriginal Parties (RAPs) as part of the consultation process completed for the project. The methodology included assessment of all landforms within Zones 5, 6, 9 & 10 that have the potential to be impacted by the proposed development. Areas considered likely to have archaeological potential were closely scrutinised, although the entire study area was considered.

The sampling strategy outlined in the ASTEM included assessment of the entirety of the study area within Zones 5, 6, 9 & 10 accessible due to the nature of the proposal in order to provide an accurate assessment of the study area in relation to the proposed impacts.

2.1 Site Inspection

A site survey was undertaken across zones 5, 6, 9 & 10 over three days on 2nd, 3rd and 6th June 2025 by Leigh Bate and Peta Rice, Archaeologists with Apex Archaeology, accompanied by [redacted] on 2nd and 3rd June 2025, and [redacted] on 6th June 2025. Tess Anastakis, Graduate Environmental Scientist from John Holland Group assisted with the inspection of all four additional survey zones.

2.2 Survey Coverage

The survey was conducted on foot for the purposes of discovering Aboriginal objects within the study areas, including areas considered to have potential for subsurface objects to be present, and to assist in identifying intangible cultural values in consultation with the Aboriginal community. The survey was undertaken in accordance with the sampling strategy prepared for the project.

Zones 5, 6, 9 & 10 were surveyed in in their entirety from one end of each zone to the other and back.

Each participant was responsible for inspecting a 2m wide portion of the transect walked. This meant that on each pass an area covering 8m to 10m would be observed for archaeological material by the survey team. Some areas of the zones were inaccessible with high grass cover and no visibility, so areas of exposure were targeted as a priority.

Survey Unit:	1	**Survey Area:**	Zone 5
Number of Survey Participants:	4		
Landform Elements:	Flat/Gentle Slope/Creek Bank/Modified	**Distance to Watercourse:**	0m (Run Boundary Creek)
Slope:	Gentle (>1.45°-5.45°)	**Vegetation:**	Cleared/Regrowth
Detection Limiting Factors:	Grass, Gravels, Leaf Litter, Redeposited Sediment	**Ground Disturbance:**	Low to Moderate
Survey Unit Length:	7,975m	**Ground Surface Visibility:**	40%
Total Area surveyed	63,800m²	**Archaeological Visibility:**	10%

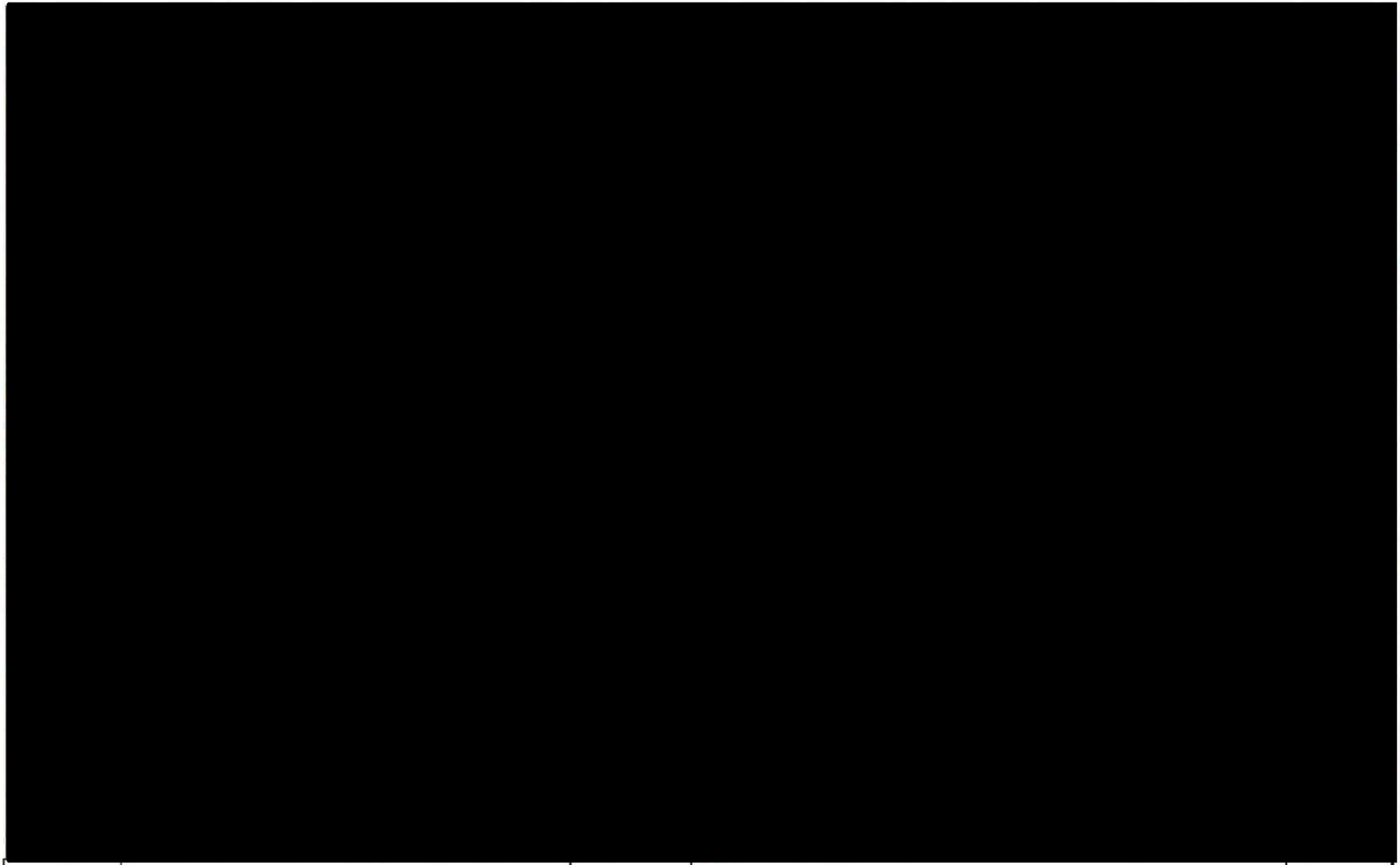
Plate 1: Looking south from the northern end of Zone 5 along the proposed rail alignment.

Plate 2: Looking south across Zone 5 PAD 1 North.

Plate 3: Looking south towards Run Boundary Creek across Zone 5 PAD 1 South.

Plate 4: Looking south towards southern end of Zone 5.

AHIMS Sites within or in close proximity to the study area:	None
Areas of sensitivity identified by GML (2022)	Zone 5 PAD 1 North; Zone 5 PAD 2 South
Newly Recorded Sites:	IR-IF-01
Areas of sensitivity confirmed:	Zone 5 PAD 1 North, Zone 5 PAD 2 South



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Base Map:
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Figure 3: Survey transect and newly identified Aboriginal site (Zone 5).

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Survey Unit:	2	**Survey Area:**	Zone 6
Number of Survey Participants:	4		
Landform Elements:	Flat/Gentle Slope/Creek Bank/Modified/Ridge	**Distance to Watercourse:**	0m (Isobel Creek)
Slope:	Moderate (>5.45°-18°)	**Vegetation:**	Grass, Regrowth
Detection Limiting Factors:	Grass, Gravels, Leaf Litter, Redeposited Sediment	**Ground Disturbance:**	Low to Moderate
Survey Unit Length:	4,882m	**Ground Surface Visibility:**	40%
Total Area surveyed	39,056m²	**Archaeological Visibility:**	15%

Plate 5: Looking north from southern end of Zone 6 from Dirnaseer Road.

Plate 6: Looking north upslope within Zone 6.

Plate 7: Looking north from ridgeline above Isobel Creek.

Plate 8: Looking north towards northern end of Zone 6.

AHIMS Sites within or in close proximity to the study area:	None
Areas of sensitivity identified by GML (2022):	Zone 6 PAD
Newly Recorded Sites:	IR-IF-03
Areas of sensitivity confirmed:	Zone 6 PAD 1, Zone 6 PAD 2, Zone 6 PAD 3, Zone 6 PAD 4, Zone 6 PAD 5, Zone 6 PAD 6

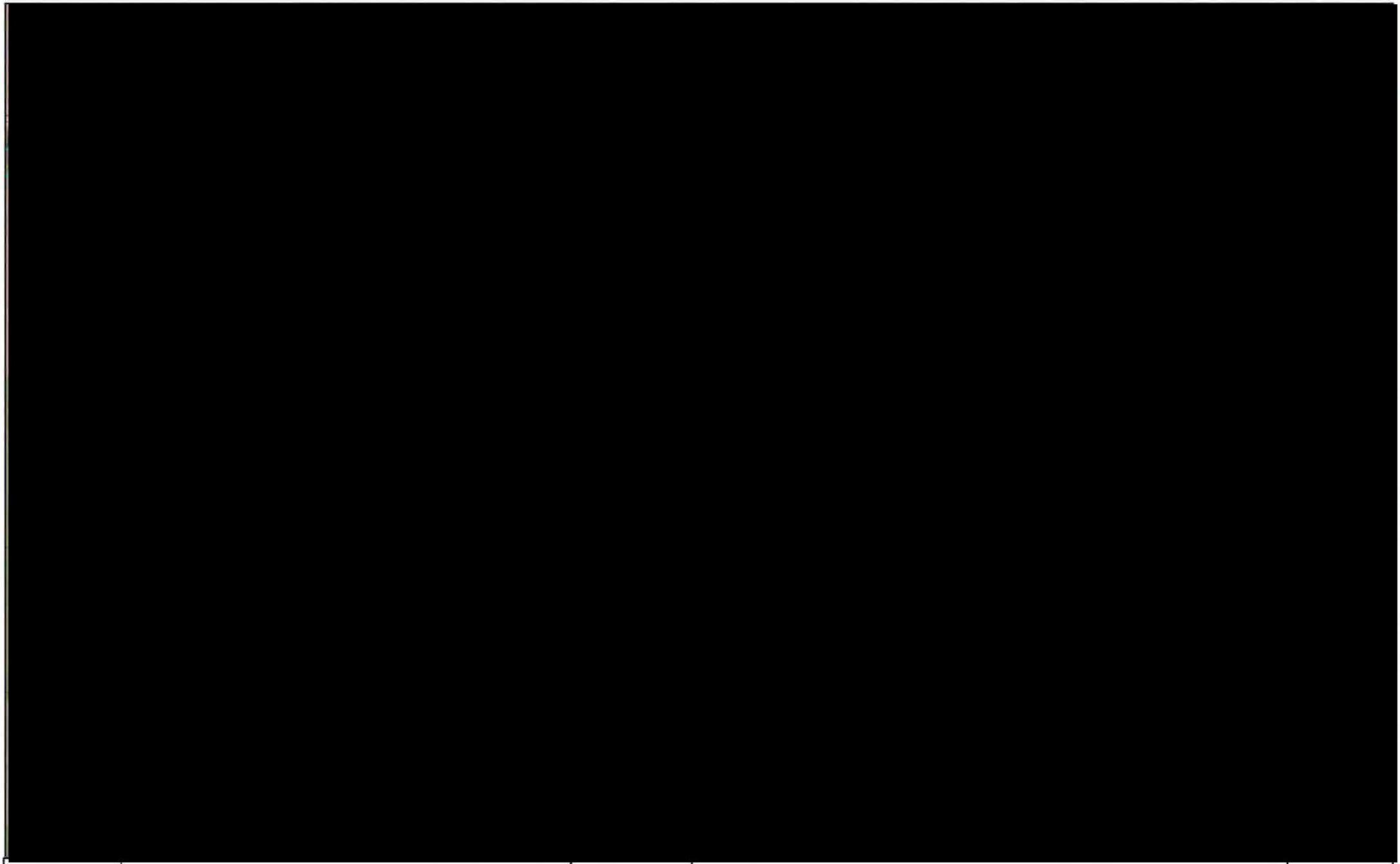

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Figure 4: Survey transect and newly identified Aboriginal site (Zone 6).

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Survey Unit:	1	**Survey Area:**	Zone 9
Number of Survey Participants:	4		
Landform Elements:	Flat/Gentle Slope	**Distance to Watercourse:**	60m (Powder Horn Creek)
Slope:	Gentle (>1.45°-5.45°)	**Vegetation:**	Cleared/Regrowth
Detection Limiting Factors:	Grass, Gravels, Leaf Litter, Redeposited Sediment	**Ground Disturbance:**	Moderate
Survey Unit Length:	2,417m	**Ground Surface Visibility:**	40%
Total Area surveyed	19,336m²	**Archaeological Visibility:**	15%

Plate 9: Looking north through Zone 9 from the southern end.

Plate 10: Looking north along Zone 9.

Plate 11: Looking north towards the northern end of Zone 9 within Zone 9 PAD 1.

Plate 12: Northern end of Zone 9.

AHIMS Sites within or in close proximity to the study area:	None
Newly Recorded Sites:	IR-IF-02 & Zone 9 PAD 1

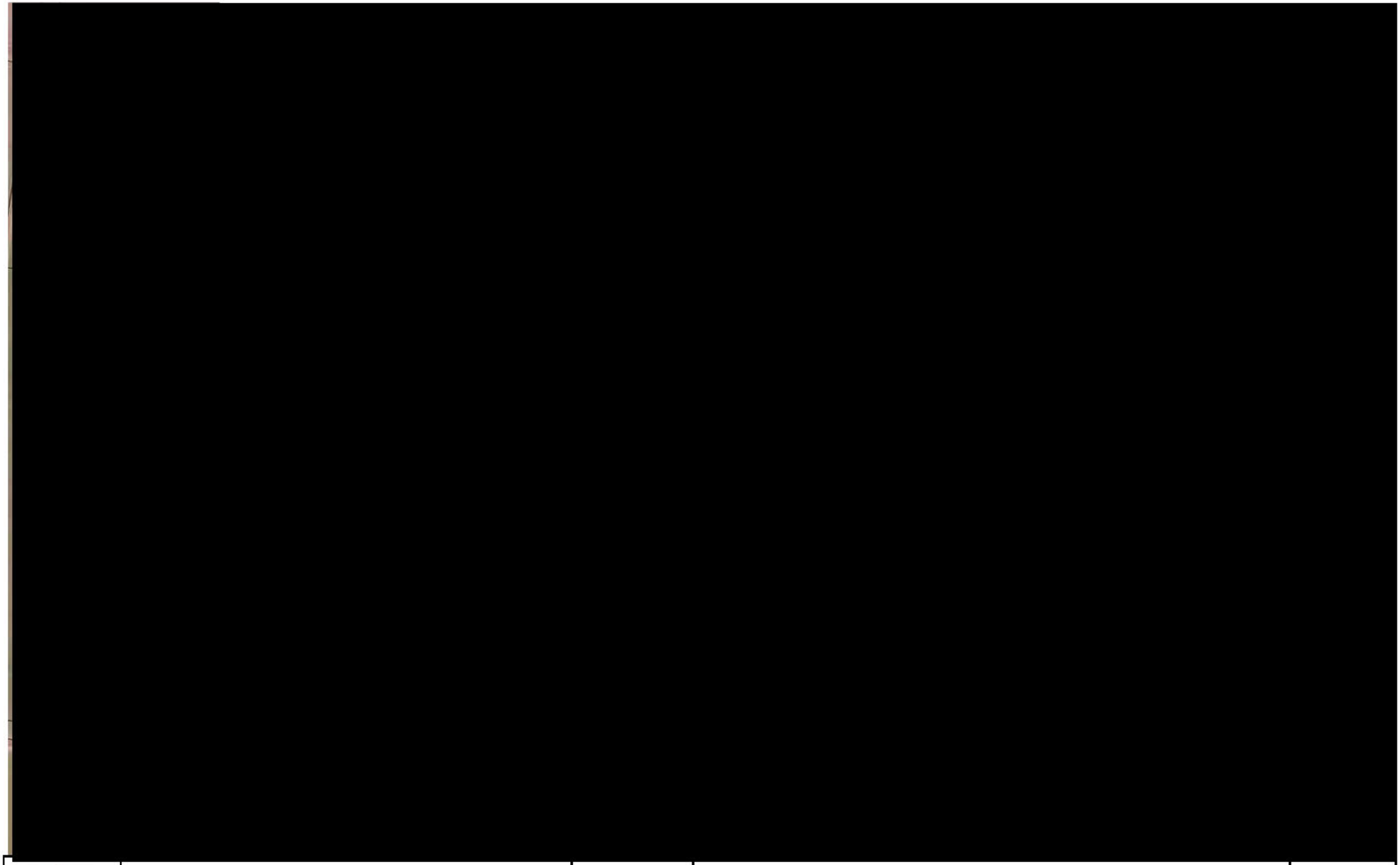

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Figure 5: Survey transect and newly identified Aboriginal site (Zone 9).

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Survey Unit:	2	**Survey Area:**	Zone 10
Number of Survey Participants:	4		
Landform Elements:	Creek Bank/Flat/Gentle Simple Slope	**Distance to Watercourse:**	0m (Powder Horn Creek)
Slope:	Moderate (>5.45°-18°)	**Vegetation:**	Grass, Regrowth
Detection Limiting Factors:	Grass, Gravels, Leaf Litter, Redeposited Sediment	**Ground Disturbance:**	Moderate
Survey Unit Length:	1,041m	**Ground Surface Visibility:**	55%
Total Area surveyed	8,328m²	**Archaeological Visibility:**	10%

Plate 13: Looking north west from the southern end of Zone 10.

Plate 14: Looking west across area of PAD within Zone 10.

Plate 15: Looking south east across area of PAD within Zone 10 from northern end.

Plate 16: Northern boundary of Zone 10 looking south east.

AHIMS Sites within or in close proximity to the study area:	None
Newly Recorded Sites:	Zone 10 PAD 1

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MGA Zone 55 (GDA 94)
Base Map:
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Image Date: 2025
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Figure 6: Survey transect and newly identified Aboriginal site (Zone 10).

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Table 1: Survey units within study area

Unit name	Landform Element	Number of participants	Total Length
Survey Unit 1	Flat/Gentle Slope/Creek Bank/Modified	4	7,975m
Survey Unit 2	Flat/Gentle Slope/Creek Bank/Modified/Ridge	4	4,882m
Survey Unit 3	Flat/Gentle Slope	4	2,417m
Survey Unit 4	Creek Bank/Flat/Gentle Simple Slope	4	1,041m

During the survey completed by Apex Archaeology, the study area was inspected for Aboriginal archaeological evidence. An assessment of landform element and slope was made for the study area, with the results presented in Table 1.

The total survey coverage (meaning the areas physically inspected for archaeological evidence) was approximately 130,520m². A range of factors were considered and recorded during the survey, including the surface visibility (percentage of bare ground within a survey unit); archaeological visibility (amount of bare ground within an area in which artefacts could be expected to be identified if present); exposure type (A or B soil horizon) and calculations of how effective the survey coverage was. The results of the survey coverage are presented in Table 2.

Table 2: Survey coverage results

Survey Area #	Total Area Surveyed (m²)	Surface Visibility (%)	Arch Vis (%)	Exposure Type (A/B)	Effective Coverage (m²)	% Total Effective Survey Coverage of Context
SU01	63,800m²	40	10	A/B	2,552m²	4
SU02	39,056m²	40	15	A/B	2,343.36m²	6
SU03	19,336m²	40	15	A/B	1160.16m²	6
SU04	8,328m²	55	10	A	458.04m²	5.5

Surface visibility across the study areas was generally quite good due to the nature of the area being assessed (cultivated farmland). Total effective survey coverage of the survey transects ranged from 4% to 6% (Table 2). Total effective survey coverage for each study area zone ranged from 0.14% to 0.84% (Table 3).

Table 3: Total effective survey coverage results SU01 to SU04

Survey Area #	Total Area of Study Area (m²)	Total Area Effectively Surveyed (m²)	Surface Visibility (%)	Arch Vis (%)	Exposure Type (A/B)	% Effective Survey Coverage of Context (Total Area)
SU01	331,400m²	2,552m²	40	10	A/B	0.77
SU02	268,900m²	2,343.36m²	40	15	A/B	0.87
SU03	811,700m²	1160.16m²	40	15	A/B	0.14
SU04	54,090m²	458.04m²	55	10	A	0.84

2.3 Survey Results

The study areas have clearly been disturbed by historic land clearance and ongoing agricultural activity. The levels of disturbance were assessed as being overall low to moderate due to the levels of modification relating to landscape modification and farming practices.

Ground surface visibility (GSV) was moderate throughout the study area. GSV was rated at 40% to 55% overall for the areas surveyed.

Ten areas of potential archaeological deposit (PAD) were identified as an outcome of the additional survey work undertaken. Previously, the entirety of Zone 6 along with two areas in Zone 5, were identified by GML via a desktop analysis as being predicted areas of Aboriginal sensitivity/PAD. During the survey these areas were reassessed and refined to specific focal areas within the landscape that were considered to meet the occupation predictive model for Aboriginal site locations.

Specifically, in Zone 6 the entirety of the predicted area of Aboriginal sensitivity/PAD was refined into 6 smaller areas, targeting ridgelines and areas bordering creeks and removing significant slopes or areas of disturbance which were considered unlikely to have been utilised for habitation, or to retain archaeological evidence.

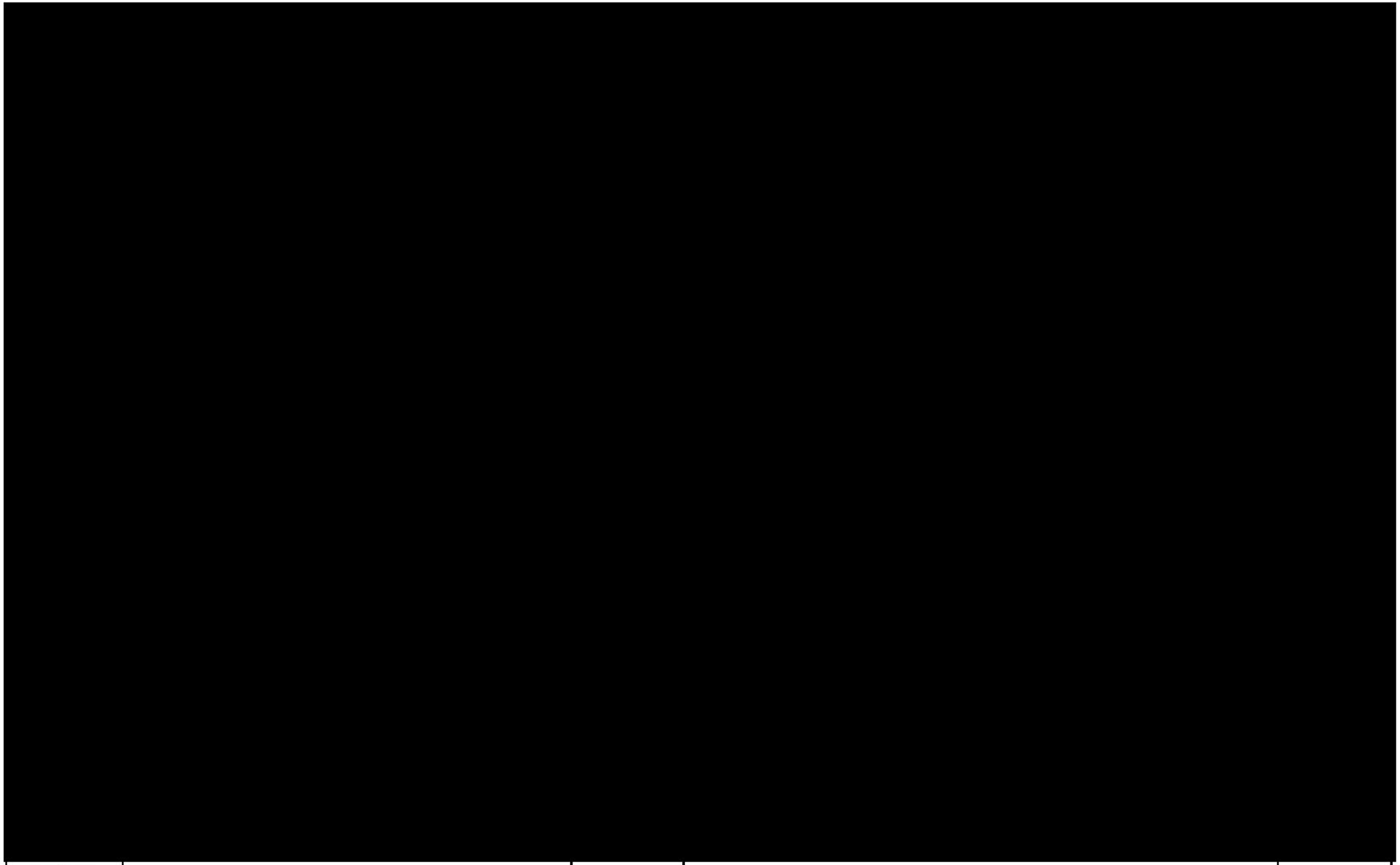

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Figure 7: Refined areas of PAD within Zone 5

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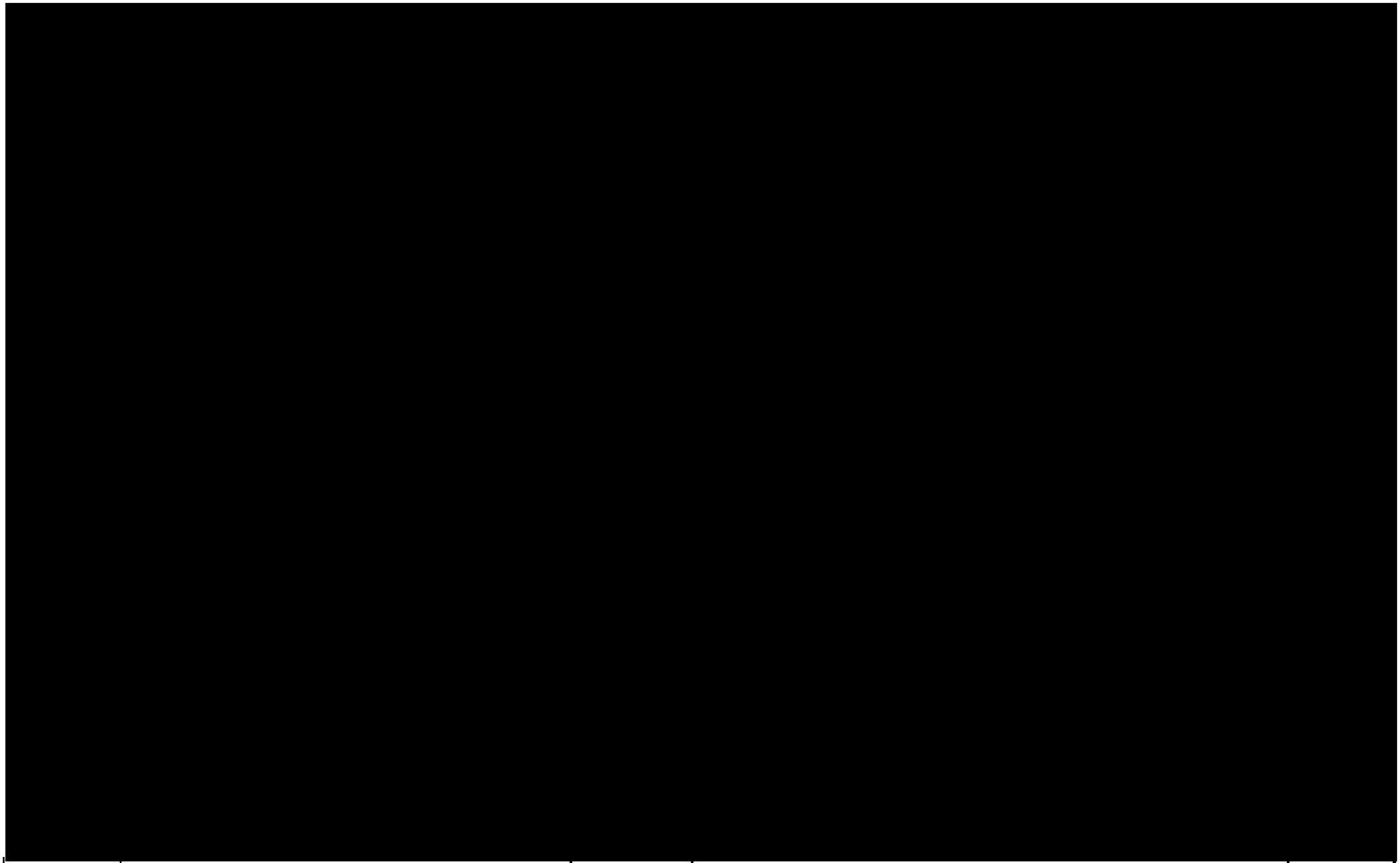

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Figure 8: Refined areas of PAD within Zone 6.

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Figure 9: Refined areas of PAD within Zone 9.

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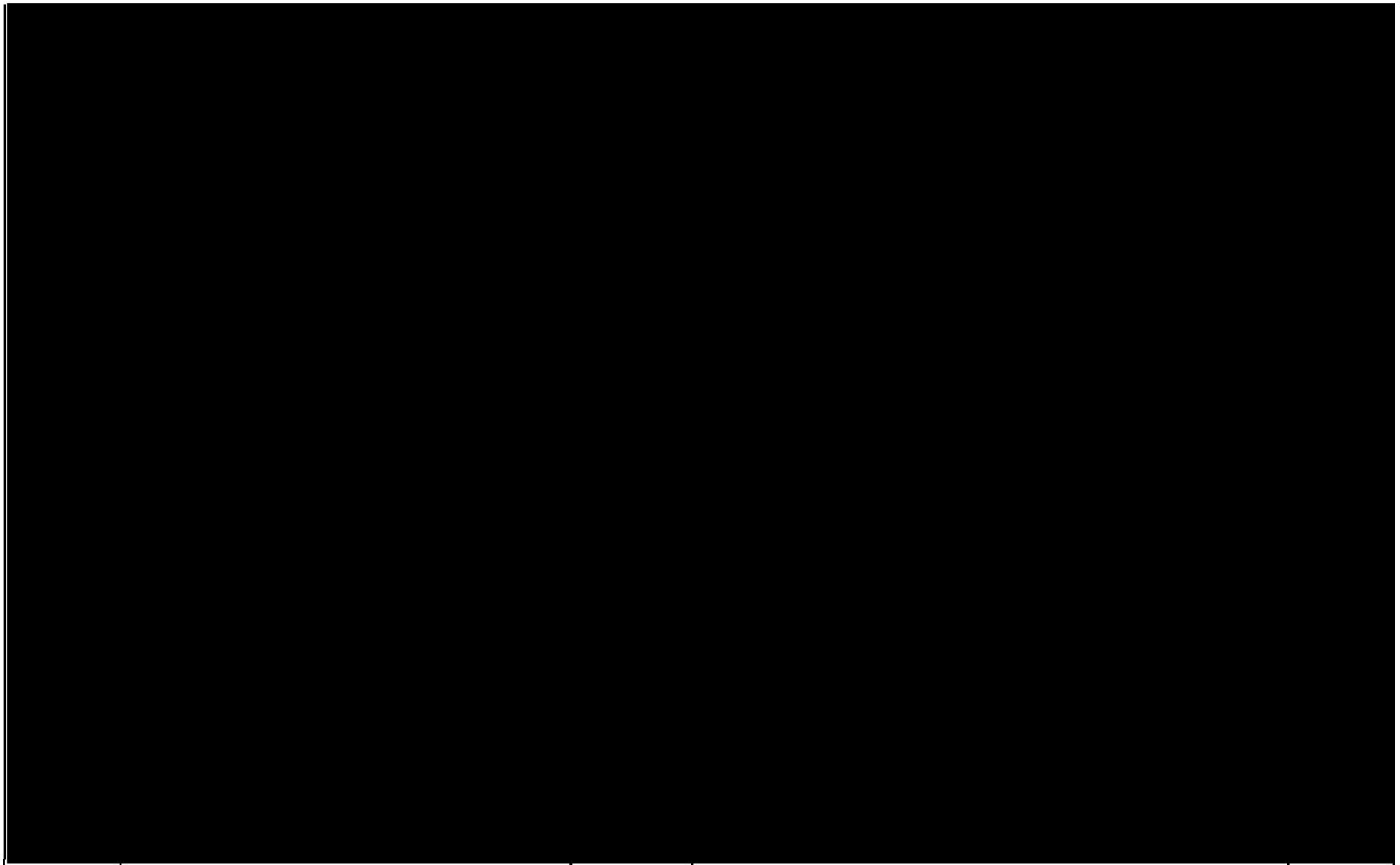

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Figure 10: Refined area of PAD within Zone 10.

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2.4 New Sites

A number of new artefact sites were identified during the site inspection. No surface artefacts identified as new sites were removed from their identified location, and these objects remain on site. Further mitigation measures are outlined in this AASEM.

2.4.1 IR-IF-01 (AHIMS #50-5-0311)

IR-IF-01 consists of a single quartz flake located along the fence line within Zone 5 towards the northern end of the zone. The isolated find is located on the northern side of an unnamed ephemeral first order creek line. Site is located approximately 900m south of Dirnaseer Road within the CIZ. The coordinates of the site are GDA94 [redacted].

Plate 17: Quartz Flake – Ventral Surface.

Plate 18: Quartz Flake – Dorsal Surface.

Plate 19: Context – IR-IF-01 – North – Close Up.

Plate 20: Context – IR-IF-01 – North – Expanded view.

2.4.2 IR-IF-02 (AHIMS #50-5-0310)

IR-IF-02 consists of a broken hammer stone/anvil located along the fence line within Zone 9 approximately 9m west of Dudauman Road and approximately 250m north of the southern end of Zone 9. The coordinates of the site are [redacted]

Plate 21: Looking north along eastern boundary fence of Zone 9 over IR-IF-01 site location.

Plate 22: Looking east towards Dudauman Road across IR-IF-01.

Plate 23: Broken Hammer Stone/Anvil.

Plate 24: Broken Hammer Stone/Anvil.

2.4.3 IR-IF-03 (AHIMS # 50-5-0312)

Site consists of a single basalt edge ground axe located within an area of PAD whilst test excavation was being undertaken. The axe was identified by opportunistic survey. Axe blade exhibits use wear along blade edge and edge damage from agricultural movement. The axe also appears to have been heavily utilised as an anvil with deep pitting on one side and potential use as a hammer stone from pitting alone the edges. Site is located 1.6km north of Dirnaseer Road within Zone 6 PAD 3. The coordinates for the site are [redacted]

Plate 25: Close up of IR-IF-03 in situ.

Plate 26: Site context looking south west.

Plate 27: Basalt Edge Ground Axe.

Plate 28: Basalt Edge Ground Axe.

Plate 29: Basalt Edge Ground Axe.

Plate 30: Basalt Edge Ground Axe.

2.5 Surface Collection (Zone 7 and 11)

Surface Artefact Collection

Within Zones 7 and 11, four isolated artefacts were identified but could not be relocated by GML during their assessment. In accordance with the ASTEM, these artefact sites were revisited to provide the RAPs an opportunity to relocate and collect these items associated with these sites if they could be relocated. Both [redacted] attended the collection of these sites. These sites are as follows:

- 50-5-0268
- 50-5-0272
- 50-2-0054
- 50-5-0273

These sites are shown on Figures 11 and 12. There are additional sites in the area, as shown on these figures, with these sites either having been confirmed as being Not a Site following test excavation, or outside the works area and thus not impacted as part of the project works.

Collection was attempted at all four sites prior to the commencement of ground disturbing geotechnical works in these zones. Where the associated artefacts could not be relocated, no further archaeological work was recommended.

AHIMS #	Item Relocated	Impact
50-5-0268	No	Unmitigated
50-5-0272	No	Unmitigated
50-2-0054	Yes	Mitigated (Surface collection has occurred)
50-5-0273	No	Unmitigated

Plate 31: Context of AHIMS site 50-2-0054 looking north west.

Plate 32: Identified lithic item from AHIMS site 50-2-0054.

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Figure 11: AHIMS sites within Zone 7

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Figure 12: AHIMS sites within Zone 11

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2.6 Results of GML Test Excavation

GML undertook test excavations within Zones 1, 2, 4, 7, 8, 11, and 11 East. Zone 3 was not considered to have subsurface potential and as such, no test excavations were considered necessary within these areas. The results of the test excavations are shown in Table 4. It should be noted that the number of artefacts reported by GML within each zone included both surface finds and results from test pits.

Table 4: Number of test pits excavated within each Zone and number of artefact bearing test pits within each area tested by GML

Zone	Test pits excavated	# of test pits with artefacts	# of artefacts
1	60	26	64
2	22	7	35
4	18	5	12
7	26	0	0
8	35	0	0
11	41	3	9
11 East	29	7	13

Based on the results of the test excavations, GML recommended salvage excavations occur within the higher density areas identified within Zones 1 and 2. Specifically, test pit 19 [redacted]) within Zone 1 contained nine artefacts, while test pit 88 [redacted] within Zone 2 contained five artefacts. Although not expressly outlined in the GML 2022 reporting as test pits requiring salvage, these are the test pits identified by Apex Archaeology as the most appropriate to focus salvage works on within each zone.

The results of the test excavations within Zones 4, 7, 8, 11 and 11 East were considered by GML to represent low density artefact deposits or nil artefacts, and as such, no further archaeological salvage excavation was recommended within these zones.

2.7 Test Excavation Results

Test excavation was undertaken across the four remaining zones to be assessed, being Zone 5, 6, 9 and 10. All test pits were excavated in 50 cm x 50 cm squares initially, with 5 cm spits, in accordance with the approved ASTEM. Where necessary, 50 cm x 50 cm test pits were excavated immediately adjacent to create a 1m^2 test unit. This was intended to be undertaken if test pits met thresholds for expansion in line with the triggers listed in the ASTEM; however, no test pits within these zones reached the threshold of five artefacts per 50 cm x 50 cm test pit and as such, no expansion occurred.

This section includes preliminary results of the test excavations, including preliminary artefact analysis. Detailed results will be included in the Aboriginal Cultural Heritage Excavation Report (ACHER) to be prepared on completion of all archaeological excavation within the I2S Construction Impact Zone (CIZ). A summary of the results of the test excavation program is shown in Table 5.

Photographs and descriptions of all test pits are included in Appendix B.

Table 5: Number of test pits excavated at Zone and number of artefact bearing test pits within each area tested

Zone	PAD Area	Test pits excavated	# of test pits with artefacts
5	PAD 1 S	35	8
	PAD 1 N	15	2
6	PAD 1	15	1
	PAD 2	10	0
	PAD 3	18	4
	PAD 4	2	0
	PAD 5	14	2
	PAD 6	14	1
9	PAD 1	35	1
10	PAD 1	14	0

2.7.1 ZONE 5

Two areas of PAD were identified in Zone 5 and were designated Zone 5 PAD 1 South and Zone 5 PAD 1 North. A total of 35 test pits were excavated in Zone 5 PAD 1 South and 15 in Zone 5 PAD 1 North. From these test pits, eight in Zone 5 PAD 1 South were confirmed to contain artefacts, while two test pits in Zone 5 PAD 1 North contained artefacts.

Test pits were excavated to a maximum depth of 100 cm, although the average depth was approximately 45 cm. The test pits closer to Run Boundary Creek within Zone 5 PAD 1 South demonstrated evidence potentially related to flood deposits, in the form of clear stratigraphic difference between horizons (refer Plate 33). Test pits further from the creek tended to be shallower than those located closer to the creek.

A total of 16 artefacts were recovered from Zone 5, comprising 13 items from Zone 5 PAD 1 South and three items from Zone 5 PAD 1 North. Test Pit 20 within Zone 5 PAD 1 South contained a total of three artefacts, Test Pit 9 and Test Pit 33 within Zone 5 PAD 1 South each contained two artefacts, and two were recovered from Test Pit 7 within Zone 5 PAD 1 North. All other artefact bearing test pits within both PAD 1 North and PAD 1 South contained single items.

Plate 33: Potential evidence of flood deposit within TP 22, Zone 5 PAD 1 South

2.7.2 ZONE 6

Six areas within Zone 6 were assessed as having subsurface potential, with a total of 73 test pits excavated within these areas. Test pits within Zone 6 often demonstrated potential flood deposits visible in their stratigraphy, although test pit depth generally decreased with distance from the watercourses present within this zone.

Test pits in Zone 6 PAD 1 were generally quite deep, reaching depths of 70-80cm. PAD 1 was in proximity to an ephemeral creekline, meaning there was potential for fluvial deposits from floodwaters within this location. Soils in the area were generally a medium to light brown sandy silt, with a darker brown deposit overlying this in some instances and considered to be related to flood deposits.

Plate 34: TP 5 from Zone 6 PAD 1

Test pits within Zone 6 PAD 2 were slightly shallower than in PAD 1, with a red-brown silty deposit present. Test pits were excavated to an approximate depth of 20-30cm, although some reached a depth of 55-60cm.

Plate 35: TP 3 from Zone 6 PAD 2

Test pits in Zone 6 PAD 3 were excavated to an approximate depth of 50cm, although some were shallower and some deeper. The deposit was generally a mid brown clayey silt.

Plate 36: TP 4 from Zone 6 PAD 3

The test pits in Zone 6 PAD 4 were excavated to approximately 35cm with a mid brown sandy silt present.

In Zone 6 PAD 5, test pits reached 30-40cm, with a brown silty loam deposit, while in Zone 6 PAD 6 test pits were excavated to an approximate depth of 25-30cm. An orangey-brown clayish loam was present in many of the test pits.

A total of 11 artefacts were recovered from the test pits excavated within the six PADs in Zone 6. PAD 3 was considered to have the highest number of artefacts identified, with a total of seven items recorded from four separate test pits.

Plate 37: TP 1 from Zone 6 PAD 5

Plate 38: TP 5 from Zone 6 PAD 6

2.7.3 ZONE 9

A total of 35 test pits were excavated within Zone 9, with one test pit confirmed to contain three artefacts. Test pits in Zone 9 ranged from 20-45cm depth and were generally brown silty loam.

The three artefacts identified within Test Pit 12 in Zone 9 were all formed from a black volcanic material and may have been knapped during the same flaking event.

Plate 39: TP 6 from Zone 9

2.7.4 ZONE 10

A total of 14 test pits were excavated within Zone 10. No test pits yielded any artefacts. As such, this PAD was confirmed to be sterile and no further archaeological mitigation is necessary within this zone. The deposit within Zone 10 comprised a red-brown silty loam and test pits were generally excavated to a depth of 35-40cm.

Plate 40: TP 3 from Zone 10

2.8 Sites Identified within the Study Area

The results of the test excavation and survey confirmed the presence of Aboriginal archaeological material within the study area, comprising subsurface material only. New sites identified as a result of the test excavations are presented in Table 6 and shown in Figure 13 to Figure 18. Buffers were placed around artefact bearing test pits in proximity to each other. Where no adjacent test pits were identified to contain artefacts, a 10m buffer was placed around the single artefact bearing test pit/s. the artefact bearing area of Zone 5 PAD 1 South AD 01 was considered to represent the potential for further, low density artefacts to be in the area, but their actual location would be impossible to predict.

Table 6: Details of confirmed archaeological deposits within the study area

Site Name	Site ID	Description
Zone 5 PAD 1 South AD01	50-5-0300	Six test pits containing nine artefacts
Zone 5 PAD 1 South AD02	50-5-0301	A single test pit containing one artefact
Zone 5 PAD 1 South AD03	50-5-0302	Two test pits containing three artefacts
Zone 5 PAD 1 North AD01	50-5-0303	Two test pits containing three artefacts
Zone 6 PAD 1 AD01	50-5-0304	A single test pit containing one artefact
Zone 6 PAD 3 AD01	50-5-0305	Three test pits containing six artefacts
Zone 6 PAD 3 AD02	50-5-0306	A single test pit containing one artefact
Zone 6 PAD 5 AD01	50-5-0307	Two test pits containing two artefacts
Zone 6 PAD 6 AD01	50-5-0308	A single test pit containing one artefact
Zone 9 AD 01	50-5-0309	A single test pit containing three artefacts

2.9 Discussion

The test pits excavated identified a low density, discontinuous artefact deposit across Zones 5, 6, and 9. No artefacts were recovered from test pits in Zone 10. None of the test pits within Zones 5, 6 and 9 met the threshold for expansion in line with the triggers in the ASTEM, and salvage excavations within those areas are considered unwarranted based on the assemblage recovered. As such, unmitigated impact is considered appropriate for these areas, once surface collection of any surface artefacts has been completed.

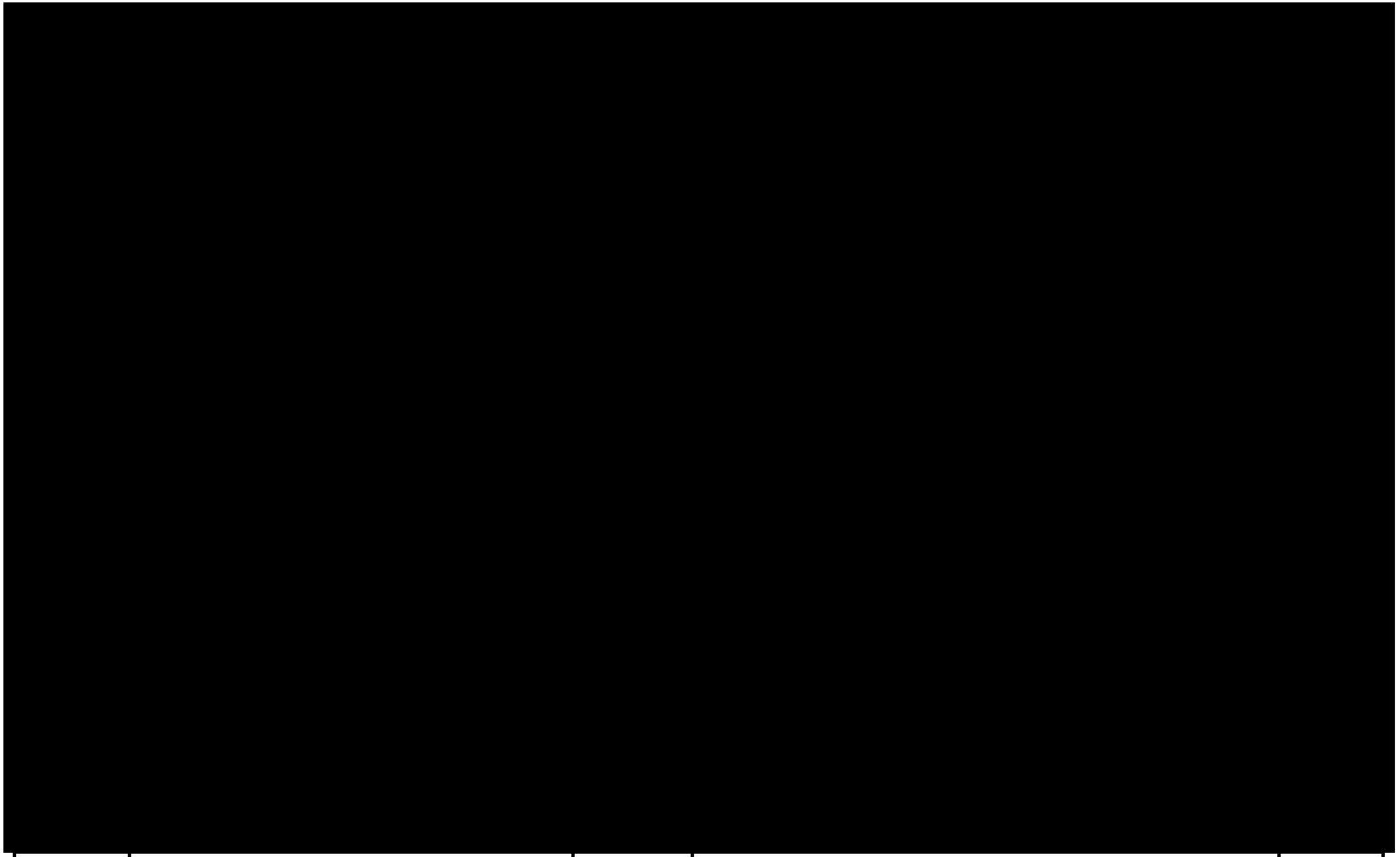

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Figure 13: Zone 5 PAD 1 South Test Pit Locations and Identified Artefact Deposits

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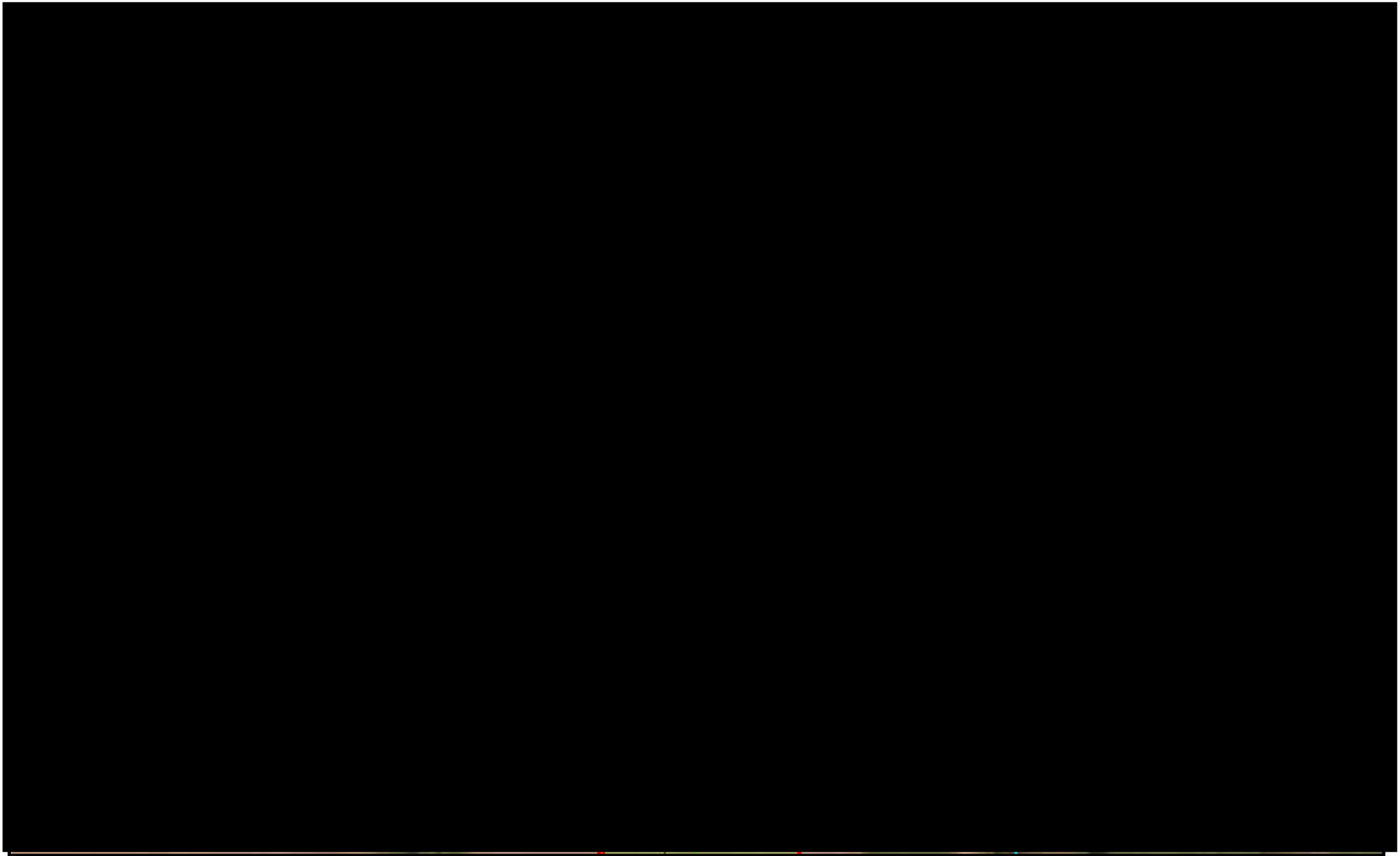

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Figure 14: Zone 5 PAD 1 North Test Pit Locations, Identified Artefact Deposit and Isolated Find

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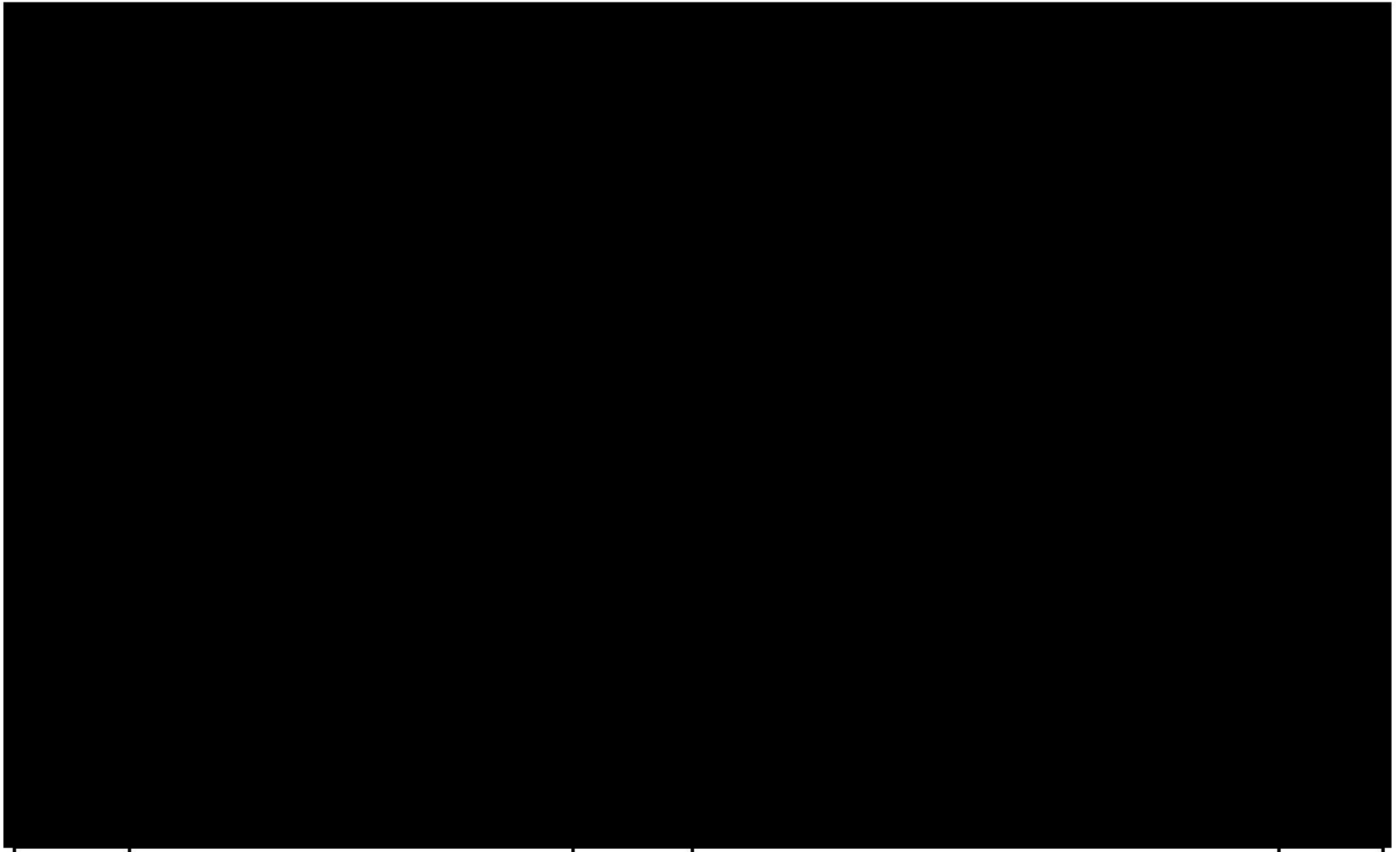

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Figure 15: Zone 6 PAD 1 & 2 Test Pit Locations and Identified Artefact Deposit.

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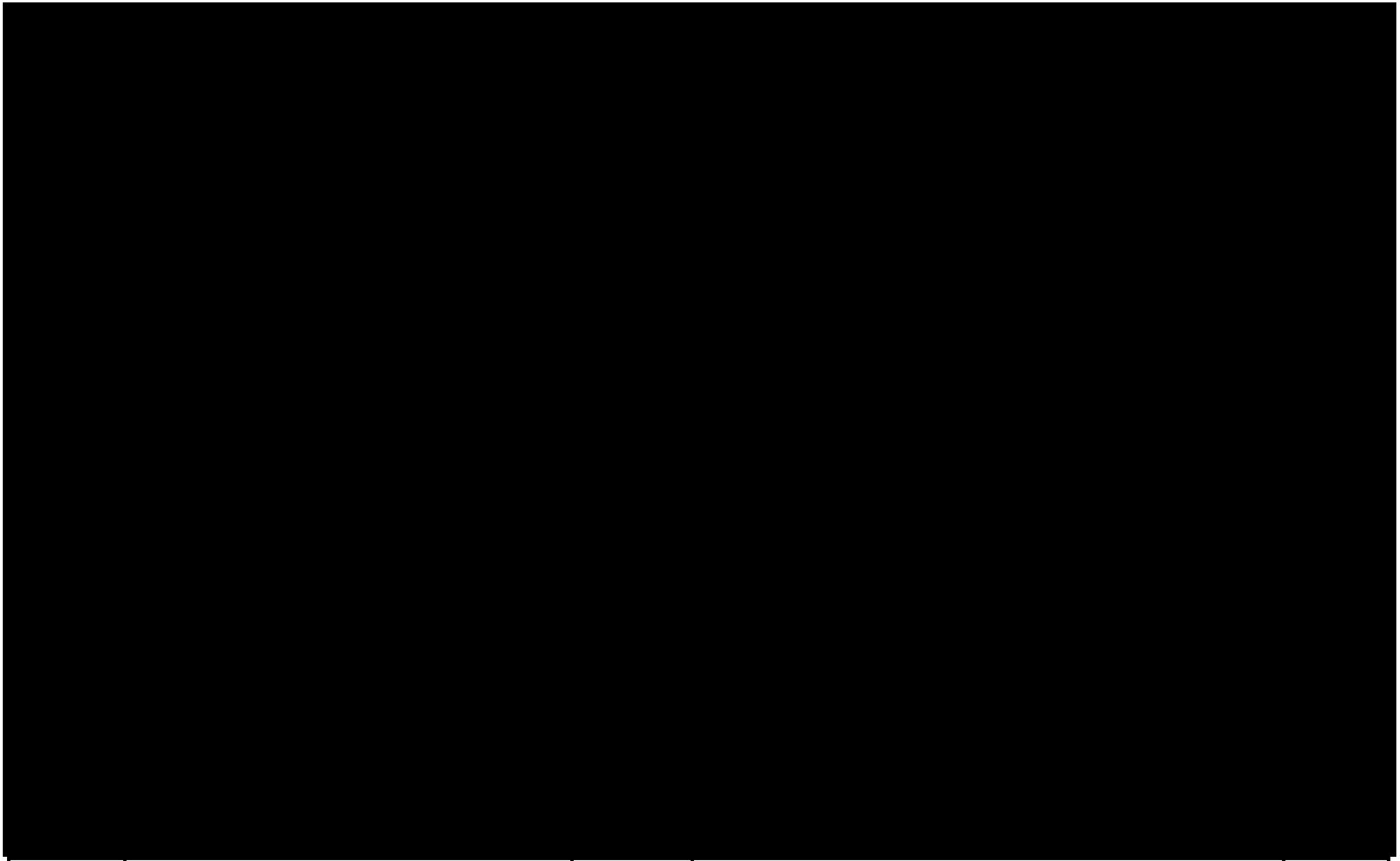

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Figure 16: Zone 6 PAD 3 & 4 Test Pit Locations, Identified Artefact Deposit and Isolated Find.

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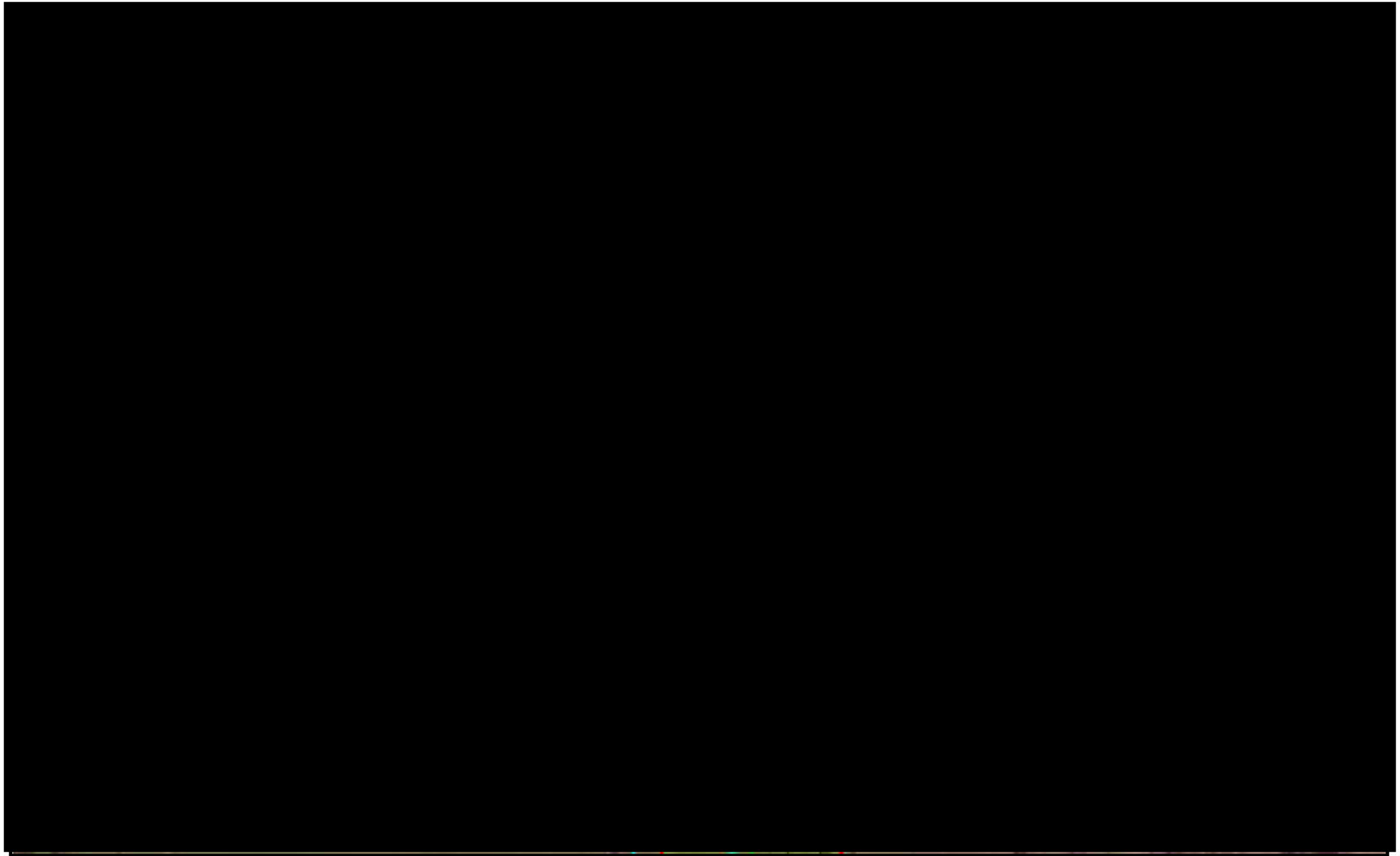

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Figure 17: Zone 6 PAD 5 & 6 Test Pit Locations and Identified Artefact Deposit and Isolated Find

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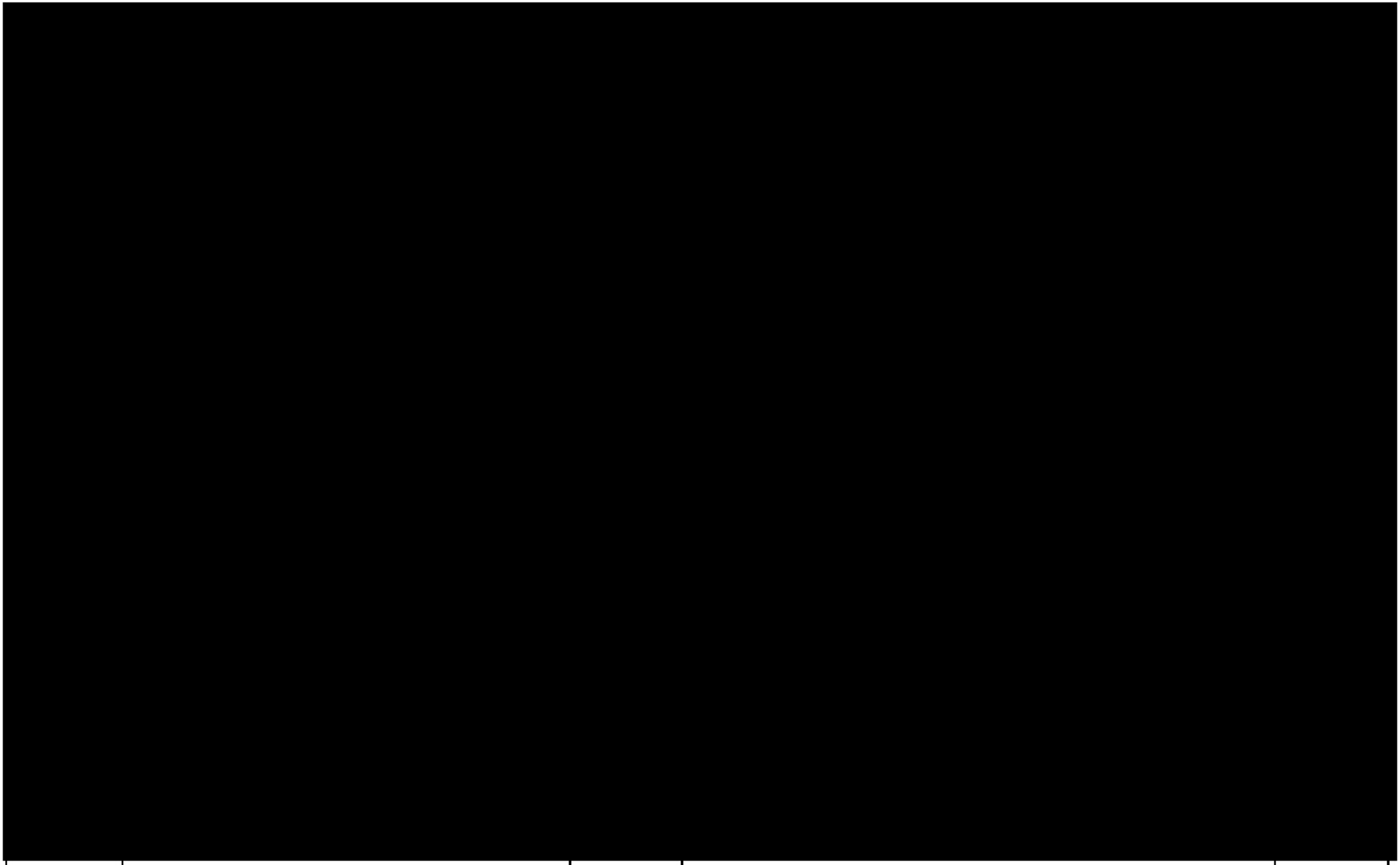

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Figure 18: Zone 9 Test Pit Locations and Identified Artefact Deposit and Isolated Find.

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3.0 LITHIC ANALYSIS

This section has been prepared by Jenni Bate, Director/Archaeologist of Apex Archaeology, in order to detail the results of the analysis of the Aboriginal objects recovered during the test excavations within the study area.

3.1 SUMMARY OF RESULTS

30 stone objects were recovered from excavation of 122 test pits across the four remaining archaeological zones (5, 6, 9 & 10). The 30 objects are summarised in Table 7 and recorded in detail in Table 8. A selection are shown in Plate 41 to Plate 43.

Table 7: Summary of artefacts recovered

Zone	PAD	Pit	# of artefacts
5	1S	2	1
5	1S	9	2
5	1S	18	1
5	1S	20	3
5	1S	21	1
5	1S	23	1
5	1S	27	1
5	1S	33	2
5	1S	34	1
5	1N	7	2
5	1N	13	1
6	1	3	1
6	3	6	1
6	3	15	2
6	3	16	3
6	3	17	1
6	5	6	1
6	5	10	2
9	1	12	3

3.2 THE STONE OBJECTS

Quartz was the predominant raw material identified during the test excavation (n=19; 63%), with a lower number of quartzite artefacts (n=3; 10%) and small numbers of silcrete (n=1; 4%), river cobbles (n=1; 4%) fine grained silicious (FGS) (n=2; 6%) and volcanic materials (n=4; 13%) (refer Chart 1).

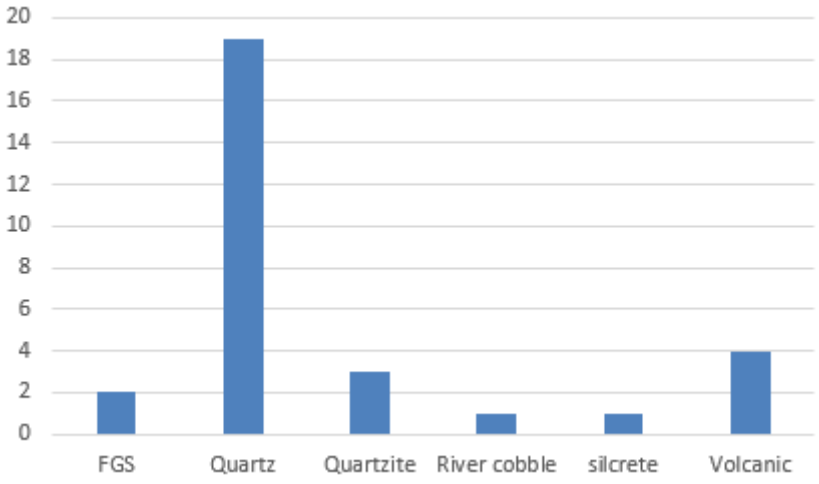

Chart 1: Breakdown of raw material types identified in artefact assemblage

The majority of items were recovered from Spit 3 (n=13; 43%), followed by Spit 4 (n=4; 13%) and Spit 5 (n=3; 10%). Only four items in total were recovered from Spit 1 across all of the additional areas investigated.

Flakes were the most common artefact type identified within the assemblage (n=15; 50%), followed by flaked pieces (items which do not retain flaking, grinding or pitting and do not meet other criteria for artefact types but are considered to have been formed through cultural activities) (n=5; 16%), and two examples each of cone split flakes, cores, medial flakes and proximal flakes (refer Chart 2).

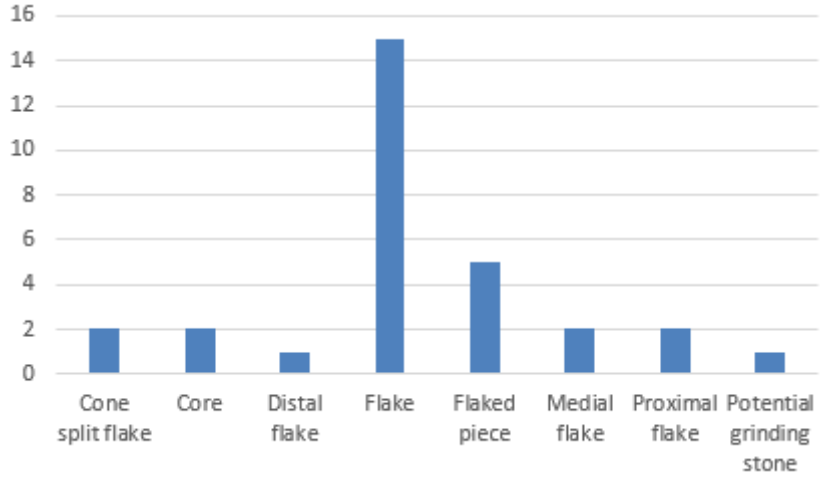

Chart 2: Distribution of identified artefact types within assemblage

The assemblage recovered during the additional test excavations is similar in composition and identified artefact densities to that identified during GML's 2022 test excavations. The spatial distribution of artefacts is shown on Figure 19 to Figure 25.

Plate 41: Silcrete flake from Zone 5 PAD 1 South TP18.
Ventral and dorsal surfaces. Scale in 1mm increments.

Plate 42: Quartzite flake from Zone 5 PAD 1 North TP13
Ventral and dorsal surfaces. Scale 5 mm long in 1mm increments.

Plate 43: Volcanic proximal fragment from Zone 9 TP12.
Ventral and dorsal surfaces. Scale 5 mm long in 1mm increments.

Table 8: Stone objects recovered by the test excavation (Zone 5 PAD 1 South).

Zone	PAD	Pit	Square	Spit	Material	Description	Cortex %	Maximum size mm	Type	Cross-section	Distal	Length	Width	Thickness
5	1S	2	[redacted]	4	Quartz	white	none	30	flake	low angle weak ridge	step	22	30	7.5
5	1S	9	[redacted]	3	Quartz	Grey/white	none	20.8	Flake	High angle strong ridge	Feather	20.8	10.5	4.1
5	1S	9	[redacted]	3	Quartz	White	None	17.9	Cone split flake	n/a	feather	17.9	(10.3)	3.8
5	1S	18	[redacted]	2	silcrete	Grey	none	12.9	Flake	Low angle strong ridge	Feather	12.9	12.4	2.9
5	1S	20	[redacted]	1	Quartz	White	None	10.1	Flake	Low angle weak ridge	Feather	10.1	7.5	2.4
5	1S	20	[redacted]	2	Quartz	White/pink	None	20	Flake	High angle strong ridge	Hinge	20	11.1	4.8
5	1S	20	[redacted]	5	Quartz	White/brown	10	36	Flake	High angle strong ridge	Step	36	16.4	8
5	1S	21	[redacted]	2	Quartz	White	None	12.1	Medial flake	Low angle weak ridge		(10.3)	12.1	2.1
5	1S	23	[redacted]	1	Quartz	White	None	8.3	Flaked piece					
5	1S	27	[redacted]	5	Quartz	White	None	14.9	Flake	Low angle weak ridge	Step	10.7	14.4	3.1
5	1S	33	[redacted]	1	FGS	Grey	40	19.1	Flaked piece					
5	1S	33	[redacted]	4	Quartz	White	None	16.3	Medial flake	High angle strong ridge		(15.6)	7.6	6
5	1S	34	[redacted]	1	Quartzite	White/brown	None	22.8	Distal flake	Low angle weak ridge	Feather	(14.9)	22.8	4.7
5	1N	7	[redacted]	3	Quartzite	Grey	20	26.6	Proximal flake	High angle strong ridge		(24.3)	18.9	8.1
5	1N	7	[redacted]	4	Quartz	White	None	13.9	Flaked piece					
5	1N	13	[redacted]	5	Quartzite	White	None	32.3	Flake	High angle strong ridge	Feather	32.3	24	7.8
6	1	3	[redacted]	11	Quartz	White	None	16.2	Flake	Low angle weak ridge	Feather	16.2	15.2	3.3
6	3	6	[redacted]	3	Quartz	White	None	14.3	Flake	Low angle strong ridge	Feather	14.3	13.1	4.4
6	3	15	[redacted]	3	Quartz	White	None	9.9	Flaked piece					
6	3	15	[redacted]	3	Quartz	White	None	18.3	Flake	High angle strong ridge	Feather	18.3	15.5	6.5
6	3	16	[redacted]	3	Quartz	White	none	31.5	Core			31.6	21.8	17.9
6	3	16	[redacted]	3	Quartz	White	None	15.1	Flake	Low angle strong ridge	Feather	15.1	7.4	2.4

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Issue Date: 13/11/2025
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Zone	PAD	Pit	Square	Spit	Material	Description	Cortex %	Maximum size mm	Type	Cross-section	Distal	Length	Width	Thickness
6	3	16	[redacted]	4	Quartz	Grey	None	13.9	Flaked piece					
6	3	17	[redacted]	3	Quartz	White	None	18.3	Flake	High angle weak ridge	Feather	18.3	12.4	4.1
6	5	6	[redacted]	3	FGS	Grey	None	13.1	Cone split flake		Feather	13.1	(8.5)	3.2
6	5	10	[redacted]	7	Volcanic	Grey/black	None	50.4	Flake	Low angle weak ridge	Step	38.2	44.4	13.3
6	6	10	[redacted]	2	River cobble	Brown	60	66.4	Potential grinding stone; striations on cortex					
9		12	[redacted]	3	Volcanic	Black	30	35.3	Core			35.3	30.3	7.9
9		12	[redacted]	3	Volcanic	Black	None	25.8	Flake	Low angle weak ridge	Step	11.7	25.8	4.9
9		12	[redacted]	3	Volcanic	Black	None	13.2	Proximal flake	Low angle weak ridge		13.2	12.8	3.5

Note to Table 8: Length measures in brackets indicate broken dimensions.

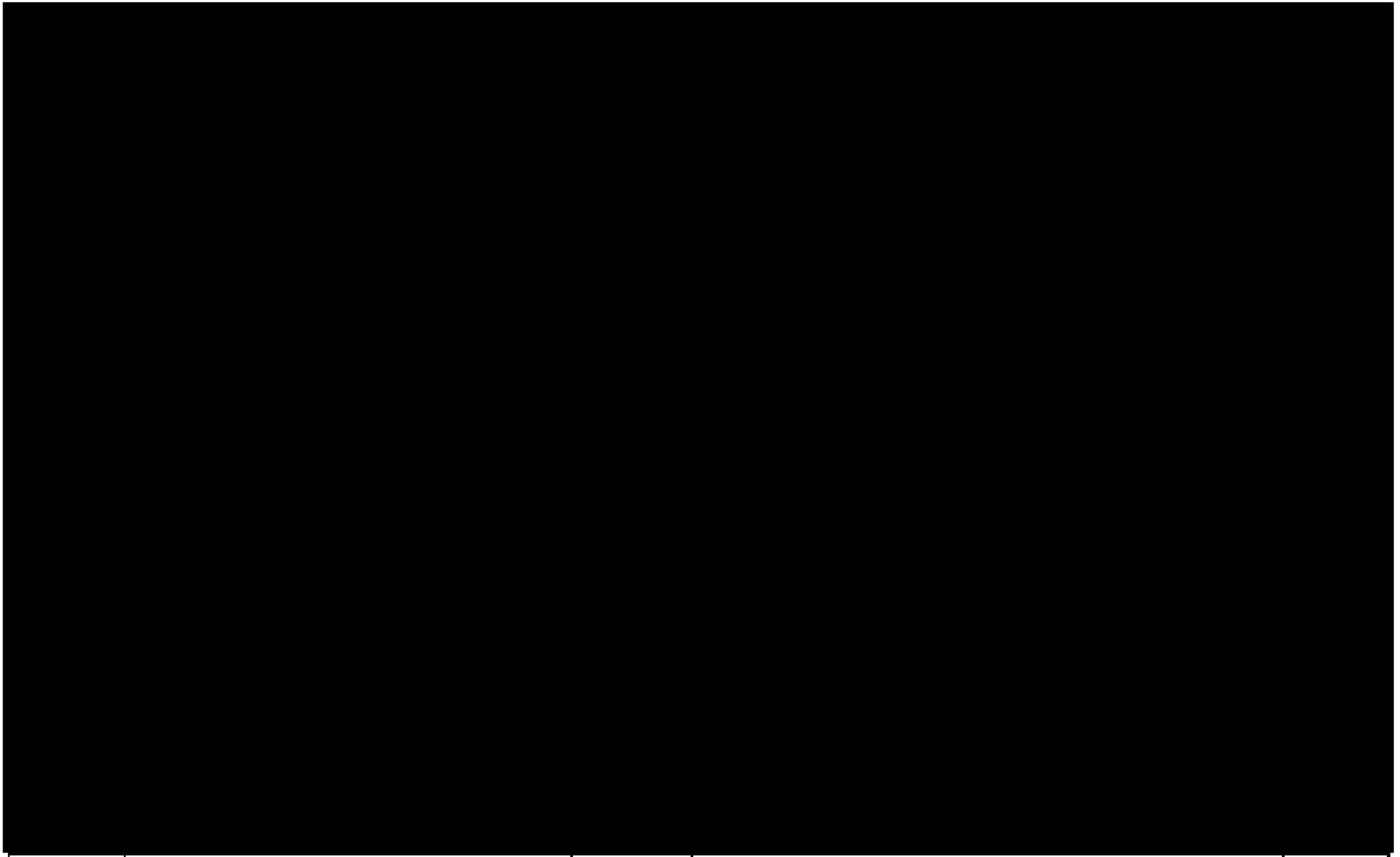

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Figure 19: Spatial distribution of objects in test pits (Zone 5 PAD 1 South).

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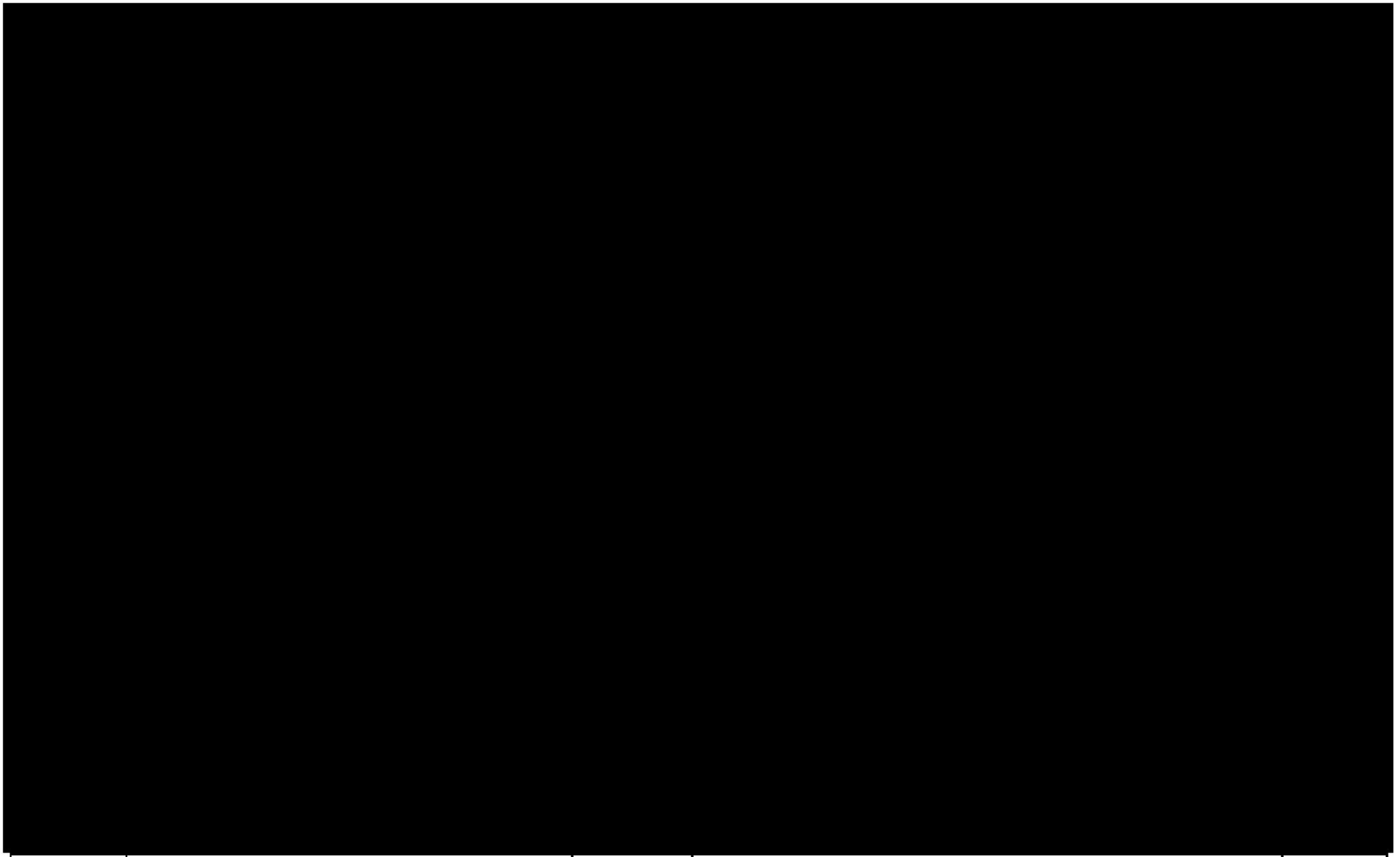

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Figure 20: Spatial distribution of objects in test pits (Zone 5 PAD 1 North).

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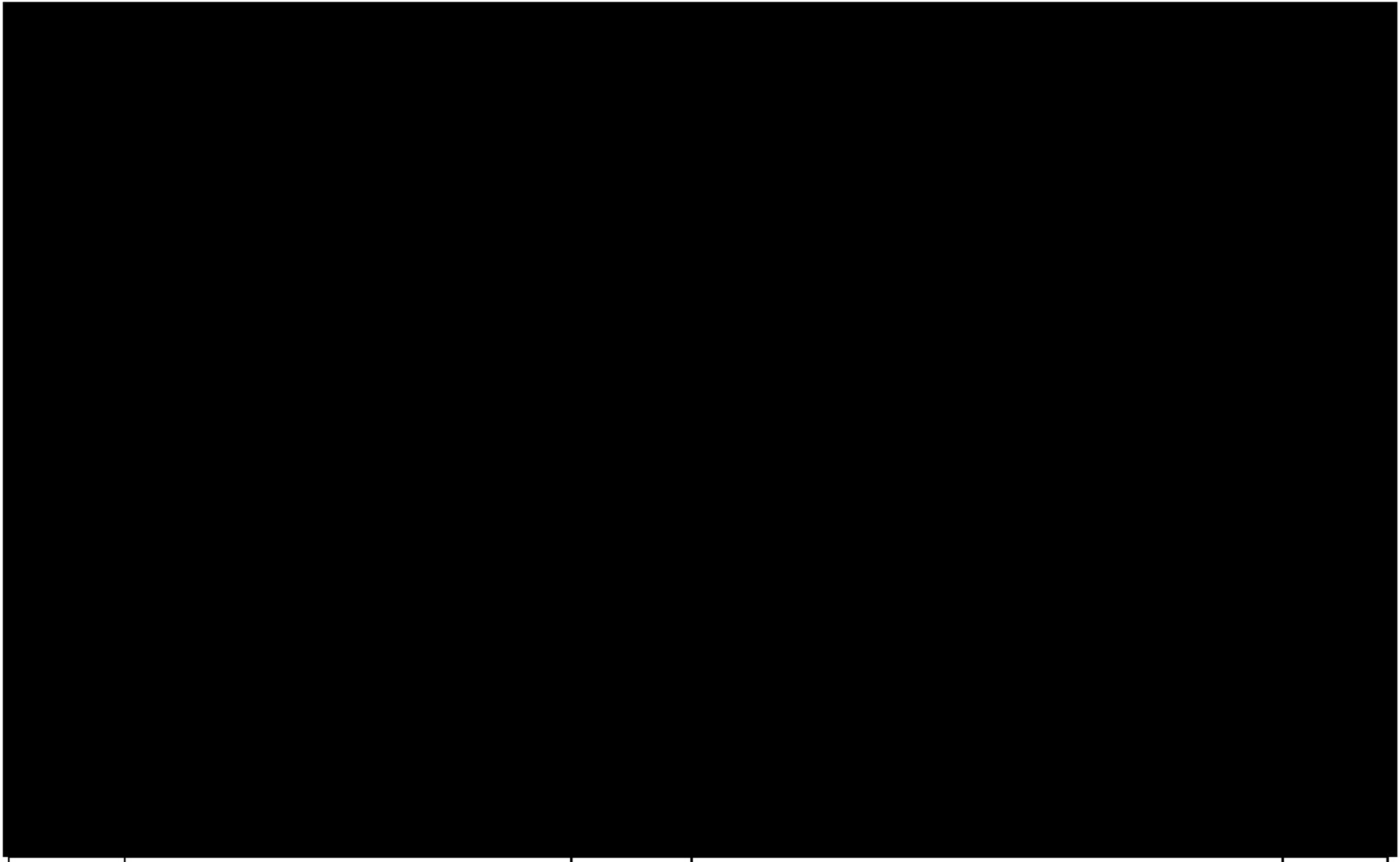

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Figure 21: Spatial distribution of objects in test pits (Zone 6 PAD 1).

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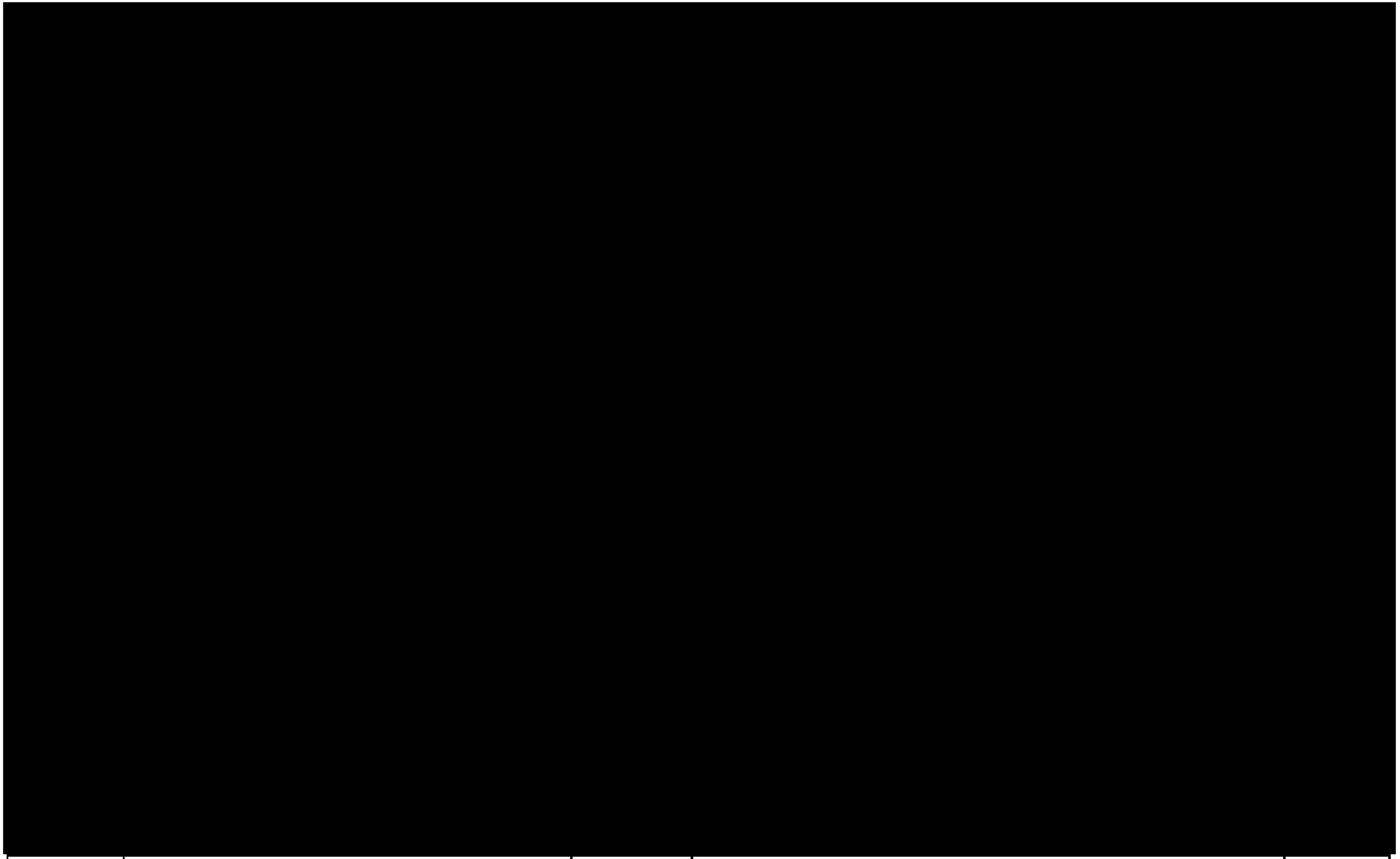

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Figure 22: Spatial distribution of objects in test pits (Zone 6 PAD 3).

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Figure 23: Spatial distribution of objects in test pits (Zone 6 PAD 5).

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Figure 24: Spatial distribution of objects in test pits (Zone 6 PAD 6).

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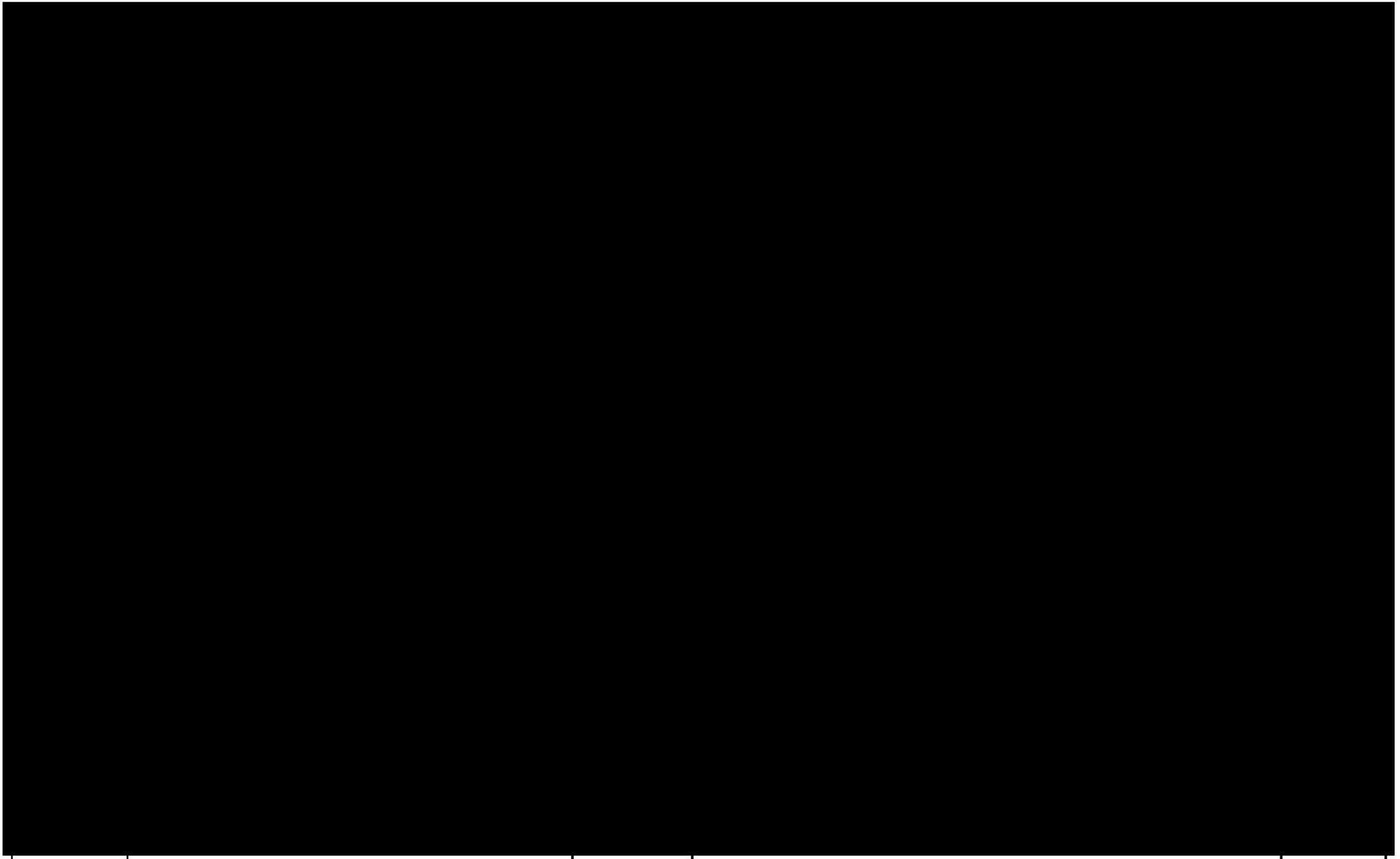

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Figure 25: Spatial distribution of objects in test pits (Zone 9 PAD 1).

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4.0 Significance Assessment

4.1 Introduction

The *Aboriginal cultural heritage consultation requirements for proponents 2010* acknowledge that:

- Aboriginal people have the right to maintain their culture, language, knowledge and identity
- Aboriginal people have the right to directly participate in matters that may affect their heritage
- Aboriginal people are the primary determinants of the cultural significance of their heritage

Undertaking consultation with Aboriginal people ensures that potential harm to Aboriginal objects and places from proposed developments is identified and mitigation measures developed early in the planning process. This section presents a significance assessment of the newly identified sites within the additional survey and test excavation zones.

4.2 Criteria

The Burra Charter is considered an appropriate framework for the assessment of cultural heritage, which can be made based on the following assessment criteria:

- **Social value:** Also referred to as cultural value, this criterion considers the spiritual, traditional, historical or contemporary associations an area or place has for Aboriginal people
- **Historic value:** the relationship between a place and people, events, phases or activities of importance to the Aboriginal community; specifically considering the "associations of a place with a historically important person, event, phase or activity in an Aboriginal community" (DECCW 2010)
- **Scientific value:** assessment under this criterion considered the ability of a landscape, place, area or object to inform scientific research and/or analysis and to assist in answering research questions
- **Aesthetic value:** the ability of a place, area, landscape or object to demonstrate aesthetic characteristics, or possess creative or technical values

Additionally, archaeological significance is assessed based on the archaeological or scientific values of an area. These values can be defined as the importance of the area relating to several criteria. Criteria used for determining the archaeological significance of an area are as follows:

- **Research or educational potential:** Can the site contribute to an understanding of the area/region and/or the state's natural and cultural history? Is the site able to provide information that no other site or resource is able to do?

- **Representativeness:** is the site representative of this type of site? Is there variability both inside and outside the study area? Are similar site types conserved?
- **Rarity:** is the subject area a rare site type? Does it contain rare archaeological material or demonstrate cultural activities that no other site can demonstrate? Is this type of site in danger of being lost?
- **Integrity/Intactness:** Has the site been subject to significant disturbance? Is the site likely to contain deposits which may possess intact stratigraphy?

Further, an assessment of the grade of significance is made, based on how well the item fulfils the assessment criteria. The Heritage Branch of the Department of Planning (now the Heritage Division of the Department of Planning, Industry and Environment) 2009 guideline *Assessing Significance for Historical Archaeological Sites and 'Relics'* defines the grading of significance as follows:

Table 9: Grading of significance, from Heritage Branch 2009

Grading	Justification
Exceptional (E)	Rare or outstanding item of local or State significance. High degree of intactness. Item can be interpreted relatively easily.
High (H)	High degree of original fabric. Demonstrates a key element of the item's significance. Alterations do not detract from significance.
Moderate (M)	Altered or modified elements. Elements with little heritage value but which contribute to the overall significance of the item.
Little (L)	Alterations detract from significance. Difficult to interpret.
Intrusive (I)	Damaging to the item's heritage significance.

Whilst this was developed for the assessment of significance of historical items, the criteria are applicable to Aboriginal significance assessments as well. It is important to note that the below assessment is specific to Aboriginal cultural heritage and does not consider the non-Aboriginal significance of the site.

4.3 Significance Assessment

The significance of the sites within the study area has been assessed and summarised in the following table, with discussion around the significance assessment for the study area as a whole following.

Table 10: Summary of significance for sites within the study area

Site	AHIMS	Social	Historic	Scientific	Aesthetic	Represent	Rarity	Integrity	Overall
Zone 5 PAD 1 South AD01	50-5-0300	H	L	L	L	L	L	L	L
Zone 5 PAD 1 South AD02	50-5-0301	H	L	L	L	L	L	L	L
Zone 5 PAD 1 South AD03	50-5-0302	H	L	L	L	L	L	L	L
Zone 5 PAD 1 North AD01	50-5-0303	H	L	L	L	L	L	L	L
Zone 6 PAD 1 AD01	50-5-0304	H	L	L	L	L	L	L	L

Site	AHIMS	Social	Historic	Scientific	Aesthetic	Represent	Rarity	Integrity	Overall
Zone 6 PAD 3 AD01	50-5-0305	H	L	L	L	L	L	L	L
Zone 6 PAD 3 AD02	50-5-0306	H	L	L	L	L	L	L	L
Zone 6 PAD 5 AD01	50-5-0307	H	L	L	L	L	L	L	L
Zone 6 PAD 6 AD01	50-5-0308	H	L	L	L	L	L	L	L
Zone 9 AD01	50-5-0309	H	L	L	L	L	L	L	L
IR-IF-01	50-5-0311	H	L	L	L	L	L	L	L
IR-IF-02	50-5-0310	H	M	L	L	M	M	L	M
IR-IF-03	50-5-0312	H	M	L	L	M	M	L	M

Social value

The Aboriginal community are best placed to make a determination of the social or cultural value of the study areas. Feedback from RAPs has been that the area is considered extremely culturally significant to the community. Cultural material provides a tangible link to elders and ancestors and as such, the area is considered to be culturally significant. All sites have been assessed as being of high cultural significance.

Historic value

The study area is not known to be associated with any specific Aboriginal individuals or historical events and thus is considered to have limited significance under this criterion. A grind stone and an edge ground axe are considered to have moderate significance under this criterion due to their demonstration of specific activities undertaken by Aboriginal people within the area.

Scientific value

The study area itself is considered to have low scientific value. Evidence of Aboriginal cultural material is located both on the ground surface and within subsurface contexts, although the surface material was within a disturbed context. The artefacts identified are limited in range and number, and as such have limited scientific value.

Aesthetic value

Generally, aesthetic value is determined by the response evoked by a setting. The study area is considered to hold limited aesthetic significance with regards to Aboriginal heritage, based on its context within a gently undulating landscape, often with significant views and vistas.

Research Potential

The study area is considered to possess limited research potential regarding Aboriginal heritage. It is noted that the artefact assemblage has the ability to provide some additional, limited information about the way Aboriginal people utilised the area in the past.

REPRESENTATIVENESS

The study area is somewhat representative of Aboriginal cultural values as it demonstrates evidence of continuity of occupation within the region. Overall, the identified sites are considered to be representative of low density artefact concentrations.

RARITY

The study area is considered to have low value under this criterion due to the level of disturbance present and the location of the artefactual material within a disturbed context. The limited range of artefacts and their ability to demonstrate Aboriginal occupation within the area is not considered rare within the local context. However, intact edge ground axes and hammer stones/anvils are relatively rare within the wider area. These sites have a moderate rarity which is limited due to their broken nature.

INTEGRITY/INTACTNESS

The study area is considered to be disturbed and thus is not considered to be overly intact or to have significant integrity under this criterion.

4.4 CULTURAL SIGNIFICANCE ASSESSMENT

Generally, all Aboriginal sites are of high significance and importance to the Aboriginal community, both locally and more broadly. The Aboriginal social or cultural value of the study area can only be determined by the Aboriginal community. The RAPs for the project have indicated that all sites are considered to be of high cultural significance as evidence of Aboriginal connection to the area. This section will be updated in the final report if any further comments are provided by the RAPs for the project.

It is acknowledged that the overall significance of a site is determined by both the cultural and scientific values of the area; with cultural values potentially extending beyond a specific study area and incorporating cultural landscapes in many cases. The cultural significance of an area can only be determined by the Traditional Owners of that area. Generally, all sites with evidence of Aboriginal occupation are considered significant to Aboriginal people as part of a larger cultural landscape.

4.5 STATEMENT OF ARCHAEOLOGICAL SIGNIFICANCE

The study area is considered to have low archaeological significance based on its limited research potential, representativeness, rarity and integrity. Overall, the potential for the site to contribute a greater understanding of the archaeological record is considered low, although it is noted that identification of edge ground axes and hammer stones/anvils is relatively rare within the wider context.

5.0 MANAGEMENT STRATEGIES

This AASEM has been prepared to provide strategies for the management of Aboriginal cultural heritage within the study area. It should be read in conjunction with the Heritage Management Sub Plan for the I2S Project (April 2025) and is an extension of that document. It also builds on management recommendations made by GML (2022) for recommendations that have not yet been enacted.

The following sections outline the required archaeological work within each zone.

Management measures have been developed in reference to measures recommended in the GML 2022 ACHAR and assessment of requirements based on current proposed works as needed to deliver the project.

Where no further archaeological mitigation is recommended, this is due to low densities of artefacts being identified within the area, or no archaeological objects being identified within that specific zone. In those areas, works are permitted to proceed with caution without the need for any additional archaeological mitigation.

5.1 WORKS REQUIRED

5.1.1 ZONE 1

- Salvage excavation of site Zone 1 – High density scatter (formerly 50-5-0280; now 50-5-0293 - Figure 26)
- ARTC2 (50-5-0267) – site registered as two artefacts. One artefact can be avoided and has been bunded off to ensure impact is avoided; the other artefact is located on boundary of CIZ and will be collected

5.1.2 ZONE 2

- Salvage excavation of site Zone 2 (formerly 50-5-0278; now 50-5-0294 - Figure 27)
- Surface collection of high density zones identified by GML (originally identified artefacts have been collected; but any additional items will be collected)

5.1.3 ZONE 3

- No further archaeological mitigation necessary

5.1.4 ZONE 4

- No further archaeological mitigation necessary

5.1.5 ZONE 5

- Surface collection of site IR-IF-01 (AHIMS # 50-5-0311)
- Unmitigated impact to Zone 5 PAD 1 South AD01, Zone 5 PAD 1 South AD02, Zone 5 PAD 1 South AD03, and Zone 5 PAD 1 North AD01 (AHIMS # 50-5-0300, 50-5-0301, 50-5-0302, 50-5-0303)

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Figure 25: Artefact counts within test pits for Zone 1 (excavated by GML Heritage).

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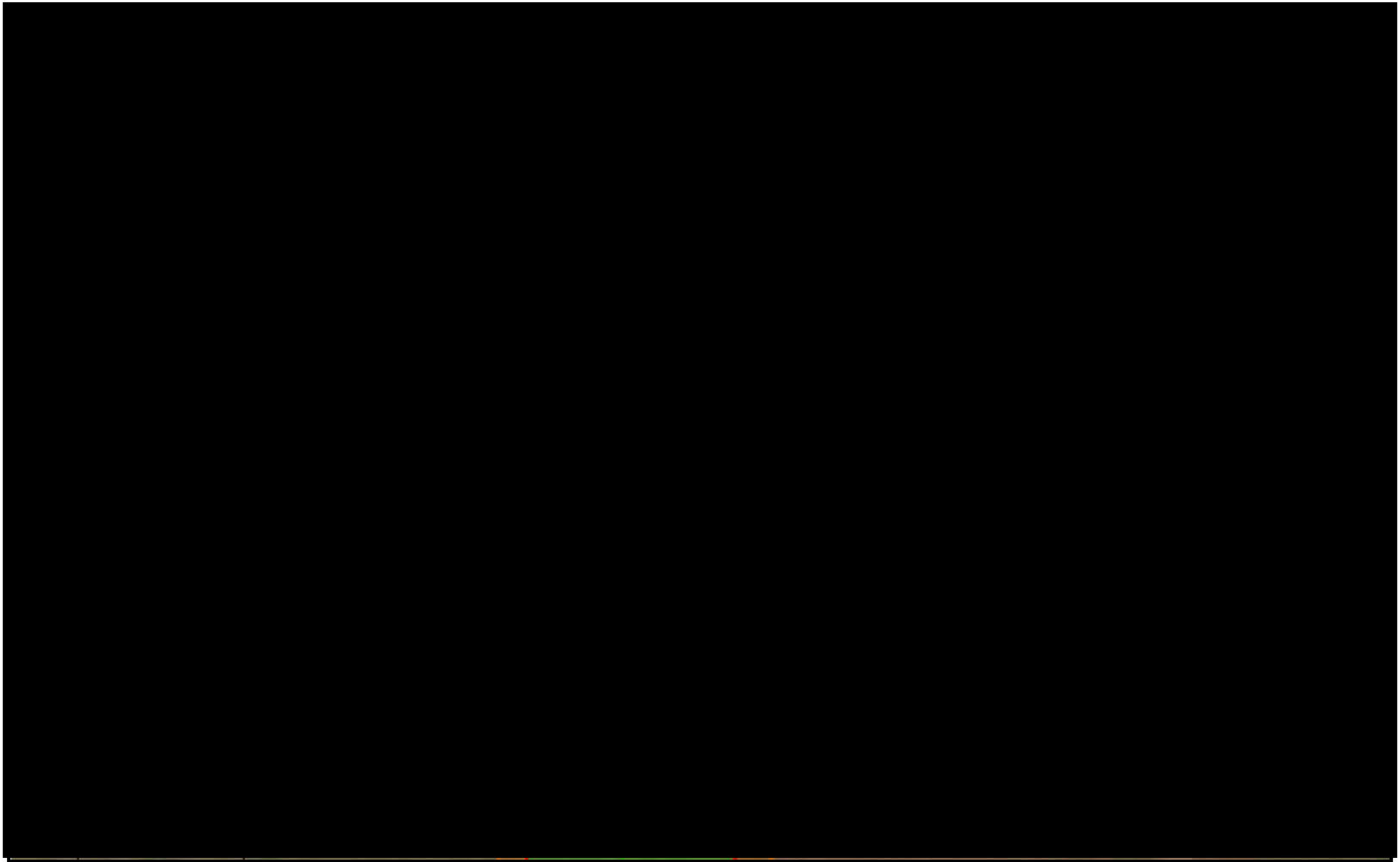

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Figure 26: Artefact counts within test pits for Zone 2 (excavated by GML Heritage).

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5.1.6 Zone 6

- Surface collection of site IR-IF-03 (AHIMS # 50-5-0312)
- Unmitigated impact to Zone 6 PAD 1 AD01, Zone 6 PAD 3 AD01, Zone 6 PAD 3 AD02, Zone 6 PAD 5 AD01, Zone 6 PAD 6 AD01 (AHIMS # 50-5-0304, 50-5-0305, 50-5-0306, 50-5-0307, 50-5-0308)

5.1.7 Zone 7

- No further archaeological mitigation necessary

5.1.8 Zone 8

- No further archaeological mitigation necessary

5.1.9 Zone 9

- Surface collection of IR-IF-02 (AHIMS # 50-5-0310)
- Unmitigated impact to Zone 9 AD01 (AHIMS # 50-5-0309)

5.1.10 Zone 10

- No further archaeological mitigation necessary

5.1.11 Zone 11 East

- No further archaeological mitigation necessary

5.1.12 Zone 11

- No further archaeological mitigation necessary

5.1.13 Areas not within an Indigenous Survey Zone

- No further archaeological mitigation necessary

5.1.14 Access Tracks

It is noted that occasionally artefacts may be located on access tracks which may be impacted by vehicles utilising the tracks for access to the Project area. Avoidance of these artefacts would not be feasible and as such, these should be collected as part of the salvage works. The original location of the artefacts should be recorded and a site card submitted (where a site has not been previously registered on AHIMS), with a subsequent ASRIF submitted noting that the site has been destroyed. This should be undertaken in accordance with the Aboriginal cultural heritage unexpected finds procedure for the Project.

5.2 Mitigation Measures

In addition to avoidance of known scarred trees within and adjacent to the CIZ, as outlined in the HMSP, mitigation measures comprise surface collection, salvage excavations, and unmitigated impact.

5.2.1 Surface Collection

Surface artefacts requiring collection will be relocated on the ground. All collected artefacts would be recorded using GPS (or appropriate alternative) and placed into

robust ziplock bags with their site name, AHIMS number, and project name recorded on the bag in indelible pen. The attributes of each item would be recorded in line with the requirements of AHIMS and ASIRFs would be submitted for each site. The item/s will be photographed. The items would be safely stored at the temporary storage location until they can be safely returned to site, likely on completion of salvage excavation works and/or construction works for the Project.

5.2.2 Archaeological Salvage Excavations

In some areas, GML (2022) recommended salvage excavations where artefact densities were comparatively higher. These areas are within Zones 1 and 2, where several test pits with relatively higher artefact densities than surrounding test pits were identified. These were defined as high density PADs and salvage excavations were recommended within these high density PADs. Areas where test pits had fewer than five artefacts in a single test excavation unit were recommended for unmitigated impact. This same approach has been applied to developing recommendations for Zones 5, 6, 9, and 10. None of the test pits excavated in these areas reached the threshold of five or more artefacts in a single pit and as such, no salvage excavation was recommended in these zones.

It is noted that several of the GML test pits identified for salvage excavation within Zone 1 are located just outside the CIZ for the project. This is likely due to amendment of the impact corridor subsequent to GML completing their test excavation within a wider corridor than the final CIZ. However, the overall higher density areas identified by GML (Figures 26 & 27) do extend into the CIZ, and it is likely that the required salvage excavations within these higher density zones will extend into the CIZ to adequately salvage these sites in line with the requirements of CoA E140, whereby “ground disturbance works may not commence in an area where archaeological excavation and surface collection of Aboriginal objects is required... until the archaeological works described in the Aboriginal Cultural Heritage Assessment Reports listed in Condition A1 have been completed”.

5.2.3 Unmitigated Impact

Unmitigated impact in an archaeological context refers to impacts occurring with no further archaeological mitigation prior to the commencement of impact activities. This is generally recommended when archaeological sites are considered to have limited scientific significance and are unable to provide additional information regarding the Aboriginal occupation of the area.

5.2.4 Avoidance

There are a number of culturally modified trees and artefact sites that are in proximity to, but outside of, the CIZ for the project. These sites can be conserved in situ through avoidance. Where there is any potential for inadvertent impact to occur to these sites, avoidance is recommended to include high visibility fencing to remain in place during construction works.

5.2.5 AWARENESS

Awareness of the potential for additional Aboriginal cultural material to be present in the wider area, as well as the existence of known Aboriginal objects and sites within the Project Area, is an important mitigation strategy to assist in preventing inadvertent impact to unexpected finds or known sites that are proposed for avoidance. All personnel are required to undertake cultural heritage awareness training as part of the project.

5.3 STAGED SALVAGE STRATEGY

The salvage excavations within Zones 1 and 2 will be a staged salvage excavation, based on best practice and evidence of what Heritage NSW will expect for sub-surface open area excavation within NSW.

The following zones will be targeted as per the results indicated within Table 7.1 from the GML ACHAR (2022), comprising Zone 1 and 2. GML Test Pits (TP) 19 & 46 will be relocated and expanded within Zone 1. TP 88 from Zone 2 will be expanded. A total of three areas of high density artefact deposits from the test excavation will be targeted for expansion within these zones, as follows:

- Stage 1 – three areas of 3 x 3m ($9m^2$) will be excavated around three test pits identified as having the highest artefact counts (Zone 1 TP 19 & 46 – Zone 2 TP 88).
- Stage 2 – Expansion of each open area to an additional maximum of $25m^2$ depending on artefact concentrations. This will be determined by artefact counts recovered from Stage 1.

Total maximum amount of salvage open area = $102m^2$

In the event the exact test pit to be targeted for salvage cannot be relocated on the ground, the coordinate location of the test pit will be used to get as close as possible to the recorded location of the original test pit.

5.3.1 RE-LOCATION/EXPANSION OF GML HERITAGE TEST PITS – STAGE ONE

- Three of the test pits previously excavated by GML Heritage within Zone 1 and 2 will be reidentified and re-excavated;
- Surrounding each test pit, eight 1 m^2 salvage pits will be excavated to form a 3 × 3 metre (9 m^2) open-area grid;
- Salvage pits will be oriented north–south using a handheld compass for consistency;
- Artefact concentrations will be recorded on graph paper to track density and distribution patterns;
- The results of Stage One will be used to guide the scale and location of any Stage Two excavation.

5.3.2 Open Area Salvage – Stage Two

- Open-area salvage excavation may extend to a maximum additional amount of 25m² across each of the stage one expansion areas, depending on artefact density, artefact type and material, stratigraphic integrity, and presence of cultural features;
- The need for and extent of Stage Two excavation will be determined based on Stage One results and in consultation with Registered Aboriginal Parties;
- Total excavation across both stages will not exceed 102 m².

5.3.3 Excavation Methodology

- All pits will be 1m² and excavated in 5cm spits by hand using a shovel, hand shovel and trowel as appropriate. Spit depths will be consistently checked with a hand tape measure to ensure accuracy of excavation depth;
- If cultural features (e.g. hearths, heat treatment pits, knapping floors) are identified during excavation, excavation with hand tools (e.g. hand shovel and shovel) will cease and continue with trowel only;
- Locations of identified features will be planned onto 1mm graph paper. X, Y and Z coordinates of individual artefacts from in-situ knapping floors will be recorded and photographed prior to removal (where possible) and continuation of excavation;
- Charcoal samples for dating (C_{14}) will only be taken during in-situ excavation of accurately identified cultural features (e.g. hearths and heat treatment pits);
- Any charcoal samples will be recovered and placed into aluminium foil, securely sealed, and placed into zip lock bags, clearly labelled and provenanced;
- The soil from each spit will be placed in 10L plastic buckets and transported to the sieving station;
- To ensure sufficient control of each spit excavated, a bag will be written to accompany the buckets from each spit. The following information will be recorded on each bag: site name, date, pit location (easting & northing) and name of excavator;
- All material from each salvage pit will be dry sieved through table sieves (1 x 1m) with a wire mesh aperture gauge of 5mm, with the option to include 3mm mesh depending on the soil matrix and micro debitage recovery.
- Wet sieving may be necessary depending on the soil matrix/weather conditions, and will be implemented if necessary;
- All material recovered from the sieving process will be checked by a qualified archaeologist with experience in artefact identification prior to being placed into the spit bag;
- Artefact counts will be recorded for each spit; and
- Lithic analysis on completion of the salvage excavation will be undertaken by Dr Beth White who is a specialist with suitable experience (30+ years); or an alternative lithic analyst with appropriate skills and experience.

5.3.4 Expansion Triggers

The presence of any one or combination of the following triggers will determine if further excavation will continue in any of the initial open area expansion sites (Stage One) and will be utilised during further expansion in Stage Two:

- The relative density of artefact frequencies. If higher numbers of artefacts are identified in one or more parts of the initial excavation, they will be further explored;
- Based on the results of the current test excavation, pits with five or more items in any 1m^2 area would be expanded, up to the maximum areas outlined in Section 6.3.1 and 6.3.2;
- Pits with 4 or fewer items would not be expanded further;
- Variations of raw materials that warrant further investigation;
- Unusual artefact types are found, e.g. complete flakes, tools, cores, other types such as ground edged implements etc;
- Evidence of artefact manufacture is found, e.g. conjoining artefacts, flaking debitage, micro-debitage, complete flakes, broken flakes; tool manufacture or maintenance;
- Evidence of different activities, indicated by different artefact types e.g. backed artefacts, partly made backed artefacts and backing debitage, tool retouching debitage, debitage with dorsal grinding and retouched and/or used tools, different raw materials and raw materials with distinctive banding or inclusions;
- Chronological material (any materials that can be used to date artefactual materials);
- Taphonomic/site formation indicators; and
- Any other relevant features appropriate for further investigations, e.g. archaeological features such as evidence of burning in a hearth, stone features; clay features etc.

5.3.5 Cessation of Excavation

Excavations will cease upon reaching basal clay, bedrock or a culturally sterile layer, or at the discretion of the archaeologist – for example, if excavation becomes unsafe due to depth. Additionally, excavations would cease upon excavation of an assemblage sufficient to answer the questions. The decision to cease based on sufficiency would be made in consultation with the lithic analyst for the project.

Excavation would also cease in the event evidence of contact archaeology is identified, and Heritage NSW would be contacted to determine the appropriate approach. The site is not considered likely to have potential for contact archaeology to be present.

Further, salvage pits would not be expanded (ie would not have adjacent salvage pits excavated) if four or few items are identified in any 1m^2 salvage pit.

5.4 Hold Points

In the event regionally significant or highly culturally significant deposits are identified during the salvage excavations (for example, significantly higher artefact densities than identified during test excavations; unusual or unexpected artefact types, or other unexpected archaeological finds), works will halt and consultation with the RAPs, Heritage NSW and the Department of Planning, Housing and Infrastructure will be undertaken to determine if additional mitigation or management actions are necessary prior to works proceeding.

If necessary, consideration will be given to redesigning the project to avoid or reduce impacts wherever possible.

5.5 Research Questions

The following research questions should guide the archaeological salvage excavations of the site.

- What do the salvage results indicate about the past Aboriginal occupation of the area and within the wider area?
- Can site formation processes be identified, and how do these formation processes impact the integrity of the archaeological deposits present?
- How do the salvage excavation results compare to other local and regional archaeological results and predictive models?
- Are the raw material sources consistent with those identified within the wider area? Are they different? Is there change over time? Can this be related to Aboriginal use of the area and does topography influence the results?
- Is it possible to determine the activities undertaken within the site based on the characteristics of the artefact assemblage?
- Can conjoining artefacts be identified within the deposit? What is the vertical and/or horizontal displacement of these artefacts?

5.6 Recording

- Each spit will be recorded on a standard spit sheet with the following information:
    - site name;
    - date;
    - excavator name;
    - spit number;
    - spit depth;
    - pit location (easting & northing);
    - start levels & end levels;
    - bucket count and end total bucket count;
    - soil description;
    - description of disturbance;
    - description of artefacts (material type & artefact type if *in situ*);

- in situ recording of artefacts where possible (xyz coordinates); and
- photograph details (from surface and of each spit to base).

5.7 Artefacts and Chain of Custody

Any artefacts that are recovered from the salvage excavation will initially be stored at Apex Archaeology's office in a lockable cupboard. The artefacts will then be transferred to be analysed by Dr Beth White, who is an archaeologist experienced in artefact analysis and interpretation; or an alternate lithic analyst with appropriate skills and experience. During the analysis the artefacts will be temporarily and securely stored at the analyst's office. On completion of the analysis the artefact assemblage will be transferred back to Apex Archaeology's office until reburial on site can occur. Once the artefacts are reburied, the location will be recorded and provided to AHIMS.

The proposed location/s for reburial of the collected assemblage must be an area that would not be subject to additional impact in future, and will be determined in consultation with the RAPs and the proponent to ensure the location is appropriate. The artefacts will avoid known Aboriginal site locations and the new location of the items would be registered with AHIMS as a new site.

5.8 Backfill and Salvage Excavation

It is considered likely that construction works would start on completion of salvage excavations and as such, the civil contractor will deal with the open area pits as part of the site works. In the event clean fill is required, the civil contractor will be responsible for the supply and backfill being completed.

5.9 Site Clearance

On completion of archaeological works within a zone, a clearance certificate will be issued to John Holland Group by MTS Heritage/Apex Archaeology stating that the archaeological work within that area has been completed, in accordance with CoA E140 and this AASEM. This requirement states that "ground disturbance works and construction work may not commence in those areas where archaeological excavation and surface collection of Aboriginal objects is required (including areas identified as requiring further assessment) until the archaeological works described in the Aboriginal Cultural heritage Assessment reports listed in Condition A1 have been completed".

A clearance certificate will be issued on completion of activities in accordance with this AASEM, stating that all salvage activities as required in this document have been completed within a specific zone, and no further archaeological work in specific areas is considered necessary. This clearance certificate will then be provided to Inland Rail, who will review and provide acknowledgement of the clearance certificate prior to ground disturbing works commencing.

The clearance certificate will inform works in line with John Holland and Inland Rail's internal environmental management systems and processes.

5.10 Post-Excavation Analysis

On completion of salvage works within the study area, any surface and subsurface, artefacts recovered would be analysed by Dr [redacted] (or an alternative analyst) as outlined in Section 6.7. Further, an Aboriginal Cultural Heritage Excavation Report (ACHER) detailing the results of any surface collection and salvage excavations would be prepared and provided to all RAPs for the project for review and comment, as well as to AHIMS for inclusion on the report database. This report would be prepared in line with CoA E139 for the project.

ASIRFs would be prepared for the impacted sites, detailing the results of the surface and subsurface salvage works undertaken within the area.

On reburial of artefacts recovered during all archaeological activities within the site, a new site card would be submitted to AHIMS detailing the location of the reburied items.

5.11 ASIRFs

Preparation of an ASIRF is required when impact has occurred to a site under a project approval. ASIRFs are prepared and submitted online to the AHIMS Registrar via the AHIMS Quarantine Station. Where a site has been impacted, the site status should be updated to record the harm that has occurred. This may be noting that the site has been partially or fully destroyed in accordance with the project approval. Where a site is confirmed to have archaeological material present that will not be impacted (for example, areas of subsurface or surface deposits extending outside of the CIZ for the Project), the AHIMS record should be updated to note that the site has been partially destroyed.

No new sites should be created as part of this process unless it is a previously unrecorded site. Records should be associated with the existing AHIMS site number so as to ensure records of all actions applicable to the existing site are recorded accurately. If necessary, where a site has been subject to partial impact, the coordinate location of the site should be updated as part of the ASIRF process to reflect the remaining portion of the site outside of the impact area.

Copies of approved ASIRFs should be attached to any salvage reports prepared to document the archaeological work undertaken to meet requirement E141 of the CoA.

5.12 Aboriginal Consultation

A copy of the AASEM will be provided to all RAPs for their review and comment. Copies of the consultation documentation are attached to the AASEM and any responses will be detailed in the final document.

Any further consultation with the Aboriginal community would relate to any unexpected finds within the site during works, as well as consultation regarding the salvage works and their results.

5.13 SUMMARY OF MANAGEMENT RECOMMENDATIONS

The following section outlines known Aboriginal sites within and in the vicinity of the Project area, and outlines the appropriate management strategies moving forward.

Table 11: Management recommendations (sci sig = Scientific Significance)

Zone	Site ID	AHIMS ID	Sci sig	Type of harm	Degree of harm	Comments	Recommendations
Zone 1	Artefact sites ARTC1 and ARTC4	50-5-0266, 50-5-0276	Low	Nil	Nil	Located inside the Project area but outside the construction zone	Avoidance; may require fencing if potential for impact exists
	Artefact site ARTC2	50-5-0267	Low	Direct	Partial	Located partially inside the Project area	Partial impact; part of site has been securely bunded off to avoid impact during works; part of site will be subject to surface collection ASIRF noting site "partially destroyed"
	Artefact sites ARTC3	50-5-0274	Low	Nil	Nil	Located outside the Project	Avoidance
	Artefact site ARTC5	50-5-0275	Mod	Nil	Nil	No longer valid. Artefact collected during test excavation ASIRF noting site "destroyed" previously submitted	No further mitigation necessary
	Site Zone 1—high density scatter	50-5-0293	Mod	Direct	Partial—less than 20%	Original PAD (50-5-0280) no longer valid, replaced by artefact site (50-5-0293) The southern edge of two of the three high-density areas in Zone 1 will be impacted by the construction zone	Salvage excavations within high density areas within CIZ ASIRF noting site "partially destroyed" Amend co-ordinate location via ASIRF to reflect location of deposit outside CIZ
	Site Zone 1—low density scatter	50-5-0293	Low	Direct	Partial—75%	Original PAD (50-5-0280) no longer valid, replaced by artefact site (50-5-0293) The two lower-density areas in Zone 1 will be substantially impacted by the construction zone	No further mitigation necessary Amend co-ordinate location via ASIRF to reflect location of deposit outside CIZ
	Ring tree	-	-	Nil	Nil	Located outside the Project	Avoidance
Zone 2	Scarred tree ARTC 6	50-5-0277	High	Indirect	Nil	Located outside the Project	Avoidance

Zone	Site ID	AHIMS ID	Sci sig	Type of harm	Degree of harm	Comments	Recommendations
	Site Zone 2—high density scatter	50-5-0294	Low	Direct	Total	Original PAD (50-5-0278) no longer valid, replaced by artefact site (50-5-0294) The two higher-density areas of in Zone 2 will be completely impacted by the construction zone	Salvage excavations within high density areas within CIZ ASIRF noting site "partially destroyed" Amend co-ordinate location via ASIRF to reflect location of deposit outside CIZ
	Site Zone 2—low density scatter	50-5-0294	Low to mod	Direct	Total	Original PAD (50-5-0278) no longer valid, replaced by artefact site (50-5-0294) The one low-density area of in Zone 2 will be completely impacted by the construction zone	No further mitigation necessary Amend co-ordinate location via ASIRF to reflect location of deposit outside CIZ
Zone 3	Scarred trees	50-5-0117, 50-5-0120, 50-5-0121	Nil	Nil	Nil	Determined not to be culturally modified trees. Deregistered from AHIMS	No further mitigation necessary
	Scarred tree ARTC18	50-5-0287	High	Indirect	Nil	Located inside the Project area	Avoidance
	Scarred tree ARTC20	50-5-0297	High	Indirect	Nil	Located inside the Project area	Avoidance
Zone 4	Artefact site ARTC7	50-5-0285	Low	Nil	Nil	Located outside the Project	Avoidance
	ARTC8	50-5-0284	Low	Nil	Nil	Located outside the Project	Avoidance
	ARTC9	50-5-0283	Low	Nil	Nil	Located outside the Project	Avoidance
Zone 5	Zone 5 PAD 1 South AD01	50-5-0300	Low	Direct	Total	Located inside the Project area. Confirmed to contain low density artefact concentration	No further mitigation necessary ASIRF to be submitted after impact to update site as destroyed
	Zone 5 PAD 1 South AD02	50-5-0301					

Zone	Site ID	AHIMS ID	Sci sig	Type of harm	Degree of harm	Comments	Recommendations
	Zone 5 PAD 1 South AD03	50-5-0302					
	Zone 5 PAD 1 North AD01	50-5-0303					
	IR-IF-01	50-5-0311	Low	Direct	Total		
Zone 6	Zone 6 PAD 1 AD01	50-5-0304	Low	Direct	Total	Located inside the Project area. Confirmed to contain low density artefact concentration	No further mitigation necessary ASIRF to be submitted after impact to update site as destroyed
	Zone 6 PAD 3 AD01	50-5-0305					
	Zone 6 PAD 3 AD02	50-5-0306					
	Zone 6 PAD 5 AD01	50-5-0307					
	Zone 6 PAD 6 AD01	50-5-0308					
	IR-IF-03	50-5-0312	Low	Direct	Total	Located inside the Project area.	No further mitigation necessary ASIRF to be submitted after impact to update site as destroyed
Zone 7	Artefact sites ARTC12 and ARTC16	50-5-0268, 50-5-0272	Low	Direct	Total	Located inside the Project area and construction zone Isolated artefacts could not be found again during the testing program	
	Artefact sites ARTC13–15	50-5-0269, 50-5-0270, 50-5-0271	Low	Nil	Nil	Located outside the Project	
	Artefact site ARTC17	50-5-0273	Low	Direct	Total	Located inside the Project area and construction zone	
Zone 8	Outside the Project						

Zone	Site ID	AHIMS ID	Sci sig	Type of harm	Degree of harm	Comments	Recommendations
Zone 9	Zone 9 AD01	50-5-0309	Low	Direct	Total	Located inside the Project area	No further mitigation necessary ASIRF to be submitted after impact to update site as destroyed
	IR-IF-02	50-5-0310				Located inside the Project area	Surface collection ASIRF to be submitted after impact to update site as destroyed
Zone 10	-	-	Nil	Nil	Nil	No sites identified within this zone	No further mitigation necessary
Zone 11	Outside the Project						
Zone 11 East	Artefact sites ARTC10	50-2-0054	Low	Direct	Total	Located inside the Project area and construction zone Isolated artefacts could not be found again during testing program	No further mitigation necessary ASIRF to be submitted after impact to update site as destroyed
	Artefact site ARTC11	50-2-0055	Low	Nil	Nil	Located inside the Project area but outside the construction zone	Avoidance
	Scarred tree ARTC19	50-5-0058	High	Indirect	Nil	Located outside the Project	Avoidance

6.0 REFERENCES

Apex Archaeology. 2025. *Illabo to Stockinbingal Rail Corridor Project: Additional Survey and Test Excavation Methodology.* Report prepared for John Holland Group and Inland Rail Pty Ltd.

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

DECCW. 2010, *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*. DECCW, Sydney South.

DECCW. 2010, *Aboriginal cultural heritage consultation requirements for proponents 2010*. DECCW, Sydney South.

GML. 2022, *Inland Rail – Illabo to Stockinbingal Aboriginal Cultural Heritage Assessment Report.* Report to ARTC.

MTS Heritage. 2025, *Inland Rail – Illabo to Stockinbingal I2S Heritage Management Sub-Plan.* Report to John Holland Group.

OEH. 2011, *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*. OEH, Sydney South.

Orton, C, 2000. *Cambridge Manuals in Archaeology: Sampling in Archaeology.* Cambridge University Press, Cambridge.

APPENDIX A: ABORIGINAL COMMUNITY CONSULTATION FOR AASEM

From: jenni@apexarchaeology.com.au
To: "Undisclosed Recipients"
Cc: "Leigh Bate"; "Fiona Leslie"
Bcc: [redacted]
Subject: Stockinbingal to Illabo section of the Inland Rail project: Salvage Methodology
Date: Monday, 29 September 2025 7:25:26 PM

Good afternoon,

I hope you're well. We have put together a methodology for archaeological salvage works within the Stockinbingal to Illabo (I2S) section of the Inland Rail project. The document is available to download here: https://we.tl/t-g22vXmwrkh

The document gives some information about the test excavation Apex Archaeology did in Sections 5, 6, 9 & 10 earlier this year, and outlines exactly what works are required prior to construction works starting along the entire I2S route. This includes surface collection of artefacts, salvage excavations, and areas where no further archaeological work is recommended.

Please have a read through the document and let us know if you have any questions or comments. I'd love to hear from you by CoB 27 October 2025.

Kind regards,

APEX ARCHAEOLOGY

Jenni Bate
DIRECTOR - ARCHAEOLOGIST
0422 229 479
JENNI@APEXARCHAEOLOGY.COM.AU
WWW.APEXARCHAEOLOGY.COM.AU

From: jenni@apexarchaeology.com.au
To: [redacted]
Subject: RE: Stockinbingal to Illabo section of the Inland Rail project: Salvage Methodology
Date: Tuesday, 30 September 2025 7:15:39 PM

Thanks so much [redacted] I appreciate your feedback and apologise that those errors have slipped in. They will definitely be amended.

This document is essentially asking all RAPs what they would like to see happen, with the most feasible option included in the draft methodology for comment. However, if anyone says that they do not want to see items reburied and say they have alternative requests, this will absolutely be considered for long term management of the artefacts.

Thanks again and we will be in touch as the process progresses.

Kind regards,

From: [redacted]
Sent: Tuesday, 30 September 2025 11:33 AM
To: jenni@apexarchaeology.com.au
Subject: Re: Stockinbingal to Illabo section of the Inland Rail project: Salvage Methodology

Hi Jenni

Thank you for your email. Hope you and Leigh are doing well.

Jenni just a couple of comments.

- [redacted]
- [redacted]
- 5.2 Mitigation measures- Were there any Scar Trees in the pathway of the new Rail?
- 5.7 Artefacts & Chain of Custody- Did All RAPs agree to the Reburial? Some may be held in the LALC for teaching purpose/s. (I just wanted to clarify this as I wouldn't like someone to come back and say they were not asked.)

That's all [redacted] has to respond with.

Thank you kindly

On Mon, Sep 29, 2025 at 7:25 PM <jenni@apexarchaeology.com.au> wrote:

> Good afternoon,
>
> I hope you're well. We have put together a methodology for archaeological salvage works within the Stockinbingal to Illabo (I2S) section of the Inland Rail project. The document is available to download here: https://we.tl/t-g22vXmwrkh
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>
> Please have a read through the document and let us know if you have any questions or comments. I'd love to hear from you by CoB 27 October 2025.
>
> Kind regards,
>
> APEX ARCHAEOLOGY
>
> Jenni Bate
> DIRECTOR - ARCHAEOLOGIST
> 0422 229 179
> JENNI@APEXARCHAEOLOGY.COM.AU
> WWW.APEXARCHAEOLOGY.COM.AU

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[redacted]

[redacted]

From: jenni@apexarchaeology.com.au
To: [redacted]
Subject: RE: Stockinbingal to Illabo section of the Inland Rail project: Salvage Methodology
Date: Tuesday, 30 September 2025 7:45:21 PM

Sorry [redacted] I missed your question about the Scar Trees – none are in the rail pathway itself. There are a number on the outskirts of the corridor but these will all be avoided with high vis fencing around them to make sure they aren't impacted. There are a number of management plans for the work and known scar trees have been included in a separate plan – this current document is specifically about the remaining salvage works and management of newly identified sites after the test excavation.

Please feel free to give me a call if you have any other questions about the process, I'm very happy to chat through it with you.

All the best,

APEX ARCHAEOLOGY
Jenni Bate
DIRECTOR - ARCHAEOLOGIST
0422 229 179
JENNI@APEXARCHAEOLOGY.COM.AU
WWW.APEXARCHAEOLOGY.COM.AU

From: [redacted]
Sent: Tuesday, 30 September 2025 11:33 AM
To: jenni@apexarchaeology.com.au
Subject: Re: Stockinbingal to Illabo section of the Inland Rail project: Salvage Methodology

Hi Jenni

Thank you for your email. Hope you and Leigh are doing well.

Jenni just a couple of comments.

- [redacted]
- [redacted]
- 5.2 Mitigation measures- Were there any Scar Trees in the pathway of the new Rail?
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That's all [redacted] has to respond with.

Thank you kindly

On Mon, Sep 29, 2025 at 7:25 PM <jenni@apexarchaeology.com.au> wrote:

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> Kind regards,
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> Jenni Bate
> DIRECTOR - ARCHAEOLOGIST
> 0422 229 179
> JENNI@APEXARCHAEOLOGY.COM.AU
> WWW.APEXARCHAEOLOGY.COM.AU

--

[redacted]

[redacted]

From: jenni@apexarchaeology.com.au
To: [redacted]
Subject: RE: Stockinbingal to Illabo section of the Inland Rail project: Salvage Methodology
Date: Monday, 27 October 2025 10:37:32 AM
Attachments: image004.png

Good afternoon [redacted]i,

Thank you so much for your thoughtful and detailed response regarding the salvage methodology for the I2S project. It is greatly appreciated. I have provided responses below in red. Any further guidance would also be gratefully received.

Kind regards,

From [redacted]
Sent: Thursday, 16 October 2025 10:42 PM
To: jenni@apexarchaeology.com.au
Subject: Re: Stockinbingal to Illabo section of the Inland Rail project: Salvage Methodology

On behalf of [redacted], we submit the following consolidated response to the Methodology report. Our representatives involved in this project bring **between 10 to 40 years of experience** in Aboriginal cultural heritage, archaeology, community-led site management, oral history, and Country-based interpretation.

1. Representation and Recognition of Aboriginal Participation

Aboriginal participation must be fully recognised as integral to the heritage management process. The contributions of all Registered Aboriginal Parties (RAPs) must be clearly and respectfully acknowledged in both the reporting structure and the interpretive outcomes of the report. We are not supplementary stakeholders; our involvement is foundational. Absolutely noted and recognised, and we endeavour to ensure all RAPs are consulted and their views considered and integrated as appropriate.

Our team includes Aboriginal representatives with 10 to 40 years of experience in cultural heritage work, including salvage excavations, community consultations, and cultural interpretation. Their expertise must be reflected in the significance assessments, methodology reviews, and final recommendations. Noted and appreciated; any comments and reflections regarding significance assessment, methodology and final recommendations will be implemented and acknowledged in reporting.

2. Methodology, Aims & Fieldwork Participation

We acknowledge the proposed methodology across three stages:

- **Stage 1:** Excavation Phase
- **Stage 2:** Artefact Analysis
- **Stage 3:** Reporting and Recommendations

We support the general framework but expect full and ongoing engagement in every stage of the process. Cultural monitors from our organisation bring extensive experience in managing both tangible and intangible cultural heritage and must be present for all mechanical and hand excavations.

We request:

- Advance coordination for fieldwork activities
- Pre-excavation briefings with all RAPs
- Input into interpretation of landforms, site stratigraphy, and artefact patterning

This is noted and appreciated; however it should be appreciated that consultation does not necessarily equal engagement. Should the proponent wish to engage [redacted] for fieldwork, appropriate notification and coordination would be undertaken. The methodology recently provided for the proposed salvage works essentially comprises a pre-excavation briefing and has been provided to all RAPs. Any input regarding knowledge of the study area landforms and known site patterning is gratefully received and will be incorporated as appropriate. However, it should be noted that Aboriginal participation in the salvage program will occur.

3. Cultural Protocols

The following cultural protocols are non-negotiable:

- **Elders & Knowledge Holders** must be consulted with cultural respect.
- **Men's and Women's Business** must be identified and managed under guidance from appropriate cultural authorities.

- **Cultural Safety** must be maintained throughout.
- **Respect for Country** must be practiced in all stages of the work.

Noted, appreciated, and implemented.

---

4. Communication & Transparency

We require clear and ongoing communication regarding:

- Fieldwork schedules (with minimum two weeks' notice)
- Draft reports for review and comment
- Updates on methodology or scope changes
- Inclusion in all RAP meetings and team briefings

[redacted] must be consistently included in all communications from Curio Projects.
Noted and appreciated. See above response. Also, Apex Archaeology includes all RAPs in consultation and will continue to do so. Please note, this is not a Curio Projects project and they are not involved in any aspect of the Illabo to Stockinbingal (I2S) section of the Inland Rail project.

---

5. Artefact and Site Management

Artefacts must not be removed, analysed, or interpreted without direct involvement from RAPs. We request a group consultation to review all artefact management protocols. All decisions regarding storage, repatriation, display, or reporting must be made in collaboration with Traditional Owners.

Noted and appreciated; the methodology has been sent in fulfillment of this requirement. We will implement any requested artefact management protocols.

---

6. Confidentiality and Consent

No cultural knowledge shared by RAPs may be published, paraphrased, or presented without explicit written consent. This includes:

- Cultural stories
- Traditional place names
- Oral histories
- Interpretations of landforms and sites

Noted and appreciated; cultural knowledge is always respectfully received and only presented with explicit written consent from the knowledge holder.

---

7. Roles and Responsibilities

RAPs are not passive contributors. We are active cultural authorities and should be listed as co-authors or contributors to key report sections. This includes methodology reviews, site significance assessments, and management recommendations.
Noted and appreciated. Any contributions received from any RAPs will be acknowledged appropriately in reporting.

---

8. Timing and Scheduling

We request:

- At least two weeks' notice before fieldwork
- A detailed daily schedule of expected activities
- Cultural flexibility for community obligations

Noted and appreciated; please refer to response to section 2.

---

9. Feedback on Visual Methodology Sections

We support:

- Final reporting
- Artefact analysis
- Consultation facilitation

However, "consultation" must reflect true co-design. Aboriginal knowledge should not be extracted or reworded without collaborative input from

the knowledge holders.

Noted and appreciated; any Aboriginal knowledge shared will be acknowledged and referenced appropriately.

---

10. Final Notes

This submission must be recorded in the consultation section of the project's reporting structure. We expect to continue working collaboratively, ensuring that cultural values and responsibilities are embedded throughout the project.

Noted, appreciated and implemented.

Expanded Comments Based on Methodology Sections

2.1 Site Inspection We support thorough on-country inspections by Traditional Owners with cultural knowledge of this landscape. All inspections must be conducted in accordance with our cultural protocols and led by those connected to Country. Noted and appreciated; all surveys for this project have been completed.

2.2 Survey Coverage We advocate for full visual access beyond transects, including open assessment of creek lines, grinding grooves, scar trees, and landforms. Our teams must be free to assess cultural values not visible through Western archaeological frameworks. Noted and appreciated; all surveys for this project have been completed.

2.3 Survey Results Survey results must be explained in plain language and shared transparently. We offer interpretive sessions to co-analyse both scientific data and cultural meanings. Noted and appreciated; all surveys for this project have been completed.

2.4 New Sites (IR-IF-01 to IR-IF-03) New discoveries must be protected with buffer zones. Our experienced representatives can provide cultural context not found in data alone. Noted and appreciated; buffer zones have been implemented to date and the salvage methodology requests any further guidance or context be provided.

2.5 Surface Collection (Zone 7 and 11) Ethical collection must be supervised by Aboriginal monitors. Items must not be removed without consent, and should be available for cultural education. Noted and appreciated. The salvage methodology forms the approval documentation for collection works to be undertaken.

2.6 Results of GML Test Excavation These findings must be cross-referenced with cultural knowledge including Dreaming narratives and oral histories. Science alone cannot define significance. Noted and appreciated. The salvage methodology requests any further guidance or context be provided.

2.7 Test Excavation Results (Zones 5–10) Lack of artefacts does not mean lack of cultural value. Aboriginal knowledge must be used to assess the entire cultural landscape, including intangible values. Noted and appreciated. The salvage methodology requests any further guidance or context be provided.

2.8 Sites Identified within the Study Area We request the inclusion of Elders and young people in reviewing these sites to support intergenerational knowledge transfer and site protection. Noted and appreciated. The salvage methodology requests any further guidance or context be provided.

2.9 Discussion All final discussions must prioritise Aboriginal voices. Our lived knowledge and ancestral stories provide insights not found in archaeology. Noted, appreciated and implemented.

3.0 Lithic Analysis

3.1 Summary of Results Scientific summaries must be balanced with cultural interpretations of stone use, sourcing, and ceremonial meaning. Some unmodified stones may hold spiritual significance. Noted and appreciated. The salvage methodology requests any further guidance or context be provided.

3.2 The Stone Objects These are not mere data points. They are links to our Ancestors and must be treated accordingly. Our reps with decades of field knowledge can interpret stone use, reworking, and social function. Noted and appreciated. The salvage methodology requests any further guidance or context be provided.

4.0 Significance Assessment

4.1 Introduction Cultural significance cannot be measured solely through Western academic frameworks. We contribute stories, ceremonial uses, and spiritual connections.

4.2 Criteria Criteria for significance must include Aboriginal worldviews—spiritual presence, ancestral sites, men's and women's business, and community ties.

4.3 Significance Assessment Assessments must be joint and consider archaeology, cultural knowledge, and local history equally.

4.4 Cultural Significance Assessment This must be Aboriginal-led. Our knowledge holders provide deep understanding of Country and its unseen layers of meaning.

4.5 Statement of Archaeological Significance This statement should be co-authored or endorsed by Aboriginal reps and reviewed for cultural sensitivity.

Noted and appreciated. The salvage methodology requests any further guidance or context be provided.

5.0 Management Strategies

5.1 Works Required (Zones 1–11 and Tracks) All fieldwork must include cultural oversight from planning to post-works restoration. Our representatives are experienced in this supervision.
Noted and appreciated. The salvage methodology requests any further guidance or context be provided.

5.2 Mitigation Measures

- **Surface Collection:** Must be RAP-led; catalogue items with storylines.
- **Salvage Excavations:** Avoidance is preferred; excavation only as last resort.
- **Unmitigated Impact:** Must be reported with reparations.
- **Avoidance:** Should be built into project design. It should be noted that the project has been approved and there is minimal opportunity for redesign; however avoidance of any unexpected finds would be the first priority wherever possible.
- **Awareness:** Site workers must complete training by Traditional Custodians.

5.3 Staged Salvage Strategy

- **Test Pits:** RAP monitoring is required.
- **Open Area Salvage:** Must not proceed without full cultural approval. The current salvage strategy forms both a project and cultural approval; any further input is gratefully received.
- **Excavation Methodology:** Must be co-designed. Noted and appreciated. The salvage methodology requests any further guidance or context be provided.
- **Expansion Triggers:** Reassessment with RAPs required. Noted and appreciated. The salvage methodology requests any further guidance or context be provided.
- **Cessation:** Any significant cultural find must stop works immediately. Noted and included already in the methodology.

5.4 Hold Points Cultural Hold Points must be established. Only Traditional Owners may lift them.

5.5 Research Questions We request to shape research priorities—Country also speaks through our oral traditions. Noted and appreciated. The salvage methodology requests any further guidance or context be provided.

5.6 Recording All recording must use our terminology and involve co-authorship with RAPs.

5.7 Artefacts and Chain of Custody Artefacts must remain under RAP control or be returned after study. Custody chains must be clear and approved. Noted – please advise of any lithic analysts with appropriate experience to undertake the assessment. It is intended to rebury the artefacts on site on completion of works. Any further guidance around management is appreciated.

5.8 Backfill and Salvage Excavation Backfilling should follow ceremony and respect for Country.

5.9 Site Clearance No clearance should proceed unless RAPs approve it. Noted – the salvage methodology provides the mechanism for approval.

5.10 Post-Excavation Analysis RAPs must access all results and shape the final interpretations. Noted and appreciated. The salvage methodology requests any further guidance or context be provided.

5.11 ASIRFs Drafts must be reviewed by RAPs with time to provide input. Whilst this request is noted, the AHIMS quarantine station does not allow for this to occur.

5.12 Aboriginal Consultation Consultation must be ongoing, genuine, and inclusive. Our team spans 10–40 years of cultural heritage experience. Noted, appreciated and implemented.

5.13 Summary of Management Recommendations RAPs must co-author or review these. Cultural outcomes must be prioritised, not just project deliverables. Noted and appreciated. The salvage methodology requests any further guidance or context be provided.

[redacted]

From: jenni@apexarchaeology.com.au <jenni@apexarchaeology.com.au>
Sent: 29 September 2025 19:25
To: 'Undisclosed Recipients' <jenni@apexarchaeology.com.au>
Cc: 'Leigh Bate' <leigh@apexarchaeology.com.au>; 'Fiona Leslie' <fiona.leslie@mtsheritage.com.au>
Subject: Stockinbingal to Illabo section of the Inland Rail project: Salvage Methodology

Good afternoon,

I hope you're well. We have put together a methodology for archaeological salvage works within the Stockinbingal to Illabo (I2S) section of the Inland Rail project. The document is available to download here: https://we.tl/t-g22vXmwrkh

The document gives some information about the test excavation Apex Archaeology did in Sections 5, 6, 9 & 10 earlier this year, and outlines exactly what works are required prior to construction works starting along the entire I2S route. This includes surface collection of artefacts, salvage excavations, and areas where no further archaeological work is recommended.

Please have a read through the document and let us know if you have any questions or comments. I'd love to hear from you by CoB 27 October 2025.

Kind regards,

APEX ARCHAEOLOGY

Jenni Bate
DIRECTOR - ARCHAEOLOGIST
0422 325 179
JENNI@APEXARCHAEOLOGY.COM.AU
WWW.APEXARCHAEOLOGY.COM.AU

APPENDIX B: TEST PIT DESCRIPTIONS

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
		ZONE 5 PAD 1 SOUTH		
TP 1	60cm		0-25cm: Lightly compacted damp, sandy silt, grass root inclusions (<2%). 25-45cm: light brown dry sandy silt. Minor gravel and rock inclusions throughout. Slightly more compact. 45-60cm: Medium brown damp, highly compacted sandy silt. Inclusions as above. Base: Light orangey brown damp dense clay.	
TP 2	33cm		0-5cm: Medium brown lightly compacted damp sandy silt. Minor grass root inclusions (<10%). 5-15cm: As above, slightly drier soil with <5% grass roots. 15-30cm: Light brown moderately compact, slightly moist sandy silt. 30-33cm: As above, highly compact, tree root inclusion from 30-33cm. Base: Light orangey brown damp dense bioturbated clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 3	55cm		0-10cm: Lightly compacted damp, sandy silt, grass root inclusions (<2%). 10-30cm: Medium brown damp, lightly compacted sandy silt (30-40% sand). Fine angular gravel and grass root inclusions (<10%) 30-40cm: As above, however, heavily compacted. 40-55cm: As above, clay content increasing towards base. Base: Dense sticky mottled yellow clay.	
TP 4	100cm		0-10cm: Medium brown lightly compacted damp, sandy silt, grass root inclusions (<2%). 10-20cm: As above, however, lighter brown and with <5% gravel and rock inclusions. 20-50cm: Lightly compact moist sandy silt, degrading tree root, mild bioturbation. 50-100cm: Damp sand. No notable inclusions. Clay content increasing with depth. Pit terminated at 100cm due to depth (no triggers for expansion met and test pit unsafe to excavate)	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 5	90cm		0-5cm: Damp medium brown sandy silt topsoil, 20% grass roots. 5-25cm: Damp light brown loose sandy silt, semi compacted. 25-65cm: Slightly damp, friable compacted silty sand (~5% clay). 65cm-90cm: Damp clayey silt, slight speckles of orange clay nodules and fine grass roots throughout. Clay content increasing towards base, <1% noticeable gravel, heavily compacted. Base: Light and dark grey dry sterile clay with minor silt sections due to bioturbation.	
TP 6	65cm		0-10cm: Damp, slightly compact medium brown sandy silt. Minor grass root inclusions (<2%). 10-20cm: As above, slightly drier with gravel inclusions. 20-35cm: Lightly compact dry sandy silt. Minor grass root and gravel inclusions (<3%). 25-45cm: As above, with 20-25% clay throughout. 45-65cm: As above, clay content increasing towards base, moderately compacted, around 5% rock and gravel inclusions. Base: Slightly damp, grey and tan clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 7	53cm		0-10cm: Brown damp clayey silt, grass roots throughout (<1%). 10-25cm: Light brown moderately compacted damp silt. 25-45cm: Moderately compacted lighter brown friable silty sand, speckles of coffee rock, ironstone inclusions throughout. 45-53cm: Grey heavily compacted clayish sandy silt. Patches of dry orange clay and fine grass roots throughout. Base: Grey and yellow mottled dry dense clay.	
TP 8	39cm		0-10cm: Brown damp clayey silt, grass roots throughout (<1%). 10-20cm: Brown damp lightly compacted silt. 20-30cm: Lighter brown moderately compact sandy clayey silt. Fine grass roots and gravel throughout (<2%). 30-40cm: White-tan dry sandy clayey silt. Inclusions as above. Base: Orange-grey dehydrated cemented clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 9	58cm		0-10cm: Brown damp clayey silt, grass roots throughout (<1%). 10-15cm: Brown damp lightly compacted silt. 15-30cm: Brown damp moderately compact sandy silt. 30-50cm: Brown sandy clayey dry silt, tree root in western side of pit, heavily compacted. 50-58cm: Light tan heavily compacted dehydrated silty clay, charcoal and rock inclusions throughout (<2%). Base: Orange-grey dehydrated cemented clay base.	
TP 10	65cm		0-15cm: Medium brown damp loose topsoil, sandy silt beneath, grass roots and scattered rock fragments throughout (<2%). 15-25cm: Moderately compacted sandy silt, grass root and charcoal throughout (<5%), degraded wood pieces throughout (<1%). 25-40cm: Light brown, loose slightly damp coarse grained river sand, charcoal throughout (<5%). 40-60cm: Loose light brown dry silt fine grass roots with evidence of bioturbation throughout. Inclusions as above. 60-65cm: Extremely compacted light brown sandy silt. Test pit terminated at a depth of 65cm on reaching compact clay. No artefacts were identified within the pit.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 11	65cm		0-20cm: Medium brown damp loose topsoil, sandy silt beneath, grass roots and scattered rock fragments throughout (<2%). 20-30cm: Loose lightly compacted grainy sand. Fine grass root and gravel inclusions (<1%). 30-40cm: Lighter brown coarse sandy silt. Inclusions as above. 40-45cm: Pure highly compacted sand. 45-65cm: As above, clay content increasing with depth, as well as ironstone fragments appearing. Colour darkening with depth also. Test pit terminated at a depth of 65cm on reaching clay. No artefacts were identified within the pit.	
TP 12	67cm		0-10cm: Yellow brown lightly compacted sandy silt (<10% sand). Fine gravels throughout (<1%). 10-25cm: Light brown damp sandy silt (10% sand), fine grass roots and gravel throughout (<1%). 25-40cm: As above, with about 5-10% clay. Clay content increasing with depth to be 20% clay at 40cm. 40-67cm: Heavily compacted sandy clay. Small ironstone inclusions (<1-5%). 50% clay at 45cm, clay content increasing with depth to be 75% clay at 67cm. Base: Distinct dehydrated light grey mottled clay base. Slight speckling of disintegrating ironstone in north west corner.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 13	62cm		0-10cm: Brown, slightly damp, lightly compacted sandy silt. Slight grass roots and gravelly rock inclusions (<5%). 10-20cm: Light tan-brown, moderately compacted, damp sandy silt (25% sand). Fine grass roots, however, no visible rock inclusions. 20-30cm: Light tan-brown, clayish sand (10% clay). Inclusions as above. 30-50cm: Light brown sandy clay (50% clay, 5-10% sand, 40% silt). Minor gravelly inclusions (1-5%). 50-62cm: Moderately compact, damp, yellow-tan silty clay. Minor rock and grass root inclusions (<1%). Clay content increasing with depth (60% clay at 60cm). Base: Highly compacted dry grey/yellow/orange clay base.	
TP14	60cm		0-15cm: Medium brown, damp, lightly compacted sandy silt. Grass roots and small gravelly rock fragments throughout (<2%). 15-30cm: Medium brown damp sandy silt, fragments of light grey gravel throughout. Small degrading ironstone throughout. 30-60cm: Light brown sandy silt with small clay particles throughout (<10%). Very fine gravel inclusions. Moderately compacted. Small charcoal flecks present and increasing with depth (5-15%). Test pit terminated at a depth of 60cm on reaching clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP15	64cm		0-20cm: Lightly compacted, damp dark brown silt. Long grass roots, with minor rock inclusions (<1%). 20-35cm: Moderately compacted, damp, light brown sandy silt (25% sand), <5% observable angular quartz, fine grass roots (<1%). 35-45cm: Same as above, however, heavily compacted. 45-64cm: Yellow-brown, dry, heavily compacted silty clay (60-65% clay). Degraded wood and burnt charcoal present throughout. Clay content increasing with depth. Base: Dehydrated yellow-grey-brown clay with ironstone flecks in base.	
TP 16	40cm		0-15cm: Dark brown damp sandy silt. Grass root and angular quartz inclusions throughout (<5%). 15-25cm: Heavily compact coarse sandy silt, fine grass roots throughout. 25-35cm: Lighter brown, heavily compact, dry sandy silt. Small angular gravel inclusions, small quartz and degrading ironstone inclusions. Very slight inclusion of clay appearing (<10%). Clay content increasing with depth 35-40cm: As above, ironstone and quartz inclusions with at least 50% of clay throughout. Difficult to reach 40cm due to quartzite chunks.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 17	28cm		0-5cm: Dark brown lightly compacted sandy silt (10-15% sand). Grass root and conglomerates of quartz (veiny and low quality) and ironstone inclusions (<2%). 5-10cm: As above, however, with 10% clay throughout. 10-15cm: Damp, reddish brown moderately compacted sandy clayey silt mix (10% sand, 40% clay, 50% silt). Fine grass roots and angular quartz fragments throughout (<1%). 15-28cm: Red-brown, damp, silty sandy clay (60% clay content). Quartz angular gravel throughout. Moderately compact. Base: Yellow-red-brown, dense silty clay.	
TP 18	45cm		0-30cm: Dark brown, damp, lightly compacted silt. Angular poor quality quartz and grass root inclusions throughout (<5%). Clay appearing at 15cm deep, with clay content increasing in depth. Clay base identified at 20cm on south side of pit. 30-45cm: As above, however wet plastic clay appearing with depth in pockets. Clay base reached at 40-45cm in northern side of pit. Base: Hard fired brown-black clay base with small fleck of gravelly poor quality quartz on top in south side, clean wet plastic black-brown clay base in northern side.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 19	39cm		0-20cm: Damp medium brown sandy silt. Grass root and gravelly rock inclusions (quartz and ironstone <3%). Clay inclusions throughout appearing around 7cm deep, increasing with depth. Moderately compacted. 20-30cm: Reddish brown moderately compacted silty clay with gravelly poor quality quartz. 30-39cm: Clean silt from root hole.	
TP 20	22cm		0-10cm: Damp dark brown sandy silt. Fine grass roots and gravelly rock inclusions throughout (<2%). 10-22cm: As above, medium brown, charcoal appearing around 10cm deep (<10%). Base: Damp, yellowish brown clay. 90% pure, clean sticky base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 21	27cm		0-5cm: Damp dark brown sandy silt. Fine grass roots and gravelly rock inclusions throughout (<2%). 5-15cm: As above, medium brown, charcoal appearing around 10cm deep (<10%). 15-30cm: Medum brown sandy silty clay (60% clay, <5% sand and 35% silt), angular poor quality quartz and fine grass root inclusions <5%). Moderately compact. Clay content increasing with depth. Base: Dense mottled grey-brown pure clay.	
TP 22	65cm		0-5cm: Damp dark brown sandy silt. Fine grass roots and gravelly rock inclusions throughout (<2%). 5-25cm: As above, medium brown, charcoal appearing around 10cm deep (<10%). 25-35cm: Light brown highly compact silty sand. Inclusions as above. 35-50cm: Coarse extremely compact grainy sand, quartz rock and ironstone inclusions (<10%). 50-65cm: Fine dehydrated silt, with minor clay inclusions (<5-10%). No other notable inclusions. Test pit ceased at 65cm on reaching clay.	7.5 YR 2.5/2 – 7.5YR 4/4 PH: 7-7.5

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 23	50cm		0-5cm: Dark brown, damp, humic, sandy silt topsoil. Minor grass root inclusions (<5%). 5-20cm: Medium brown, loose sandy clay, clusters of orange clay (<20%). 20-40cm: Lighter brown, slightly damp sandy silt, fine grass root inclusions, small fragments of quartz and gravelly rock (<10%). Slight clay inclusions beginning at 30-35cm. Moderately compacted. 40-50cm: Dry, highly compacted light brown silty clay. Base: Dark brown dehydrated dense clay.	
TP 24	18cm		0-10cm: Brown slightly damp sandy silt. Minor grass root and quartz inclusions (<10%). Lightly compacted. 10-15cm: As above, however moderately compacted and <15% clay inclusions. 15-18cm: Red-brown heavily compacted silty clay, large angular quartz rock inclusions (<10%). Base: Yellow-brown dense clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 25	26cm		0-15cm: Dark brown, damp, humic, sandy silt topsoil. Minor grass root inclusions (<5%). 5-10cm: Medium brown, loose sandy clay, clusters of orange clay (<20%). Angular gravelly ironstone & quartz (20-40%). 15-20cm: Moderately compacted, damp silty clay (40% clay, 60% silt). Quartz and rock inclusions. 20-26cm: As above, however, 70% clay content. Base: Yellow-brown dense, plastic sterile clay.	
TP 26	25cm		0-10cm: Damp, dark brown loose sandy silt. Grass root and angular quartz inclusions (<10%). 10-15cm: Damp, dark brown moderately compact sandy silt. Minor orangey clay clusters throughout (<10%). Large angular quartz and ironstone inclusions (<20%). 15-20cm: As above, however, larger clay cluster inclusions (<30%). 20-25cm: Medium brown silty clay with dense angular quartz and ironstone inclusions (<50%). Additional inclusions as above. Base: Compact light brown (burning event due to tree root), and red loose clay in NW corner alongside iron rich shale.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 27	33cm		0-5cm: Dark brown, damp, humic, sandy silt topsoil. Minor grass root inclusions (<5%). 5-10cm: Medium brown, loose sandy clay, clusters of orange clay (<20%). Angular gravelly ironstone & quartz (20-40%). 10-15cm: Dark brown, damp, moderately compact sandy silt. Large angular ironstone, shale and quartz inclusions, as well as minor grass root inclusions. 15-30cm: Red-brown moderately compact sandy silt. Large chunks of poor quality quartz throughout (as large as 10cm). 30-33: Interface between the above soil and clay base, with burnt tree root in bottom. Base: Red dense clean clay. Has previously been fired due to tree root and land clearance.	
TP 28	16cm		0-5cm: Dark brown, damp, humic, sandy silt topsoil. Minor grass root inclusions (<5%). 5-10cm: Medium brown, loose sandy clay, clusters of orange clay (<20%). Angular gravelly ironstone & quartz (20-40%). 10-16cm: Compact, damp, dark brown-orange and brownish-red silty clay. Base: Hard compacted clay, dark brownish orange in colour.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 29	50cm		0-5cm: Dark brown, damp, humic, sandy silt topsoil. Minor grass root inclusions (<5%). 5-10cm: Medium brown, loose sandy clay, clusters of orange clay (<20%). Angular gravelly ironstone & quartz (20-40%). 10-17cm: Red-brown damp sandy silt, fine grass root and gravel inclusions (<1%). 17-50cm: Red-brown moderately compact sandy silt. Large chunks of poor quality quartz throughout (as large as 10cm). Clay content increasing with depth. Base: Dark brown, dense clean, dehydrated clay.	
TP 30	24cm		0-5cm: Dark brown, damp, humic, sandy silt topsoil. Minor grass root inclusions (<5%). 5-10cm: Medium brown, loose sandy clay, clusters of orange clay (<20%). Angular gravelly ironstone & quartz (20-40%). 10-15cm: Dry, compacted light brown sandy silt, angular quartz and ironstone gravels throughout (<30%). Brownish-orange clay inclusions (10-15cm in size). 15-24cm: Brown-red silty clay, with 10-20% gravelly quartz inclusions. Base: Dark red-brown mottled clean clay.	Munsell: 7.5YR 3/2 – 7.5YR 2.5/2. PH: 6-7 Base Munsell: 2.5YR 3/4 PH: 7

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 31	25cm		0-15cm: Dark brown to reddish brown damp silt with angular quartz and grass root inclusions (<2%), moderately compact. Clay inclusions (<10-15%) appearing around 12cm deep 15-25cm: Lighter medium to reddish brown, dry, heavily compacted clayey silt (clay inclusions about 20-30%), as well as iron stone inclusions (<30%). Base: Reddish brown and grey-brown mottled clay.	7.5YR 2.5/2 PH: 6-6.5
TP 32	20cm		0-10cm: Loose, damp brown sandy silt. Grass root inclusions with heavy bioturbation. Large angular quartz inclusions (<30%). 10-20cm: Moderately compact, dark reddish brown clayey silt. Inclusions as above. Base: Moderately compact dark brown-red clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 33	28cm		0-10cm: Loose, damp brown sandy silt. Grass root inclusions with heavy bioturbation. Large angular quartz inclusions (<30%). 10-15cm: Moderately compact, dark reddish brown clayey silt. Inclusions as above. 15-20cm: Dry, compacted light brown sandy silt, angular quartz and ironstone gravels throughout (<30%). Brownish-orange clay inclusions (10-15cm in size).so 20-28cm: Red-brown dry silty clay (70% clay). Fine grass roots, and burnt tree root at 27-28cm. Further inclusions as above. Base: Red, dense, clean, dry burnt clay. No evidence of cultural burning; burning likely associated with bushfires or agricultural land clearing.	
TP 34	15cm		0-5cm: Compact, damp medium brown sandy silt. Grass root and angular quartz gravels throughout (<5%). 5-10cm: Moderately compacted dry sandy silt, quartz inclusions increasing (<15%). 10-15cm: Dry compacted light brown sandy silt. Ironstone inclusions appearing (<5%) and quartz increasing (<30%). Brown-clay inclusions also appearing (<5%). Base: Extremely compact light brown fired clay, with patches of orange clay throughout. No evidence of cultural burning; burning likely associated with bushfires or agricultural land clearing.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 35	21cm		0-5cm: Compact, damp medium brown sandy silt. Grass root and angular quartz gravels throughout (<5%). 5-10cm: Moderately compacted dry sandy silt, quartz inclusions increasing (<15%). 10-21cm: Highly compacted, damp red-brown silty clay (70% clay). Ironstone and quartz gravel throughout (<10-15%). Base: Yellow-brown dense, slightly damp clay.	
ZONE 5 PAD 1 NORTH				
TP 1	50cm		0-15cm: Dark brown damp sandy silt. Lightly compacted, fine grass roots (<2%), however, minimal topsoil (recently ploughed). 15-20cm: Light grey damp sandy silt, moderately compacted. Minor gravelly rock inclusions (<1%). 20-40cm: Light brown lightly compacted clayey sand. Small charcoal inclusions (<5%). 40-50cm: As above, however, highly compacted (70% clay). Base: Light brown-yellow dehydrated clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 2	47cm		0-20cm: Light brown, slightly damp silty sand. Minor grass roots and bioturbation throughout (<2%). Small angular quartz inclusions (<10%). Moderately compacted. 20-30cm: Lighter brown, moderately compact, coarse grainy sand. Minor grass root inclusions (<5%), also degraded ironstone inclusions (<10%). 30-46cm: Light brown highly compacted silty sand. Clusters of reddish-brown clay appearing (<20-40%). Clay content increasing with depth, being 80-90% clay at 46cm. Base: Red-brown dehydrated clay as well as grey-tan mottled clay base.	
TP 3	45cm		0-20cm: Dark brown damp sandy silt. Lightly compacted, fine grass roots (<2%), however, minimal topsoil (recently ploughed). 20-40cm: Light grey damp sandy silt, moderately compacted. Minor gravelly rock inclusions (<1%). Small clusters of light orange clay appearing at 40-45cm. Base: Light brown-yellow dehydrated clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 4	51cm		0-10cm: Light brown, slightly damp silty sand. Minor grass roots and bioturbation throughout (<2%). Small angular quartz inclusions (<10%). Moderately compacted. 10-20cm: Medium brown damp fine sandy silt. Inclusions as above. 20-35cm: Light brown damp sandy silt. Moderately compacted. Angular ironstone throughout (<5%). 35-51cm: Light brown damp sandy silt. Highly compacted. Clay content appearing and increasing with depth (<20-30%). Base: Mottled white and dehydrated dense clay.	
TP 5	75cm		0-10cm: Lightly compacted dark brown sandy silt. Grass root and fine gravel inclusions (<2%). 10-30cm: As above, however, with higher sand content. Inclusions as above. 30-40cm: Medium brown slightly damp sandy silt. Inclusions as above. 40-50cm: Very light brown compacted silt. 50-75cm: Light yellow-brown highly compacted silt. Minor gravelly quartz inclusions throughout (<2%). Base: Very dehydrated light yellow-brown highly compact clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 6	100cm		0-15cm: Damp medium brown loose sandy silt. Grass root and minor charcoal inclusions (<5%). 15-30cm: Damp loosen black-brown silt. 30-80cm: Moderately compacted, dry light brown sandy silt. Charcoal flecks and angular quartz inclusions throughout (<10%). 80-100cm: Extremely compacted, dry, very light brown-grey silt. Orange degraded ironstone inclusions throughout (<10%). Charcoal appearing on south wall (<5%). Pit was terminated at 100cm due to depth and safety. Pit not expanded to allow deeper excavation due to lack of cultural material.	5YR 2.5/2 – 10YR 4/2. PH: 7-8.
TP 7	70cm		0-15cm: Damp medium brown loose sandy silt. Grass root and minor charcoal inclusions (<5%). 15-30cm: Damp loosen black-brown silt. 30-60cm: Moderately compacted, dry light brown sandy silt. Charcoal flecks and angular quartz inclusions throughout (<10%). 60-70cm: Extremely compacted, dry, very light brown-grey silt. Orange degraded ironstone inclusions throughout (<10%). Pit was terminated at 70cm due to reaching clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 8	55cm		0-10cm: Light brown, loose/friable silt. Minor grass root inclusions (<5%). 10-40cm: Warm orange-brown moderately compacted silt. Minor gravelly quartz inclusions (<10%). Soil becoming more compacted with depth. 40-55cm: Orange-brown compact, grainy clayey silt. Flecks of ironstone throughout (<1%). Clay content increasing with depth. Base: Orange-brown dehydrated clay.	
TP 9	60cm		0-15cm: Damp medium brown loose sandy silt. Grass root and minor charcoal inclusions (<5%). 15-30cm: Damp loosen black-brown silt. 30-40cm: Moderately compacted, dry light brown sandy silt. Charcoal flecks and angular quartz inclusions throughout (<10%). 40-60cm: Heavily compacted grey-tan silt. Consistent fine charcoal flecks throughout, alongside small ironstone gravels (<15%). Test pit terminated at 60cm due to reaching clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 10	75cm		0-40cm: Mid grey-brown loose silt. Gravelly quartz throughout (<10%). Minor grass root inclusions (<2%). Minor insect bioturbation. 40-70cm: Light grey-brown moderately compacted sily sand. Som angular quartz (<5%). Charcoal appearing and increasing with depth (5-10%). 70-75cm: Soft, friable sand. Inclusions as above. Test pit terminated at 75cm due to depth and safety.	
TP 11	29cm		0-10cm: Medium brown damp sandy silt, lightly compacted. Grass root inclusions (<10%). 10-15cm: Lighter brown moderately compacted damp sandy silt. 15-20cm: Slightly less damp light brown moderately compacted sandy silt. 20-29cm: Reddish-brown heavily compacted sandy silt. Clay clusters appearing at 20cm (<20-30%) and increasing with depth (<80-90% at 29cm). Base: Reddish brown dry dehydrated clay in south side of pit, and grey-tan dehydrated clay in north side of pit.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 12	36cm		0-20cm: Mid-brown friable silt. Minor grass root inclusions (<2%). Clay appearing at 15cm and increasing with depth (<10-15%). 20-30cm: Lighter brown loose silt. Clay content increasing (<25-75%). 30-36cm: Clay base removal layer due to silt veins in clay – 0.5cm of clay removed.	7.5YR 2.5/2 – 7.5YR 4/3 PH: 7-7.5 Base: 7.5YR 5/3 PH: 7.5
TP 13	50cm		0-15cm: Medium brown damp clayey silt. Grass and tree root inclusions (<10%). 15-35cm: Light yellow-brown sandy silt. Inclusions as above. 35-45cm: Compacted slightly damp light yellow-brown sandy silt. 45-50cm: Heavily compacted light yellow-brown sandy silt. Base: Medium brown-orange compacted fired clay. Firing likely related to agricultural land clearing or potential bushfire events.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 14	74cm		0-15cm: Disturbed overturned clay-silt fill. Clay nodules throughout (<10%). 15-20cm: Original ground level encountered at 15cm deep - medium brown damp clayey silt. Grass and tree root inclusions (<10%). 20-30cm: Slightly damp yellow-brown silty sand. Moderately compacted. 30-50cm: Very compacted very light brown silty sand. 50-74cm: Dry friable light yellow-brown silty sand. Clay content appearing with depth. Base: Yellow-brown dehydrated clay at 72-74cm deep.	
ZONE 6 PAD 1				
TP 1	66cm		0-35cm: Dark brown loose sandy silt. Grass roots and charcoal throughout (<5%). 35-66cm: Moderate to extremely heavily compacted grey silt. Charcoal increasing with depth (<10-40%). Small degrading ironstone inclusions (<2%). Base: Dehydrated grey clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 2	66cm		0-5cm: Dark brown loose silt. Grass root inclusions (<2%). 5-20cm: Light orangey brown silt. 20-40cm: Light orangey brown silty sand. 40-60cm: As above, clay content appearing at 40cm, increasing with depth. 60-66cm: Interface between clay base and sandy clay soil. Very highly compacted. Base: Extremely solid dehydrated mottled orange-brown clay.	
TP 3	72cm		0-15cm: Slightly damp medium brown sandy silt. Minor grass roots and tree bark throughout (<2%). 15-35cm: Light brown, moderately compact coarse sandy silt. Degrading ironstone inclusions (<5%). 35-67cm: Light beige fine sandy silt. Ironstone inclusions increasing (<10-15%). Note: 1cm clay lens at 38cm deep. 70-72cm: Orangey tan silty clay. Highly compact (cemented) dry, with tree root in bottom. Ironstone inclusions becoming less frequent (<2%). Base: Dehydrated highly compacted yellow-orange mottled clay.	7.5YR 3/4 – 7.5YR 5/6 PH: 6.5-7 Base: 7.5YR 5/8 PH: 7

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 4	80cm		0-15cm: Slightly damp medium brown sandy silt. Minor grass roots and tree bark throughout (<2%). 15-35cm: Light brown, moderately compact coarse sandy silt. Degrading ironstone inclusions (<5%). 35-70cm: Light beige fine sandy silt. Ironstone inclusions increasing (<10-15%). 70-80cm: Orangey tan silty clay. Highly compact (cemented) dry, with tree root in bottom. Ironstone inclusions becoming less frequent (<2%). Base: Dehydrated highly compacted yellow-orange mottled clay.	
TP 5	71cm		0-15cm: Slightly damp medium brown sandy silt. Minor grass roots and tree bark throughout (<2%). 15-30cm: Light brown, moderately compact coarse sandy silt. 30-55cm: Light grey-brown heavily compacted sandy silt. Degrading ironstone fragments (<10-20%). 55-71cm: As above, however clay content appearing and increasing with depth. Base: Very dry mottled yellow-brown-grey cemented clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 6	48cm:		0-15cm: Dark brown loose sandy silt. Grass roots and charcoal throughout (<5%). 15-48cm: Moderate to extremely heavily compacted grey silt. Small degrading ironstone inclusions (<2%). Base: Hard dehydrated grey-brown clay.	
TP 7	45cm		0-15cm: Slightly damp medium brown sandy silt. Minor grass roots and tree bark throughout (<2%). Evidence of disturbance with clusters of clay appearing between 5 and 10cm. 15-25cm: Lighter medium brown alluvial sandy lens. 25-45cm: Yellow-brown, damp, clayish sand. Clay content increasing with depth (<10%-40%). Base: Wet yellow-brown clay in NW corner, remaining base is hard orange clay with burnt tree root in base.	M: 10YR 3/2 – 3/3, 10YR 4/4 – 10YR 5/6 PH: 7-8

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 8	60cm		0-10cm: Lightly compacted red-brown silt. Grass root and gravelly quartz inclusions (<1%). 10-37cm: Light brown lightly compacted silt, quartz increasing – very poor quality and veiny (<10-20%). Sandy lens appearing around 30cm deep. 37-55cm: Reddish-brown highly compacted sandy clay (65% clay content). Quartz increasing (<30%). 55-60cm: Dry, concreted slightly sandy clay (85% clay content). Inclusions as above. Base: 80% pure clay with laterite geology crumbled into base.	
TP 9	60cm		0-10cm: Red-orangey brown, damp, lightly compacted silt. Grass root inclusions (<2%). 10-25cm: Lighter red-orangey brown lightly compacted silt. Charcoal throughout (<10%). 25-45cm: Lighter warm orangey dry sandy silt. Gravelly quartz throughout (<5-10%). Minor orange fired clay inclusions (<5%). 45-50cm: Light orange-brown silt. Inclusions as above. 50-60cm: Vibrant orange-brown heavily compacted silty clay. Inclusions as above. Base: Orange-brown dehydrated clay with dried tree roots on NW side and SW side of the pit.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 10	50cm		0-15cm: Lightly compacted, damp medium brown sandy silt. Grass root inclusions (<2%). 15-35cm: Lighter brown sandy silt. Degrading ironstone inclusions (<10%). Small fragmented quartz inclusions (<5%). 35-45cm: As above, clay content beginning to appear at 35cm and increasing with depth (<10-30%). 45-50cm: Yellow-orange-brown silty clay. Base: Dehydrated hard yellowish orange clay base.	
TP 11	50cm		0-23cm: Mid-brown damp clayey silt. Grass root and gravelly quartz inclusions (<2-5%). 23-34cm: Damp, moderately compacted light brown silt. Inclusions as above. 34-45cm: Heavily compacted light tan sandy silt. Clay content appearing around 40cm deep and increasing with depth (<10-20%). 45-50cm: Concreted, extremely dry clayey silt (50/50 clay and silt). Fine gravelly inclusions (<2%). Base: Hard dehydrated grey-brown clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 12	52cm		0-15cm: Damp, medium brown sandy silt. Light to moderately compacted with grass root inclusions (<2%). 15-40cm: Medium brown sandy silt. Gravelly quartz and ironstone inclusions (<10-40%). Charcoal appearing around 17cm deep (<25%-30%). 40-45cm: Light brown sandy silt, clay beginning to appear in the northern side of the pit. 45-52cm: Very light brown compacted sandy clayey silt. Base: Yellow-grey-brown dehydrated solid clay reached at 50cm on northern side of pit. Pit terminated at 52cm on south side on reaching clay.	
TP 13	53cm		0-10cm: Damp, medium brown sandy silt. Lightly compacted. Grass root inclusions (<5%). 10-25cm: Lighter medium brown sandy silt. Grass root and gravelly quartz inclusions (<10%). 25-45cm: Light beige-brown sandy silt with ironstone inclusions (<10-20%). 45-53cm: Orangey tan silty clay. Highly compact (cemented) dry. Ironstone inclusions becoming less frequent (<2%). Base: Dehydrated highly compacted yellow-orange mottled clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 14	60cm		0-10cm: Damp, medium brown sandy silt. Lightly compacted. Grass root inclusions (<5%). 10-30cm: Lighter medium brown sandy silt. Grass root and gravelly quartz inclusions (<10%). 30-45cm: Light beige-brown sandy silt with ironstone inclusions (<10-20%). 45-60cm: Light grey-brown heavily compacted sandy silt. Degrading ironstone fragments (<10-20%). Base: Heavily compacted, brown clay.	
TP 15	75cm:		0-10cm: Damp, medium brown sandy silt. Lightly compacted. Grass root inclusions (<5%). 10-45cm: Rich red-brown damp silt. Gravelly poor quality quartz inclusions (1-5mm in size) (<10-15%). 45-60cm: Moderately compacted, damp, red-brown clayey silt (<10-20%). Inclusions as above. 60-75cm: Damp, yellow-orange moderately compact silty clay (60-80% clay). Small gravelly quartz inclusions (<5%). Base: Heavily compacted, mottled red and yellow-brown clay.	M: 7.5YR 4/6, 7.5YR 5/6, 7.5YR 5/8 PH: 5.5-7 Base: 7.5YR 6/8 PH: 7.5

ZONE 6 PAD 2

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 1	55cm		0-15cm: Red-brown, damp, lightly compacted silt. Quartz gravel inclusions (<10-15%). Grass root inclusions (<5%). 15-35cm: As above, however, with large quartz chunks throughout (<30%). 35-45cm: As above, however, also large chunks of degrading geology appearing (10-15cms in size). 45-50: As above, however, no more quartz fragments. 50-55cm: Red-brown, very crumbly clayey silt (40% clay). Very large chunks of geology throughout (<30-40%). Base: Damp, clean, red dense clay. Disintegrating laterite gravel geology peeking through.	
TP 2	25cm		0-15cm: Red-brown, damp, lightly compacted silt. Quartz gravel inclusions (<10-15%). Grass root inclusions (<5%). 15-25cm: As above, however, with large quartz chunks throughout (<30%). Base: Damp, clean, red dense clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 3	25cm		0-15cm: Red-brown, damp, lightly compacted silt. Quartz gravel inclusions (<10-15%). Grass root inclusions (<5%). 15-25cm: As above, however, with large quartz chunks throughout (<30%). Base: Damp, clean, red dense clay.	M: 5YR 3/4 – 5YR 4/6 PH: 6.5 Base: 2.5YR 3/6 PH: 6
TP 4	22cm		0-15cm: Red-brown, damp, lightly compacted silt. Quartz gravel inclusions (<10-15%). Grass root inclusions (<5%). 15-22cm: As above, however, with large quartz chunks throughout (<30%). Base: Damp, clean, red dense clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 5	25cm		0-15cm: Red-brown, damp, lightly compacted silt. Quartz gravel inclusions (<10-15%). Grass root inclusions (<5%). 15-25cm: As above, however, with large quartz chunks throughout (<30%). Base: Damp, clean, red dense clay.	
TP 6	38cm		0-5cm: Warm brown moist silt. Grass root inclusions (<2%). 5-20cm: Red-brown soft silt. Minor charcoal inclusions (<5%). 20-38cm: Red, soft clayey silt. Inclusions as above. Base: Damp, clean, red dense clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 7	29cm		0-15cm: Red-brown, damp, lightly compacted silt. Quartz gravel inclusions (<10-15%). Grass root inclusions (<5%). 15-29cm: As above, however, with large quartz chunks throughout (<30%). Base: Damp, clean, red dense clay.	
TP 8	29cm		0-15cm: Red-brown, damp, lightly compacted silt. Quartz gravel inclusions (<10-15%). Grass root inclusions (<5%). 15-29cm: As above, however, with large quartz chunks throughout (<30%). High ant bioturbation between 20-25cm. Base: Damp, clean, red dense clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 9	64cm		0-5cm: Red-brown, damp, lightly compacted silt. Grass root inclusions (<5%). 5-10cm: As above, however, no roots. 10-15cm: Lightly compacted red-brown clayey silt (10% clay). Small angular quartz pieces throughout (<5%). 15-30cm: Vibrant red lightly compacted silt. Clay content increasing (<20%). 30-45cm: Damp, extremely bright red, lightly compacted clayey silt. Very fine angular gravel (<1%), very fine grass roots (<1%). 45-54cm: As above, however, becoming moderately compact. Large conglomerate chunks of rock (grey/white in colour) throughout (<15%). 54-64cm: Yellow-red, very crumbly, dry silty clay (60-70% clay), moderately compact. Rocky quartz inclusions throughout (<15%), as well as disintegrating geology (<30-50%). Base: Disintegrating laterite geology as well as dense red dehydrated clay.	2.5YR 4/6 – 2.5YR 4/8 PH: 6-7 Base: 5YR 4/6 PH: 7

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 10	27cm		0-15cm: Red-brown, damp, lightly compacted silt. Quartz gravel inclusions (<10-15%). Grass root inclusions (<5%). 15-27cm: As above, however, with large quartz chunks throughout (<30%). High ant bioturbation between 20-25cm. Base: Damp, clean, red dense clay.	
Zone 6 PAD 3				
TP 1	45cm		0-16cm: Brown silty loam. 16-45cm: Orange clayey silty loam. Base: Orange compact sticky clay. Tree root burnt in base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 2	40cm		0-16cm: Brown silty loam. 16-40cm: Orange clayey silty loam. Base: Orange compact sticky clay.	
TP 3	35cm		0-16cm: Brown silty loam. 16-35cm: Orange clayey silty loam. Base: Orange compact sticky clay. Degrading tree root in north west corner.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 4	50cm		0-15cm: Mid brown damp clayey silt. Minor grass roots throughout (<1%). 15-35cm: Mid brown compact clayey silt. Small ironstone inclusions (<5-10%). Small amount of manganese (<1%). Increasing clay content (<20%). 35-50cm: Mottled horizon to pale grey silt. Heavily compacted/concreted alluvium. Sparse ironstone inclusions (<2%). Base: Light grey compacted clay base.	
TP 5	50cm		0-40cm: Brown silty loam. 40-50cm: Compact grey sandy loam. Base: Light grey compacted clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 6	50cm		0-15cm: Mid brown damp clayey silt. Minor grass roots throughout (<1%). 15-35cm: Mid brown compact clayey silt. Small ironstone inclusions (<5-10%). Small amount of manganese (<1%). Increasing clay content (<20%). 35-50cm: Mottled horizon to pale grey silt. Heavily compacted/concreted alluvium. Sparse ironstone inclusions (<1%). Heavy charcoal inclusions in North section. Likely burnt tree root (8cm L x 6cm W at 33cm deep). Base: Highly compacted light brown clay.	
TP 7	50cm		0-15cm: Mid brown damp clayey silt. Minor grass roots throughout (<1%). 15-35cm: Mid brown compact clayey silt. Small ironstone inclusions (<5-10%). Small amount of manganese (<1%). Increasing clay content (<20%). 35-50cm: Orangey red moderately compacted clayey silt. Base: Mid brown hard damp clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 8	50cm		0-15cm: Mid brown damp clayey silt. Minor grass roots throughout (<1%). 15-35cm: Mid brown compact clayey silt. Small ironstone inclusions (<5-10%). Small amount of manganese (<1%). Increasing clay content (<20%). 35-45cm: Mottled horizon to pale grey silt. Heavily compacted/concreted alluvium. Sparse ironstone inclusions (<2%). 45-50cm: Concreted alluvium in NW corner, undulating down to the south, abutted by red-brown clay along the southern section. Base: Light orangey brown hard basal clay.	
TP 9	50cm		0-5cm: Grey-brown loose sandy silt. 5-35cm: Pale orangey-yellow loose sandy silt. Small grass root inclusions (<25). 35-50cm: As above, however, becoming more compact with depth. Base: Warm brown sandy clay.	0-5cm: 10YR 2/2, PH: 7 25-30cm: 7.5YR 4/4 PH: 7 40-45cm: 10YR 4/6 PH: 7 Base: 10YR 3/4 PH: 7.5

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 10	50cm		0-15cm: Mid brown damp clayey silt. Minor grass roots throughout (<1%). 15-35cm: Mid brown compact clayey silt. Small ironstone inclusions (<5-10%). Small amount of manganese (<1%). Increasing clay content (<20%). 35-50cm: Mottled horizon to pale grey silt. Heavily compacted/concreted alluvium. Sparse ironstone inclusions (<1%). Base: Concreted light grey brown clay.	
TP 11	50cm		0-15cm: Mid brown damp clayey silt. Minor grass roots throughout (<1%). 15-35cm: Mid brown compact clayey silt. Small ironstone inclusions (<5-10%). Small amount of manganese (<1%). Increasing clay content (<20%). 35-50cm: Orangey red moderately compacted clayey silt. Base: Mid brown-orange hard damp clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 12	50cm		0-15cm: Mid brown damp clayey silt. Minor grass roots throughout (<1%). 15-35cm: Mid brown compact clayey silt. Small ironstone inclusions (<5-10%). Small amount of manganese (<1%). Increasing clay content (<20%). 35-50cm: Orangey red moderately compacted clayey silt. Base: Mid brown-orange hard damp clay.	
TP 13	45cm		0-16cm: Brown silty loam. 16-45cm: Orange clayey silty loam. Base: Orange compact sticky clay. Tree root burnt in base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 14	50cm		0-15cm: Mid brown damp clayey silt. Minor grass roots throughout (<1%). 15-35cm: Mid brown compact clayey silt. Small ironstone inclusions (<5-10%). Small amount of manganese (<1%). Increasing clay content (<20%). Poor quality quartz throughout (<40%). 35-50cm: Orangey red moderately compacted clayey silt. Base: Mid brown-orange hard damp clay.	
TP 15	55cm		0-15cm: Mid brown damp clayey silt. Minor grass roots throughout (<1%). 15-35cm: Mid brown compact clayey silt. Small ironstone inclusions (<5-10%). Small amount of manganese (<1%). Increasing clay content (<20%). Poor quality quartz throughout (<40%). 35-55cm: Orangey red moderately compacted clayey silt. Base: Mid brown-orange hard damp clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 16	50cm		0-15cm: Mid brown damp clayey silt. Minor grass roots throughout (<1%). 15-35cm: Mid brown compact clayey silt. Small ironstone inclusions (<5-10%). Small amount of manganese (<1%). Increasing clay content (<20%). Poor quality quartz throughout (<40%). 35-50cm: Orangey red moderately compacted clayey silt. Base: Mid brown-orange hard damp clay.	
TP 17	50cm		0-15cm: Mid brown damp clayey silt. Minor grass roots throughout (<1%). 15-35cm: Mid brown compact clayey silt. Small ironstone inclusions (<5-10%). Small amount of manganese (<1%). Increasing clay content (<20%). Poor quality quartz throughout (<40%). 35-50cm: Mottled horizon to pale grey silt. Heavily compacted/concreted alluvium. Sparse ironstone inclusions (<2%). Tree root in base. Base: Mid brown-orange hard damp clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 18	35cm		0-5cm: Mid-brown loose sandy silt topsoil. 5-20cm: Pale yellow-brown compact sandy silt. 20-25cm: Red clay, potential post hole in south east. Highly compacted and plastic/sticky. 20-35cm: Historic disturbance. Dark brown clayey silt. Only south east corner excavated. Ends at same clay base as above at 35cm.	
Zone 6 PAD 4				
TP 1	34cm		0-5cm: Mid-brown sandy silt. Angular coarse quartz cobbles throughout (<3%). 5-34cm: Pale, tan-yellow silty sand. Inclusions as above. Some ant bioturbation. Base: Clay and geology.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 2	35cm		0-5cm: Mid-brown sandy silt. Angular coarse quartz cobbles throughout (<3%). 5-35cm: Pale, tan-yellow silty sand. Inclusions as above. Some ant bioturbation. Base: Heavily compacted pale grey-brown clay and geological bedrock.	10YR 3/3 – 10YR 5/3 PH: 6.5-7
Zone 6 PAD 5				
TP 1	34cm		0-15cm: Brown silty loam, grass root inclusions (<5%). 15-34cm: Orange silty clay loam. Base: Orange compact basal clay	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 2	40cm		0-15cm: Brown silty loam, grass root inclusions (<5%). 15-40cm: Orange silty clay loam. Base: Orange compact basal clay	
TP 3	40cm		0-15cm: Brown silty loam, grass root inclusions (<5%). 15-40cm: Orange silty clay loam. Tree root in base. Base: Orange compact basal clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 4	30cm		0-15cm: Brown silty loam, grass root inclusions (<5%). 15-30cm: Orange silty clay loam. Base: Orange compact basal clay.	
TP 5	35cm		0-15cm: Brown silty loam, grass root inclusions (<5%). 15-35cm: Orange silty clay loam. Base: Orange compact basal clay. Undulating, high point in north east corner.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 6	26cm		0-15cm: Brown silty loam, grass root inclusions (<5%). 15-26cm: Orange silty clay loam. Base: Orange compact basal clay	
TP 7	30cm		0-15cm: Brown silty loam, grass root inclusions (<5%). 15-30cm: Orange silty clay loam. Loose friable large grain quartz in curved cavity in south east corner (likely animal burrow). Base: Orange compact basal clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 8	32cm		0-15cm: Brown silty loam, grass root inclusions (<5%). 15-32cm: Orange silty clay loam. Base: Orange compact basal clay	
TP 9	35cm		0-15cm: Brown silty loam, grass root inclusions (<5%). 15-35cm: Orange silty clay loam. Base: Orange compact basal clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 10	35cm		0-15cm: Brown silty loam, grass root inclusions (<5%). 15-35cm: Orange silty clay loam. Base: Orange compact basal clay.	
TP 11	33cm		0-15cm: Brown silty loam, grass root inclusions (<5%). 15-33cm: Orange silty clay loam. Base: Orange compact basal clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 12	27cm		0-15cm: Brown silty loam, grass root inclusions (<5%). 15-27cm: Orange silty clay loam. Base: Orange compact basal clay.	10YR 3/3, 10YR 4/3, 10YR 4/4, 10YR 4/6, 10YR 3/6 PH: 6.5-7
TP 13	40cm		0-15cm: Brown silty loam, grass root inclusions (<5%). 15-40cm: Orange silty clay loam. Base: Orange compact basal clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 14	25cm		0-10cm: Clayey silt, highly diffuse horizons. 10-25cm: Mostly same as TP 13, however, clay beginning higher (from 20cm). Little to no inclusions. Base: Smooth clay	10YR 3/2, 10YR 3/3, 10YR 4/4 PH: 6.5-7
		Zone 6 PAD 6		
TP 1	25cm		0-5cm: Brown silty loam rocky topsoil. 5-10cm: Orangey clayish loam. Poor quality quartz inclusions (<5%). 10-25cm: Orangey clayey silt. Base: Orange compact clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 2	30cm		0-5cm: Brown silty loam rocky topsoil. 5-10cm: Orangey clayish loam. Poor quality quartz inclusions (<5%). 10-30cm: Orangey clayey silt. Base: Orange compact clay.	
TP 3	30cm		0-10cm: Red-brown clayey loam. Lightly compacted, damp. Quartz gravelly inclusions (<5%). Small charcoal flecks throughout (<5%). 10-17cm: Damp brown-red clayey silt. Moderately compacted. Inclusions as above. 17-30cm: Brown-red silty clay. Quartz gravel inclusions (<5%). Base: Orange sticky clay base	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 4	22cm		0-22cm: Orange silty clay loam. Clay increasing with depth. Poor quality quartz fragments and grass roots throughout (<10%). Base: Orange sticky clay base.	
TP 5	20cm		0-20cm: Orange silty clay loam. Clay increasing with depth. Poor quality quartz fragments and grass roots throughout (<10%). Base: Orange sticky clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 6	25cm		0-10cm: Red-brown clayey loam. Lightly compacted, damp. Quartz gravelly inclusions (<5%). Small charcoal flecks throughout (<5%). 10-17cm: Damp brown-red clayey silt. Moderately compacted. Inclusions as above. 17-25cm: Brown-red silty clay. Quartz gravel inclusions (<5%). Base: Orange-brown sticky clay base.	
TP 7	18cm		0-18cm: Orange silty clay loam. Clay increasing with depth. Poor quality quartz fragments and grass roots throughout (<10%). Base: Orange sticky clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 8	33cm		0-10cm: Dark brown clayey silt. Quartz gravelly inclusions (<5%). Small charcoal flecks throughout (<5%). 10-25cm: Pale brown clayey silt. Inclusions as above. 25-33cm: Red-brown silty clay. Grey-yellow clay inclusions. Base: Orange sticky clay base.	
TP 9	16cm		0-16cm: Orange silty clay loam. Clay increasing with depth. Poor quality quartz fragments and grass roots throughout (<10%). Base: Orange sticky clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 10	25cm		0-25cm: Orange silty clay loam. Clay increasing with depth. Poor quality quartz fragments and grass roots throughout (<10%). Base: Orange sticky clay base.	
TP 11	23cm		0-23cm: Orange silty clay loam. Clay increasing with depth. Poor quality quartz fragments and grass roots throughout (<10%). Base: Orange sticky clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 12	19cm		0-19cm: Orange silty clay loam. Clay increasing with depth. Poor quality quartz fragments and grass roots throughout (<10%). Base: Orange sticky clay base.	
TP 13	25cm		0-10cm: Dark brown clayey silt. Quartz gravelly inclusions (<5%). Small charcoal flecks throughout (<5%). 10-25cm: Red-brown silty clay. Grey-yellow clay inclusions. Base: Orange sticky clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 14	14cm		0-14cm: Brown silty loam. Gravelly poor quartz inclusions (<20-30%). Grass roots inclusions (<5%). Base: Orange compacted clay base.	
		Zone 9		
TP 1	20cm		0-15cm: Light brown silty loam. Grass root inclusions (<10%). 15-20cm: Brown silty clay loam. Inclusions as above. Base: Orange basal clay, moist and compact.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 2	42cm		0-7cm: Dark brown loam with humic material. Lightly compacted. Grass root inclusions (<5%). 7-11cm: Brown friable silt. High bioturbation throughout. 11-18cm: Reddish brown clayey silt. Grass root inclusions and bioturbation as above. 18-33cm: Brownish red clayey silt, small gravelly inclusions (<5%). 33-42cm: Mottled red and grey-brown clay. Inclusions as above. Base: Yellow-brown sticky clay base	
TP 3	30cm		0-10cm: Warm dark brown loose/friable silt. Minimal topsoil. Minor grass root inclusions (<5%). 10-20cm: Orangey brown loose/friable silt. Inclusions as above. 20-30cm: Orange loose clayey silt. Minor charcoal in bottom (<2%). Base: Mottled sticky orange clay base.	7.5YR 3/4, 5YR 5/6. PH: 6.5-7

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 4	40cm		0-15cm: Light brown silty loam. Minor grass root inclusions (<5%). 15-40cm: Orange clayey loam. Base: Orange, highly compact basal clay.	
TP 5	33cm		0-5cm: Dark brown silt. Grass root inclusions (<5%). 5-15cm: Orange loose silt. Small charcoal flecks throughout (<2%). 15-33cm: Very bright orange loose clayey silt. Inclusions as above. Base: Orange, highly compact basal clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 6	36cm		0-15cm: Brown silty loam. 15-30cm: Light brown-orange silty clay loam. 30-36cm: Transition to basal clay. Light grey silty loam with orange clay inclusions (<15%). Base: Compact orange clay	
TP 7	38cm		0-6cm: Dark brown friable loam. Grass root inclusion (<2%). 6-14cm: Brown silt. Inclusions as above. 14-30cm: Reddish brown clayey silt. Gravelly quartz inclusions (<10%). 30-38cm: Highly compacted light brown/grey silt. Inclusions as above. Base: Mottled compacted grey and red clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 8	23cm		0-8cm: Dark brown silt. Clumpy and moist. Grass root inclusions (<5%). 8-20cm: Orangey clayey silt. Plastic and clumpy. Inclusions as above. 20-23cm: Hard orange silty clay. Base: Hard orange sticky clay. Water ripples throughput base.	
TP 9	23cm		0-15cm: Dark brown silt. Clumpy and moist. Grass root inclusions (<5%). 15-23cm: Orangey clayey silt. Plastic and clumpy. Inclusions as above. Base: Hard orange sticky clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 10	24cm		0-5cm: Dark brown clumpy silt. Grass root inclusions (<5%). 5-15cm: Orangey brown clumpy yet friable silt. Inclusions as above. 15-25cm: Orange clayey silt. Large grass roots in western wall (<10%). Base: Hard orange sticky clay.	
TP 11	26cm		0-15cm: Light brown silty clay loam. Grass root inclusions (<5%). 15-27cm: Orange silty clay loam. Base: Hard orange sticky clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 12	27cm		0-8cm: Dark brown silt. Clumpy and moist. Grass root inclusions (<5%). 8-20cm: Orangey clayey silt. Plastic and clumpy. Inclusions as above. 20-27cm: Hard orange clayey silt. Base: Hard orange sticky clay. Water ripples throughput base.	
TP 13	29cm		0-15cm: Dark brown loamy silt, damp, lightly compact. No visible inclusions. High bioturbation (<15%). 15-23cm: Reddish-brown silt, moist, lightly compact. Small gravel inclusions throughout (<10%). Grass root inclusions (<10%). Bioturbation as above. 23-28cm: Mottled grey and reddish brown, moist silty clay. Highly compact. Gravelly quartz inclusions (<20%). Base: Greyish red-brown moist clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 14	34cm		0-15cm: Brown clay loam. Grass root inclusions (<10%). 15-30cm: Orange silty clay loam. 30-32cm: Interface of above and below, chalky grey silty material. 32-34cm: Orange hard/compact clay base.	
TP 15	34cm		0-8cm: Dark brown, lightly compact, moist loamy silt. Grass root inclusions (<5%). 8-13cm: Brown moist silt, lightly compacted. Grass root inclusions (<5%). 13-25cm: Red-brown silt, moist, moderately compact. Small ironstone/manganese gravel inclusions (<10%) as well as angular quartz inclusions (<5%).	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 16	35cm		0-15cm: Brown silty loam. Grass root inclusions (<5%). 15-30cm: Orange silty clay loam. 30-33cm: Transition to clay base. Base: Orange compact clay base.	
TP 17	30cm		0-15cm: Dark brown moist silty loam. Lightly compact. Charcoal flecks and grass roots throughout (<10%). Some bioturbation. 15-28cm: Pale brown moist silt. Light to moderately compacted. Small ironstone/manganese gravel inclusions (<10%) as well as angular quartz inclusions (<5%). 28-30cm: Mottled grey and reddish brown silty clay. Highly compacted. Inclusions as above. Base: Grey to red-brown mottled hard clay.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 18	30cm		0-15cm: Dark brown moist silty loam. Lightly compact. Charcoal flecks and grass roots throughout (<10%). Some bioturbation. 15-30cm: Orange silty clay loam. Inclusions as above. Base: Orange compact clay base.	
TP 19	28cm		0-10cm: Dark brown moist silty loam. Lightly compact. Charcoal flecks and grass roots throughout (<10%). Some bioturbation. 15-30cm: Orange silty clay loam. Inclusions as above. Base: Orange compact clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 20	35cm		0-7cm: Very dark brown moist silty loam. Lightly compact. Grass root inclusions (<5%). 7-17cm: Brown, moist lightly compacted silt. Inclusions as above. Some bioturbation throughout (<5%). 17-28cm: Reddish light brown moderately compact silt. Small gravelly quartz and ironstone inclusions (<20%). 28-34cm: Highly compacted mottled grey-orange silty clay. Inclusions as above. Base: Mottled grey-orange hard clay base.	
TP 21	27cm		0-15cm: Brown silty loam. Grass root inclusions (<5%). 15-27cm: Orange silty clay loam. Base: Orange compact clay base	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 22	30cm		0-15cm: Brown silty loam. Grass root inclusions (<5%). 15-30cm: Orange silty clay loam. Base: Orange compact clay base	
TP 23	33cm		0-15cm: Brown silty loam. Grass root inclusions (<5%). 15-33cm: Orange silty clay loam. Base: Orange extremely compact clay base	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 24	26cm		0-15cm: Brown silty loam. Grass root inclusions (<5%). 15-27cm: Orange silty clay loam. Base: Orange extremely compact clay base	
TP 25	33cm		0-8cm: Dark brown moist silty loam. Grass roots inclusions (<5%). 8-15cm: Brown lightly compacted moist silt. Inclusions as above. 15-32cm: Pale brown moist lightly compacted clayey silt. Ironstone and quartz gravel inclusions (<10%). Grass root inclusions (<2%). 32-39cm: Highly compacted mottled grey-orange silty clay. Inclusions as above. Base: Mottled grey-orange hard clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 26	23cm		0-15cm: Brown silty loam. Grass root inclusions (<5%). 15-27cm: Orange silty clay loam. Base: Orange extremely compact clay base.	
TP 27	38cm		0-16cm: Dark brown moist silty loam. Grass roots inclusions (<5%). 16-38cm: Reddish brown lightly compacted damp silty clay. Small charcoal flecks throughout (<10%). Base: Hard reddish brown clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 28	33cm		0-15cm: Brown silty loam. Grass root inclusions (<5%). 15-33cm: Orange silty clay loam. Base: Orange extremely compact clay base.	
TP 29	17cm		0-15cm: Brown silty loam. Grass root inclusions (<5%). 15-17cm: Orange silty clay loam. Base: Orange extremely compact clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 30	44cm		0-22cm: Dark brown moist silty loam. Grass roots inclusions (<5%). 22-34cm: Reddish brown lightly compacted damp clayey silt. 34-44cm: Mottled pale brown to orange-red silty clay. Base: Mottled grey-orange hard clay base.	
TP 31	43cm		0-22cm: Dark brown moist silty loam. Grass roots inclusions (<5%). 22-34cm: Reddish brown lightly compacted damp clayey silt. 34-43cm: Mottled pale brown to orange-red silty clay. Historical disturbance (ripple lines) diagonally through it. Base: Mottled grey-orange hard clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 32	35cm		0-22cm: Dark brown moist silty loam. Grass roots inclusions (<5%). 22-35cm: Reddish brown lightly compacted damp clayey silt. Base: Mottled grey-orange hard clay base.	
TP 33	22cm		0-15cm: Brown silty loam. Grass root inclusions (<5%). 15-22cm: Orange silty clay loam. Base: Orange extremely compact clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 34	20cm		0-22cm: Dark brown moist silty loam. Grass roots inclusions (<5%). 22-35cm: Reddish brown lightly compacted damp clayey silt. Tree root 1cm in diameter throughout. Base: Mottled pale brown to orange-red hard clay base.	
TP 35	20cm		0-8cm: Dark brown moist silty loam. Grass roots inclusions (<5%). 8-17cm: Red-brown damp moderately compacted silt. Charcoal flecks throughout (<10%). Small quartz and ironstone fragments throughout (<10%). Minor bioturbation. 17-20cm: Mottled grey/pale to orange-brown silty clay. Heavily compacted. Inclusions as above. Base: Mottled grey-orange hard clay base.	

Zone 10

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 1	40cm		0-30cm: Brown silty sandy loam. 30-40cm: Orange clayey loam. Clay content increasing towards base. Base: Orange sticky clay.	
TP 2	39cm		0-10cm: Dark brown moist silty loam. Grass roots inclusions (<5%). Recently ploughed. 10-28cm: Pale red-brown damp silt. Inclusions as above. 28-35: Pale brown damp lightly compacted clayey silt. Gravelly quartz inclusions (<10%). 35-39cm: Mottled grey/orange-brown silty clay. Base: Grey-orange hard clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 3	40cm		0-10cm: Brown silty sandy loam. 10-40cm: Orange clayey loam. Clay content increasing towards base. Base: Orange sticky clay. Degraded tree root through base.	
TP 4	36cm		0-8cm: Dark brown moist silty loam. Grass roots inclusions (<5%). Recently ploughed. 8-27cm: Pale red-brown damp silt. Inclusions as above. 27-30: Pale brown damp lightly compacted clayey silt. Gravelly quartz inclusions (<10%). 30-36cm: Mottled grey/orange-brown silty clay. Base: Grey-orange hard clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 5	23cm		0-23cm: Light brown silty loam/sandy clay. Grass root inclusions (<5%). Base: Orange compact clay base.	
TP 6	33cm		0-10cm: Dark brown moist silty loam. Grass roots inclusions (<5%). Recently ploughed. 10-30cm: Pale red-brown damp silt. Inclusions as above. 30-33cm: Mottled grey/orange-brown silty clay. Base: Grey-orange hard clay base. Tree roots through base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 7	37cm		0-10cm: Brown silty sandy loam. 10-37cm: Orange clayey loam. Clay content increasing towards base. Base: Orange sticky clay. Degraded tree root through base.	
TP 8	37cm		0-10cm: Dark brown moist silty loam. Grass roots inclusions (<5%). Recently ploughed. 10-32cm: Pale red-brown damp silt. Inclusions as above. 32-37cm: Mottled grey/red orange-brown silty clay. Higher clusters of orange clay throughout (<10%). Base: Grey-orange hard clay base. Tree roots through base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 9	38cm		0-10cm: Dark brown moist silty loam. Grass roots inclusions (<5%). Recently ploughed. 10-32cm: Pale red-brown damp silt. Inclusions as above. 32-38cm: Mottled grey/red orange-brown silty clay. Base: Grey-orange hard clay base.	
TP 10	38cm		0-15cm: Dark brown moist silty loam. Grass roots inclusions (<5%). Recently ploughed. 15-27cm: Pale red-brown damp silt. Inclusions as above. 27-35cm: Pale brown clayey silt. Small gravel inclusions (<5%) 35-38cm: Mottled grey/red orange-brown silty clay. Base: Grey-orange hard clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 11	37cm		0-10cm: Brown silty sandy loam. 10-37cm: Orange clayey loam. Clay content increasing towards base. Base: Orange sticky clay. Degraded tree root through base.	
TP 12	43cm		0-14cm: Dark brown moist silty loam. Grass roots inclusions (<5%). Recently ploughed. 14-31cm: Red-brown damp silt. Inclusions as above. 31-40cm: Pale brown clayey silt. Small gravel inclusions (<5%) 40-43cm: Mottled grey/red orange-brown silty clay. Base: Grey-orange hard clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 13	44cm		0-3cm: Dark brown humic topsoil. 3-28cm: Light brown silty sandy loam. 28-44cm: Orange sandy clay loam. Base: Orange compacted basal clay.	
TP 14	40cm		0-14cm: Dark brown moist silty loam. Grass roots inclusions (<5%). Recently ploughed. 14-31cm: Red-brown damp silt. Inclusions as above. 31-35cm: Pale brown clayey silt. Small gravel inclusions (<5%) 35-40cm: Mottled grey/red orange-brown silty clay. Base: Grey-orange hard clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 15	33cm		0-14cm: Dark brown moist silty loam. Grass roots inclusions (<5%). Recently ploughed. 14-31cm: Red-brown damp silt. Inclusions as above. 31-33cm: Mottled grey/red orange-brown silty clay. Base: Grey-orange hard clay base.	
TP 16	40cm		0-14cm: Dark brown moist silty loam. Grass roots inclusions (<5%). Recently ploughed. 14-34cm: Red-brown damp silt. Inclusions as above. 34-40cm: Mottled grey/red orange-brown silty clay. Base: Grey-orange hard clay base.	

Pit Name	End Depth	Pictures	Soil Description	Munsell and PH
TP 17	37cm		0-10cm: Brown silty sandy loam. 10-37cm: Orange clayey loam. Clay content increasing towards base. Base: Orange sticky clay. Degraded tree root through base.	