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HUMELINK EAST
UNSURVEYED AREAS

SSI-36656827

Addendum Aboriginal Cultural Heritage Assessment Report

Prepared for Acciona Genus Joint Venture

Upper Lachlan Shire, Yass Valley, Cootamundra-Gundagai Regional
and Snowy Valleys Local Government Areas

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Executive Summary

Transgrid is undertaking works to increase the energy network capacity in southern New South Wales (NSW) through the development of new high-voltage transmission lines and associated infrastructure between Wagga Wagga, Bannaby and Maragle. This proposal is collectively referred to as 'HumeLink'. HumeLink is declared as Critical State Significant Infrastructure (CSSI) (SSI-36656827) and the project was approved by the NSW Minister for Planning and Public Spaces in November 2024 under section 5.19 of the *Environmental Planning and Assessment Act 1979* subject to Conditions of Approval. Previous Aboriginal heritage assessment to inform the Environmental Impact Statement (EIS) and Amendment Report (AR) included preparation of an Aboriginal Cultural Heritage Assessment Report (ACHAR) and Revised ACHAR, respectively.

The overall HumeLink project is being delivered under two separate Contract Packages - HumeLink East and HumeLink West. Acciona Genus Joint Venture (AGJV) have been appointed to deliver the construction of HumeLink East, from the Bannaby substation to the interface point with HumeLink West north of Wondalga. AGJV engaged Kelleher Nightingale Consulting Pty Ltd to provide professional services related to Aboriginal and historical heritage for the construction phase of HumeLink East, including preparation of a Heritage Management Plan (HMP).

During preparation of the environmental assessment documentation for HumeLink, there were a number of landholdings where access was unavailable or where archaeological surveys for Aboriginal and historical heritage were otherwise unable to be completed. For Aboriginal heritage, these areas were identified in map series A5.2 of the Revised ACHAR. It was also identified that some sections of proposed access tracks had not been subject to archaeological field survey. The HumeLink Conditions of Approval and Updated Mitigation Measures (UMMs) for the Approved Project include certain requirements relating to archaeological survey and subsequent assessment of these unsurveyed areas.

The current document comprises an Addendum ACHAR in accordance with CoA B31 and fulfils the reporting requirements for these 'unsurveyed areas' which have now been subject to assessment (i.e. the study area). Archaeological investigations including field survey and test excavation were undertaken in accordance with the methodologies included in the HumeLink East HMP and the requirements of the CoA and UMMs. As a result of the investigations, Aboriginal objects have been identified within the Addendum ACHAR study area at 29 archaeological sites. These are predominantly stone artefact sites (n=27) along with two modified trees. A further 21 Potential Archaeological Deposits (PADs) have also been described across various landform contexts.

The identified sites include higher density deposits indicating Aboriginal people's more frequent and/or focused use of certain areas, as well as dispersed moderate to low density deposits and isolated objects across the landscape resulting from less lithic-intensive activities, and the background scatter of Aboriginal objects across the landscape, resulting from discard events as Aboriginal people moved across Country. Surface artefacts tended to be identified in areas of high disturbance and low integrity, but suitable surrounding landforms were usually found to contain associated subsurface deposit. The sites display a mixture of assessed archaeological significance levels ranging from low to moderate, with all PADs displaying moderate archaeological potential.

Impact assessment for the Addendum ACHAR was based on the current disturbance footprint (as dated 7 March 2025). Archaeological site/PAD locations and extents within the current disturbance footprint were assumed to be subject to direct harm. This allowed for formulation of appropriate management and mitigation strategies where it is determined that impacts cannot be avoided. This approach is consistent with the impact assessment methodology utilised for the HumeLink ACHAR and Revised ACHAR, which assumed that Aboriginal objects within the project footprint were at risk of harm pending the finalisation of detailed design and determination of avoidance. In total, seven Aboriginal sites/PADs (all low density sites in areas of higher disturbance) would be subject to total impacts, 35 sites/PADs (of varying nature and significance) would be subject to limited, partial impacts and eight sites/PADs (including both modified trees) would be avoided.

Suitable recommendations for the identified impacts to the sites have been developed based on the principles of Ecologically Sustainable Development, environmental context and condition, background research and consultation with the Registered Aboriginal Parties. Recommended mitigation and management strategies include site protection measures for avoided/non-impacted site areas, salvage collection of surface artefacts at all sites within the impact area, and archaeological salvage excavation where the significance of the proposed harm is at least moderate. Recommendations are consistent with the existing mitigation strategies as described in the HumeLink East HMP, the project's UMMs for Aboriginal heritage, and the requirements of the CoA. Where additional field survey and test excavation within the unsurveyed areas is still required, these will be undertaken in accordance with the HumeLink East HMP and the assessment methodologies employed for this Addendum ACHAR.

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Terms and Definitions

Abbreviation	Expanded text
ACHAR	Aboriginal Cultural Heritage Assessment Report
AGJV	Acciona Genus Joint Venture
AHIMS	Aboriginal Heritage Information Management System
AR	Amendment Report
ASIRF	Aboriginal Site Impact Recording Form
CEMP	Construction Environmental Management Plan
CoA	Conditions of Approval
CSSI	Critical State Significant Infrastructure
DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
DEC	NSW Department of Environment and Conservation (former)
DECCW	NSW Department of Environment, Climate Change and Water (former)
DPE	NSW Department of Planning and Environment (former)
DPHI	NSW Department of Planning, Housing and Infrastructure
ECMs	Environmental Control Measures
EIS	Environmental Impact Statement
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
GDA	Geocentric Datum of Australia
GIS	Geographic Information System
GPS	Global Positioning System
HHIA	Historic Heritage Impact Assessment
HMP	Heritage Management Plan
ICOMOS	International Council on Monuments and Sites
IMT	Indurated Mudstone/Tuff
KNC	Kelleher Nightingale Consulting Pty Ltd
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
MNF	Minimum Number of Flake
NHL	National Heritage List
NOHC	Navin Officer Heritage Consultants
NPW Act	*National Parks and Wildlife Act 1974*
NPWS	NSW National Parks and Wildlife Service
NSW	New South Wales
OEH	Office of Environment and Heritage
PAD	Potential Archaeological Deposit
RAP	Registered Aboriginal Party
RNE	Register of the National Estate
SHR	State Heritage Register
UMM	Updated Mitigation Measure
UNESCO	United Nations Educational, Scientific and Cultural Organization
VIC	Victoria

1 Introduction

1.1 Project background, proponent and consultants

Transgrid proposes to increase the energy network capacity in southern NSW through the development of new high-voltage transmission lines and associated infrastructure between Wagga Wagga, Bannaby and Maragle. This proposal is collectively referred to as 'HumeLink'. HumeLink will involve the development of around 365 kilometres of new 500 kilovolt (kV) high-voltage transmission lines and associated infrastructure including substations, permanent and temporary access tracks and roads, and ancillary facilities.

HumeLink was designated as Critical State Significant Infrastructure (CSSI) (SSI-36656827) and approval was sought under Division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The Planning Secretary's Environmental Assessment Requirements (SEARs) for the overall HumeLink project were issued in March 2022 by the NSW Department of Planning and Environment (now Department of Planning, Housing and Infrastructure; DPHI) in accordance with the requirements of Division 5.2 of the EP&A Act to guide preparation of an Environmental Impact Statement (EIS) for the project. Following referral under the EPBC Act, the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) determined the project to be a controlled action under section 75 of the EPBC Act in April 2022. Supplementary SEARs were issued in May 2022 to provide additional requirements from DCCEEW.

Preparation of the EIS was undertaken by Transgrid and Aurecon Australasia Pty Ltd in August 2023. The EIS included specific assessment of both Aboriginal cultural heritage and non-Aboriginal (historical) heritage matters, undertaken by Navin Officer Heritage Consultants (NOHC). Following completion and public exhibition of the EIS between 30 August - 10 October 2023, a Submissions Report was prepared to address the issues raised during the exhibition period. A separate Amendment Report (AR) was prepared to address potential environmental impacts due to design changes and construction updates to the project since the exhibition of the EIS. Addendum Aboriginal and historical heritage reports were prepared by NOHC to inform the Amendment Report.

The HumeLink project was approved by the Minister for Planning and Public Spaces on 14 November 2024. Transgrid must carry out the CSSI in accordance with the conditions of approval and the following environmental assessment documentation:

(a) HumeLink Environmental Impact Statement (dated August 2023)
(b) HumeLink Submissions Report (dated May 2024)
(c) HumeLink Amendment Report (dated May 2024)

Project documentation specific to cultural heritage matters includes:

- NOHC, 2023a. HumeLink EIS Technical Report 2: Aboriginal Cultural Heritage Assessment Report (ACHAR).
- NOHC, 2023b. HumeLink EIS Technical Report 3: Historic Heritage Impact Assessment (HHIA).
- NOHC, 2024a. HumeLink AR Technical Report 2: Revised Aboriginal Cultural Heritage Assessment Report (Revised ACHAR).
- NOHC, 2024b. HumeLink AR Technical Report 3: Revised Historic Heritage Impact Assessment (Revised HHIA).

The overall HumeLink project is being delivered under two separate Contract Packages - HumeLink East and HumeLink West. Figure 1 shows an indicative high-level scope of each Contract Package. Acciona Genus Joint Venture (AGJV) have been appointed to deliver the construction of HumeLink East, from the Bannaby substation to the interface point with HumeLink West north of Wondalga.

AGJV engaged Kelleher Nightingale Consulting Pty Ltd (KNC) to provide professional services related to Aboriginal and historical heritage for the construction phase of HumeLink East ('the Project'), including preparation of a Heritage Management Plan (HumeLink East HMP; KNC & AGJV 2025) in accordance with the recommendations of the EIS, AR and the HumeLink Conditions of Approval (CoA).

The HumeLink East HMP was approved by DPHI on 2 July 2025 and now forms the primary document guiding heritage management for construction of HumeLink East.

1.2 Current assessment context

During preparation of the environmental assessment documentation for the Project, there were a number of landholdings where access was unavailable or where archaeological surveys for Aboriginal and historical heritage were otherwise unable to be completed. For Aboriginal heritage, these areas are identified in map series A5.2 of the Revised ACHAR (NOHC 2024a) (included as Addendum ACHAR Appendix A). It was also identified that some sections of proposed access tracks had not been subject to archaeological field survey.

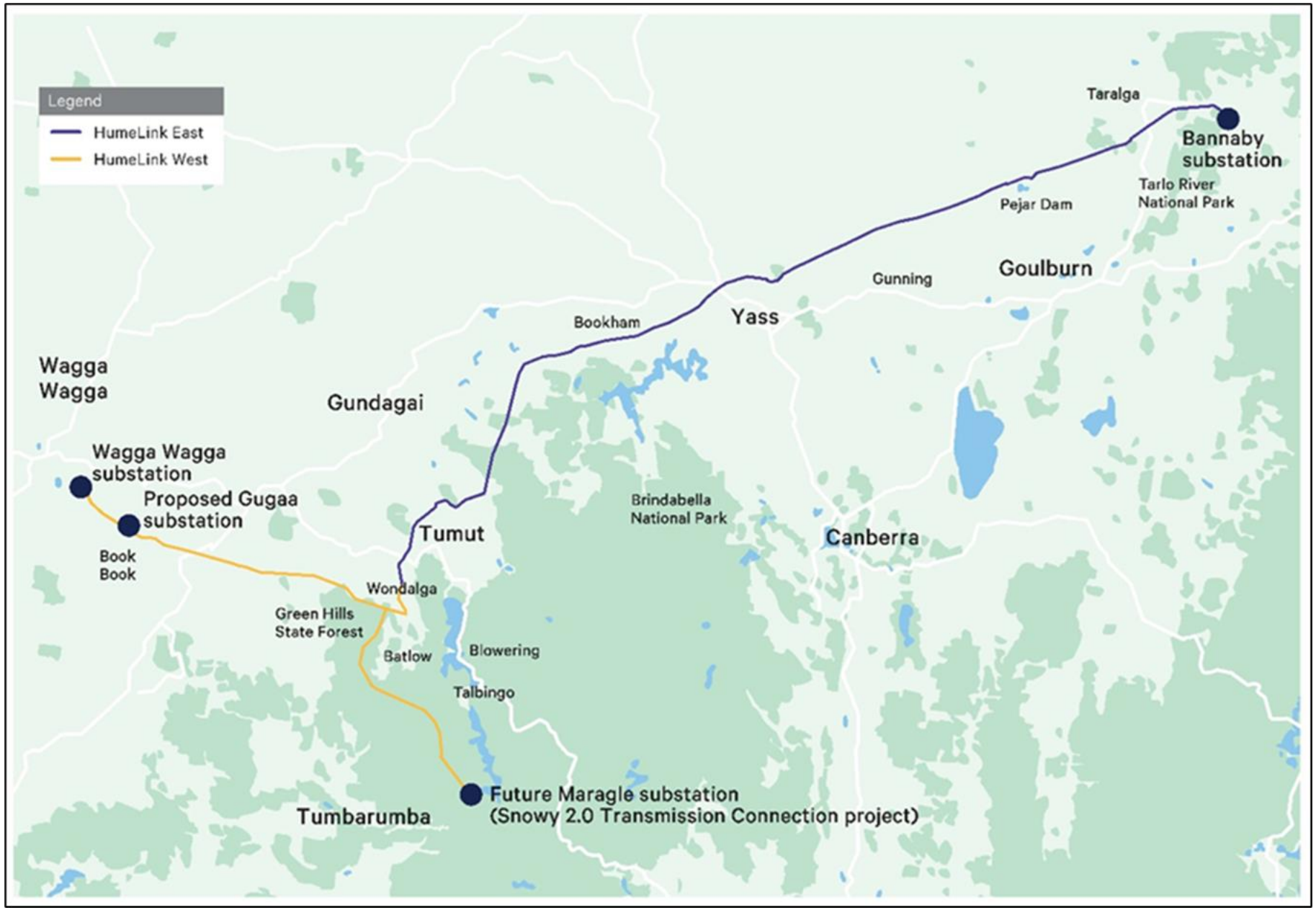


Figure 1. Indicative high-level scope of HumeLink East and HumeLink West

The EIS and AR identified that additional assessment of these unsurveyed areas would be required prior to any ground disturbing activities associated with the project that may impact heritage items. The HumeLink Conditions of Approval and Updated Mitigation Measures (UMMs) for the Approved Project include certain requirements relating to archaeological survey and subsequent assessment of these unsurveyed areas.

CoA B31 ("Unsurveyed Areas") states that:

> *Prior to carrying out any development within the unsurveyed areas of the development area identified in the EIS, untested areas of moderate and high sensitivity, or any potential archaeological deposits (PADs) identified for impact during detailed design, the Proponent must provide an Addendum Aboriginal Cultural Heritage Assessment Report (Addendum ACHAR), prepared in consultation with the Aboriginal stakeholders and Heritage NSW, to the satisfaction of the Planning Secretary. The report must:*
>
> *a) include details of consultation with the Aboriginal stakeholders;*
> *b) describe the additional Aboriginal heritage surveys that were undertaken, including test excavations of PADs;*
> *c) describe any potential additional impacts to heritage items;*
> *d) identify further mitigation measures, including avoidance or salvage;*
> *e) include detailed justification where the final transmission line alignment is not able to avoid impacts to heritage items; and*
> *f) provide an updated and consolidated list of sites that would be protected and remain in-situ throughout construction and sites that would be salvaged and relocated to suitable alternative locations.*

UMM AH3 ("Impact to Aboriginal sites in unassessed areas of the project footprint") also includes requirements for further survey and reporting for unassessed areas.

The current document comprises an Addendum ACHAR in accordance with CoA B31 and fulfils the reporting requirements for 'unsurveyed areas' which have now been accessed and subject to assessment.

1.3 Locations and scope of activity

HumeLink East specifically involves the following:

- Augmenting the existing Bannaby 500kV substation
- Delivering a new 500 kV double circuit transmission line connecting the augmented Bannaby 500kV substation to the Interface Point where it will connect with HumeLink West
- Delivering the infrastructure required at the Interface Point to enable the connection of the HumeLink West and HumeLink East transmission line works – including the interface tower and associated infrastructure.

Construction activities associated with the HumeLink East project include:

- Continuation of remaining enabling works activities commenced under the approved Enabling Works Management Plan as Construction consistent with CoA B67, including:
  - Site establishment and operation of construction compounds, including excavations, surface preparation, access roads and utility connections
  - Site establishment of worker accommodation facilities, including excavations, surface preparation, access roads and utility connections
  - Establishment of new access tracks and minor adjustments to existing access tracks
  - Utility relocations and adjustments.
- Vegetation clearing
- Utility connections, adjustments and protection work
- Property adjustments
- Works related to access tracks, including upgrades to existing tracks and construction of new tracks
- Earthworks and transmission line structure footing construction and assembly of transmission line structures
- Stringing of the transmission lines
- Bannaby 500kV substation modification
- Testing and commissioning
- Demobilisation and rehabilitation, including landscaping, fencing etc

The "study area" for this Addendum ACHAR comprises the previously unsurveyed areas as identified in the HumeLink environmental assessment documentation and HumeLink East HMP, and the additional proposed access track areas requiring survey. Field assessment and evaluation of proposed impacts within the study area were restricted to the indicative disturbance footprint (as of 07/03/2025) within the approved project boundary.

The study area comprises scattered locations along the length of the HumeLink East project. The Addendum ACHAR uses the unique property identifiers and access track identifiers employed by AGJV to identify the relevant areas. The general locations of properties containing the unsurveyed areas and access tracks are shown in Figure 2 - Figure 4. More detailed mapping is provided in Appendices A and B.

Specifically, this Addendum ACHAR has been prepared to evaluate the current disturbance footprint within the unsurveyed areas of the following properties:

- MA-047
- MA-059-01
- MA-059-07
- MA-059-08
- MA-059-09
- MA-059-10
- MA-059-13
- MA-059-13A
- MA-059-15
- MA-059-16
- MA-077
- MA-077-01
- MA-085
- MA-088
- MA-089
- MA-094
- MA-100
- YG-034
- YG-031
- YG-009
- BY-156
- BY-152
- BY-151
- BY-150
- BY-128-01
- BY-112-01A
- BY-109
- BY-108
- BY-107
- BY-101
- BY-097
- BY-090
- BY-074
- BY-072
- BY-070
- BY-046
- BY-007
- BY-006
- BY-003

And for the following proposed access track areas identified as unsurveyed:

- AT-463 (MA-047)
- AT-449, AT-451, AT-452 (MA-051)
- AT-451, AT-450 (MA-054)
- AT-443 (MA-059A)
- AT-442, AT-441, AT-440, AT-439, AT-437, unnamed track area (MA-059-02)
- AT-439, AT-434 (MA-059-03)
- AT-431, unnamed track area (MA-059-09 / MA-059-08)
- AT-428, AT-426, unnamed track area (MA-059-10)
- AT-423, unnamed track area (MA-059-13 / MA-059-13A)
- AT-419, AT-420 (MA-059-15)
- AT-417, AT-418, AT-416 (MA-059-16)
- AT-412, unnamed track area (MA-077-01)
- AT-353 to 358 (MA-100)
- AT B W 52 (YG-025 / AT027B)
- AT-290, unnamed track area, AT-288 (YG-024)
- AT-287, AT-286, AT-284 to 286, AT-285, AT-284, AT-283 (YG-020)
- AT-256 (YG-009)
- AT-174 (BY-113 / BY-111)
- AT-173 (BY-112-01A)
- AT-163 (BY-107)
- AT-152 to 152p1 (BY-097)
- AT-150, AT-148 (BY-101)
- AT-146 (BY-100)
- AT-068, AT-067 to 068 (BY-044)
- AT-015 (BY-008)
- Unnamed track area (BY-006)
- AT-011, AT-010 (BY-005)

Together, the previously unsurveyed properties and access track areas listed above are referred to as “unsurveyed areas” for the Addendum ACHAR, meaning they required assessment under UMM AH3 and CoA B31.

1.4 Objectives of the Addendum ACHAR

This report forms an Addendum to the existing ACHAR and Revised ACHAR for the HumeLink Project (NOHC 2023a and NOHC 2024a) and should be read in conjunction with those documents.

The purpose of the Addendum ACHAR is to identify and assess the Aboriginal heritage impacts of the proposed HumeLink East works within the disturbance footprint and unsurveyed areas as defined in Section 1.3, and to fulfil the requirements of CoA B31.

The report has been prepared in accordance with the existing SEARs for the Project as well as relevant government agency assessment requirements, guidelines and policies, and in consultation with the project's Registered Aboriginal Parties (RAPs). The objectives of the Addendum ACHAR combine Aboriginal community consultation with an archaeological investigation in accordance with:

- HumeLink SEARs;
- HumeLink East HMP;
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (Department of Environment, Climate Change and Water (DECCW) 2010a);
- *Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW* (Office of Environment and Heritage (OEH) 2011); and
- *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010b).

Specific requirements of CoA B31, and where they are addressed in the Addendum ACHAR, are outlined in Table 1 below.

Table 1. CoA B31 - report requirements

C0A B31 requirements		**Where addressed**
The report must:		
a)	include details of consultation with the Aboriginal stakeholders;	Section 7
b)	describe the additional Aboriginal heritage surveys that were undertaken, including test excavations of PADs;	Section 5 & Section 6
c)	describe any potential additional impacts to heritage items;	Section 10
d)	identify further mitigation measures, including avoidance or salvage;	Section 11
e)	include detailed justification where the final transmission line alignment is not able to avoid impacts to heritage items; and	Section 10 & Section 11
f)	provide an updated and consolidated list of sites that would be protected and remain in-situ throughout construction and sites that would be salvaged and relocated to suitable alternative locations	Table 38 & Section 12

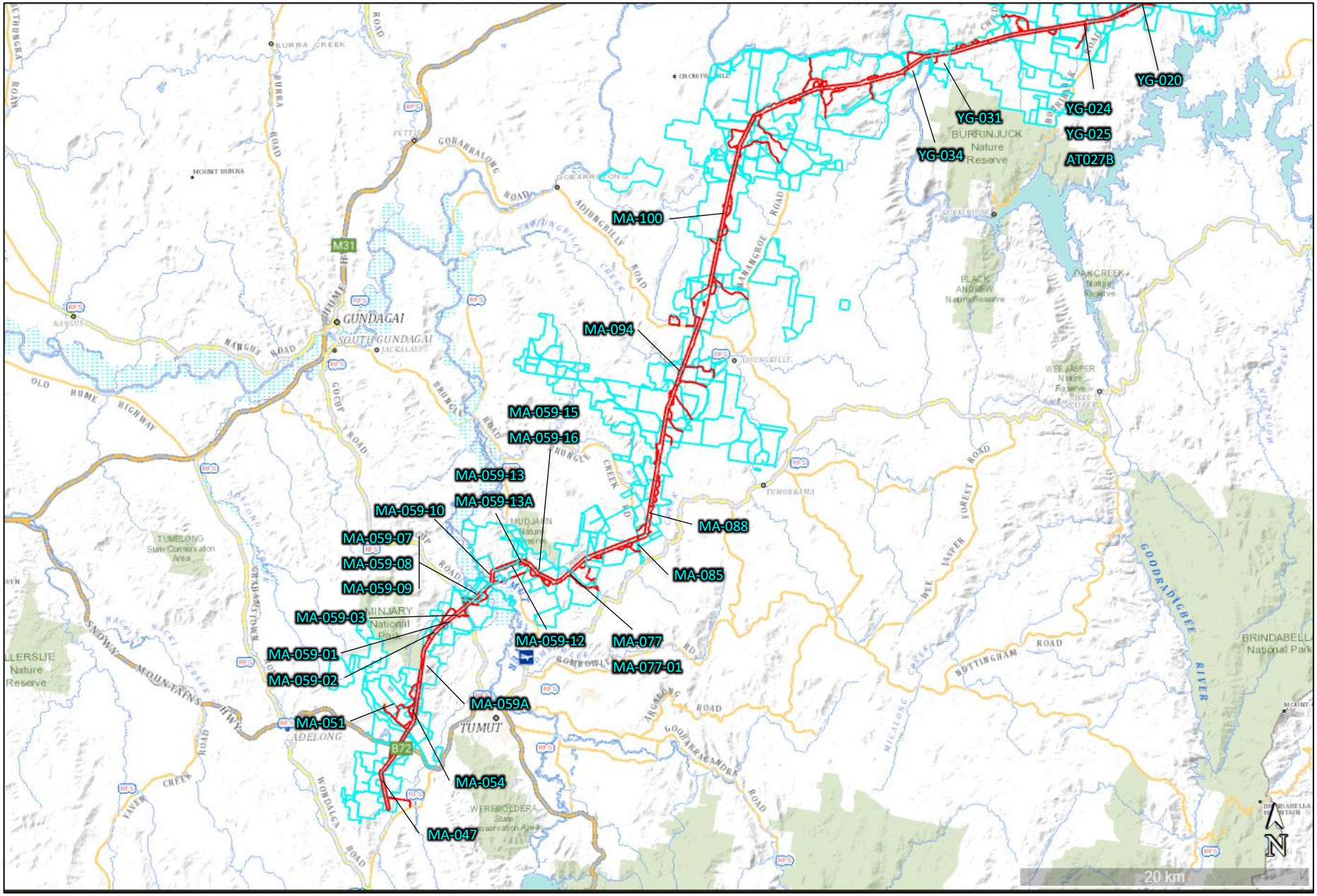


Figure 2. General location of properties containing unsurveyed areas (south). Approved project boundary (SSI-36656827) for HumeLink East shown in red.

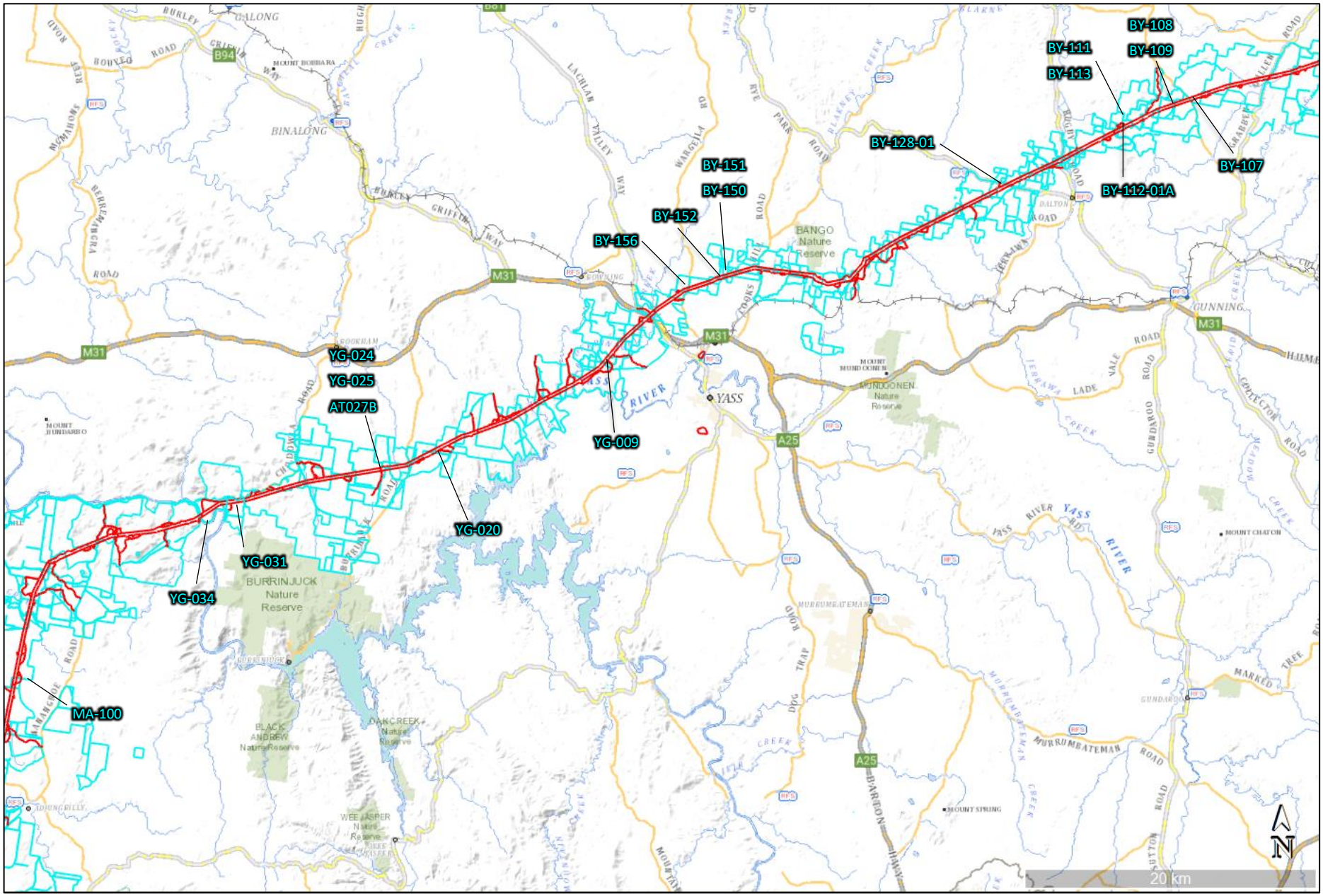


Figure 3. General location of properties containing unsurveyed areas (centre). Approved project boundary (SSI-36656827) for HumeLink East shown in red.

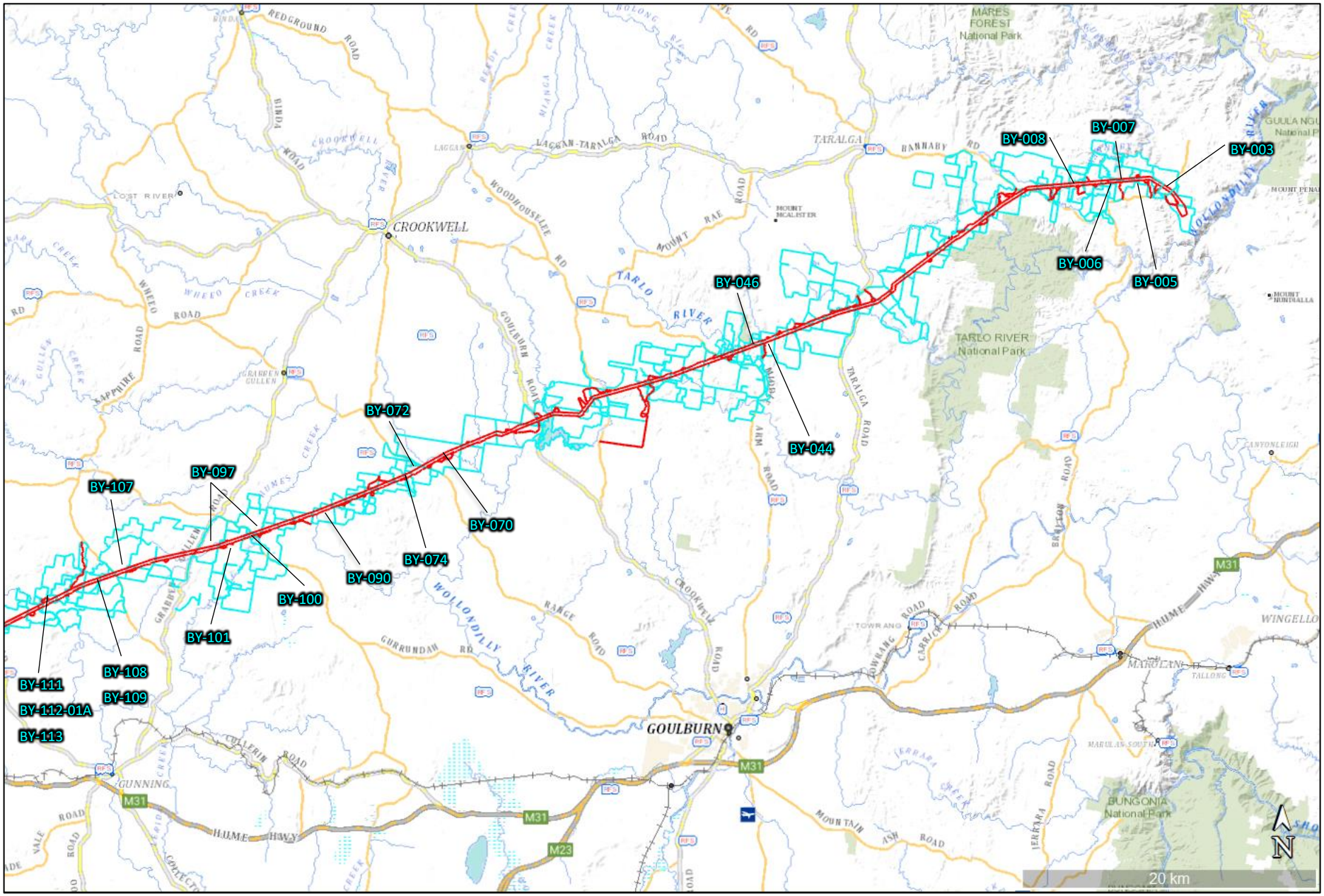


Figure 4. General location of properties containing unsurveyed areas (east). Approved project boundary (SSI-36656827) for HumeLink East shown in red.

2 Environmental Context

2.1 Geology, soils and vegetation

Comprehensive review of environmental context for the current study area and wider HumeLink Project has been undertaken. Existing project documentation prepared for the EIS and AR (NOHC 2023a and NOHC 2024a) details the physical environmental characteristics of the various regions crossed by the HumeLink transmission alignment. A summary of relevant environmental data as developed for the Revised ACHAR is adapted and expanded below. More specific environmental context for individual Aboriginal archaeological sites and areas is included in Sections 5 and 6.

The study area for the HumeLink East Addendum ACHAR occurs within the South Eastern Highlands and NSW South Western Slopes bioregions (Figure 5) (NSW National Parks and Wildlife Service (NPWS) 2003). The majority of the study area is located within the South Eastern Highlands, a high-lying bioregion of NSW typified by its general elevation and flatness. The South Eastern Highlands lies just inland from the coastal bioregions of the South East Corner and Sydney Basin, bounded by the Australian Alps to the south and the NSW South Western Slopes to the west. Topographically, the dominant features of the highlands are plateau remnants, granite basins with prominent ridges formed on contact metamorphic rocks and the western ramp grading to the NSW South Western Slopes. Streams cutting through the bioregion are deeply entrenched with only a few terrace features. Valleys are narrow and there is little Quaternary sediment. From Bookham in the west to Bannaby in the east, excepting a small area north of Yass, the study area crosses the Murrumbateman, Crookwell and Bungonia subregions of the South Eastern Highlands.

The Murrumbateman subregion is characterised as an undulating plateau with rounded hills and peaks, entrenched meandering streams and chain of ponds tributaries. Underlying geology comprises fine-grained Palaeozoic sedimentary and metasedimentary rocks, with minor areas of coarse acid volcanics. Tertiary alluvial terraces occur along the main streams. Soils include mottled yellow and brown texture contrast soils with strongly bleached topsoils. Dark organic loams and clay loams occur on valley floors. Saline patches may be present and soil fertility varies. Typical vegetation distribution is Blakely's red gum and yellow box on lower slopes with red stringybark, bundy/long-leaved box and white gum on ridges. Areas of apple box and mottled gum also occur. Limited swampy flats and grasslands are present on the valley floors.

The Crookwell subregion is located east of the Murrumbateman subregion, consisting of hilly terrain with some rugged areas and deep valleys with hill tops occurring as small plateaus or capped by basalt with inverted relief. Geology is complex, dominated by fine grained Ordovician and Silurian sedimentary rocks, with some granites. Tertiary basalts with buried river gravels may be present along ridges well above present streams. Soil types comprise red and yellow texture contrast soils, which are often thin and stony on the steeply sloping relief. Stony brown structured loams occur on underlying basalt. Vegetation typically includes apple box, mountain gum, Blakely's red gum and yellow box.

The eastern end of the study area near the Bannaby substation falls within the Bungonia subregion. This subregion is distinguished by a distinct plateau with very steep, deep margins on the Great Escarpment dropping into the Shoalhaven River. The landscape features strong linear ridges on resistant sandstones and volcanics, wide valleys with some cold air drainage and inverted treelines. Geology is primarily fine-grained Palaeozoic sedimentary and meta-sedimentary rocks, with minor areas of acid volcanics and limestone. There are also areas of Tertiary river and terrestrial sediments and low sandsheets in the south of the bioregion, with very limited basalt. Soils are mostly yellow texture contrast profiles, some with harsh clay subsoils. Limestone and basalt formations feature shallow, structured organic loams, while deep siliceous sands and clayey sands occur atop the younger Tertiary sediments. Vegetation includes forests and woodlands of mottled gum, broad-leaved peppermint, white gum, red stringybark and black ash, with black she-oak common as an understorey and in regeneration areas. Snow gum and snow grass also occur in cold pockets.

A portion of the study area north of Yass and the majority of the western portion of the Project alignment between Bookham and Wondalga fall within the NSW South Western Slopes bioregion. This bioregion encompasses an extensive area of foothills and isolated ranges comprising the western fall and lower inland slopes of the Great Dividing Range, extending from north of Cowra through southern NSW into western Victoria. Geology, soils and vegetation are complex and diverse but are typified by granites and meta-sediments, texture contrast soils and a variety of eucalypt woodlands. Inland streams pass across the slopes in confined valleys with terraces and local areas of sedimentation. The bioregion is also affected by topographic and rainfall gradients that decrease toward the Riverina and the west.

The study area falls within the Inland/Upper Slopes subregion, typified by steep, hilly and undulating ranges with occasional basalt caps on Ordovician to Devonian folded and faulted sedimentary sequences with inter-bedded volcanic rocks and intrusive granite basins. Major drainage occurs in confined river valleys with terrace remnants. Soils are shallow and stony on steep slopes, with texture contrast types grading from red subsoils on upper slopes to yellow subsoils on lower slopes. Alluvial sands, loams and clays occur in river valleys. Vegetation includes open forests and woodlands of red stringybark on upper slopes with black cypress pine, kurrajong, red ironbark, white gum, white box, yellow box and Blakely's red gum on lower slopes. Rough-barked apple occurs on flats with river oak on upper tributaries and river red gum on lower and larger streams.

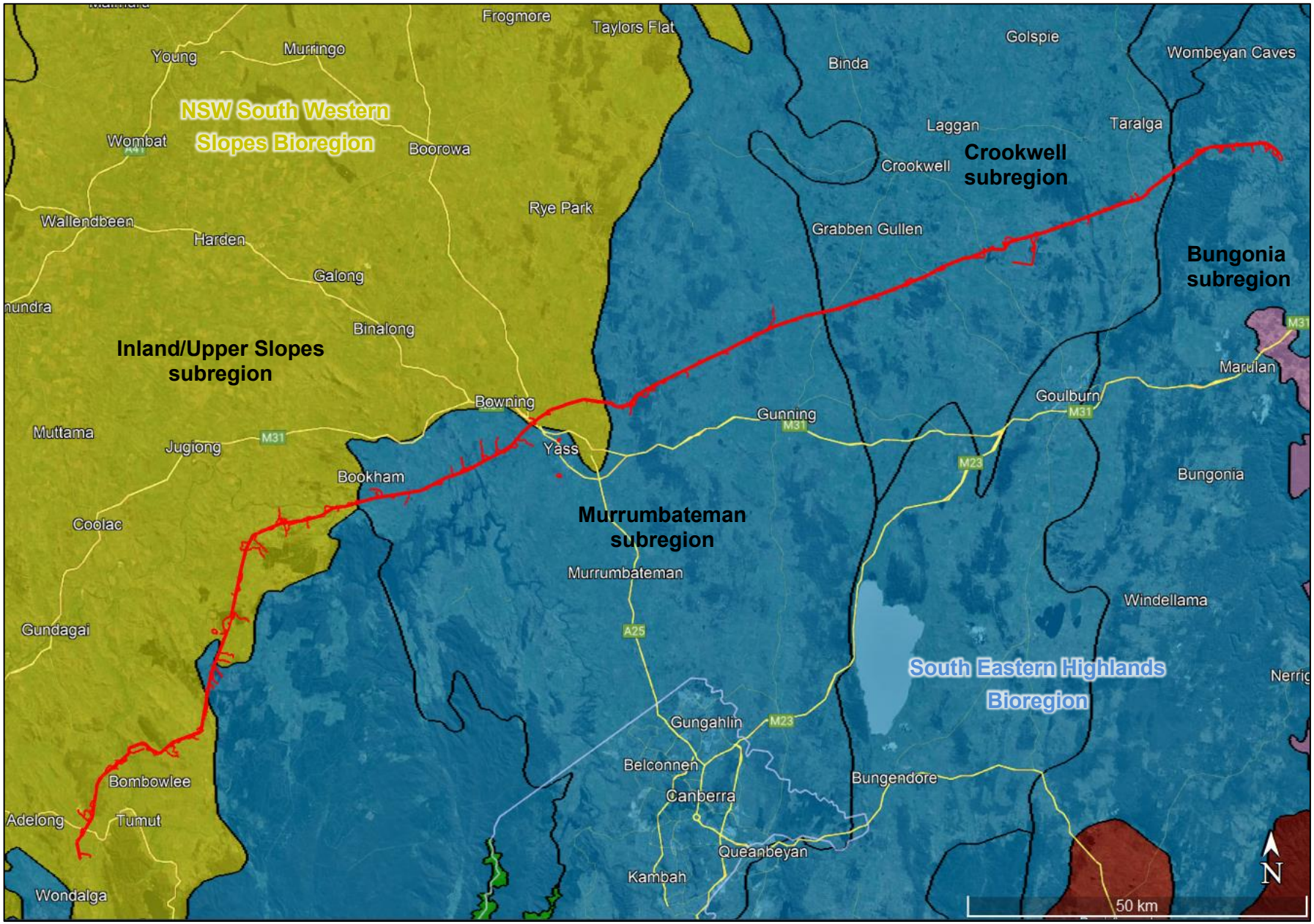


Figure 5. Bioregions and subregions of the HumeLink East alignment. Base image: Google Earth.

2.2 Hydrology

Water availability is a major influence on the range of resources available and suitability for human occupation. An understanding of an area's regional and local hydrology assists in identifying likely areas of occupation, provides a better understanding of the environment, and consequent archaeological potential. Hydrology also affects site taphonomy and depositional/erosional processes in the landscape. The wider Project footprint extends along and across major rivers, perennial and non-perennial waterways and in proximity to ephemeral lakes. HumeLink East and the current study area passes through the Upper Lachlan Shire, Yass Valley, Cootamundra-Gundagai Regional and Snowy Valleys Local Government Areas (LGAs) across the NSW South Western Slopes and South Eastern Highlands bioregions. Hydrology for these areas, described by LGA, was assessed for the Project alignment for the Revised ACHAR (NOHC 2024a) and is adapted for the current study area below.

NSW South Western Slopes

Snowy Valleys LGA
The portion of the HumeLink East project within the Snowy Valleys LGA and within the NSW South Western Slopes extends between Windowie and Red Hill. The project area runs across and along rivers and major perennial creeks, low order non-perennial creeks and tributaries as well as natural and artificial waterbodies and gullies. Principal watercourses include (from west to east) Windowie Creek, Sandy Creek, Gocup Creek, Big Rock Gully, Meadow Creek, the Tumut River (with extensive braided channel and floodplain), Killimicat Creek, Sawpit Gully, Brungle Creek and Kiley Creek. These range from permanent high order waterways to perennial creeks and streams, to non-perennial lower order waterways. Numerous small drainage lines and headwater first order tributaries are also present along the project footprint.

Cootamundra-Gundagai Regional LGA
Within this LGA and within the NSW South Western Slopes Bioregion, the amended project footprint extends from Red Hill to c.5 kilometres east of the Murrumbidgee River crossing. From west to east, this portion of the project alignment intersects Saw Mill Creek (within the small area of South Eastern Highlands bioregion), Adjungbilly Creek, O'Briens Creek, Cart Road Creek, Oak Creek, Yellow Clay Creek, Dicks Gully, Rocky Creek, Oaky Creek, and finally the Murrumbidgee River. East of the river, the main watercourse is Oak Creek. These watercourses include permanent and non-permanent tributary streams, with numerous smaller drainage lines and first-second order headwaters also passing through the project footprint.

Yass Valley LGA
The section of the project footprint north of Yass township, from the Hume Highway to the Bango Nature Reserve, also falls within the NSW South Western Slopes bioregion. Watercourses along this section of the alignment include Derringullen Creek, Excursion Gully, Fairy Hole Creek, Cooks Creek and Bango Creek. These are primarily semi-permanent streams, with chain of ponds upper tributaries and headwaters.

South Eastern Highlands

Yass Valley LGA
The South Eastern Highlands bioregion covers a large portion of Yass Valley LGA. The sections of the project encompassed in this zone run from Bookham to the Hume Highway near Yass, and a small section east of the Bango Nature Reserve to the Mundoonen Ranges and the boundary with the Upper Lachlan Shire LGA. From west to east, waterways along this part of the alignment include Jugiong Creek, Cart Road Creek, Black Range Creek, Bogolong Creek, Woolgarlo Creek, McCullums Creek, Washpen Creek, Bowning Creek, and Derringullen Creek. The Yass River is to the south of the project footprint and at its closest is within c. 500m of the project footprint. The majority of these waterways are tributaries to the river, of to the Murrumbidgee and Lake Burrinjuck to the south. The small section east of the Bango Nature Reserve contains upper tributaries of Bango Creek, as well as Mantons Creek and Three Waterholes Creek.

Upper Lachlan Shire LGA
The South Eastern Highlands bioregion covers most of the Upper Lachlan Shire LGA. From the western border of the LGA to the east the amended project footprint runs across rivers and high order perennial creeks and tributaries such as Flacknell Creek, Jerrawa Creek, Oolong Creek, Lachlan River, Merrill Creek, Humes Creek, Kialla Creek, Middle Creek, First Creek, Pejar Creek, Wollondilly River, Steeves Creek, Melamalong Creek, Tarlo River, Turrallo Creek, Cowpers Creek, Myrtle Creek, Kerrawary Creek and Bannaby Creek. The amended project footprint also traverses through high order non-perennial creeks and gullies such as Catherines Creek, tributaries of Bunton Creek, Felled Timber Creek, Dowlings Creek, Sams Creek, Middle Creek, Heffernans Creek, Gurrundah Creek, Ryans Creek, Sawpit Creek, Back Creek, tributaries of Wollondilly River, tributaries of Pejar Creek, Sawpit Gully, tributaries of Tarlo River, tributaries of Kings Creek, Dawsons Flat Creek, Cow Horn Creek, Forest Creek, tributaries of Kerrawary Creek, Bannaby Creek, Connors Creek, Wills Gully as well as low order non-perennial waterways and tributaries.

3 Ethnohistoric and Cultural Context

The current study area lies in a landscape which was important to and intensively used by Aboriginal people in the past. Within the wider HumeLink Project footprint there are four major Aboriginal language groups: the Wiradjuri to the west and north-west, the Ngun(n)awal to the centre, the Ngarigo to the south, and the Gandangara (Gundungurra) to the north-east. Tribal boundaries are based largely on linguistic evidence. It is probable that tribal boundaries, clan estates and band ranges were fluid, varying over time. Consequently, tribal boundaries as delineated today must be regarded as approximations only, and relative to the period of, or immediately before, European contact. European settlement in the NSW South Western Slopes and South Eastern Highlands began very soon after invasion of the continent, and increased heavily after the 1820s. As a result, recorded information regarding traditional Aboriginal culture is highly fragmentary as much of the local Aboriginal language and lifestyle had changed before it could be recorded. Existing project documentation prepared for the EIS and AR (NOHC 2023a and NOHC 2024a) details the cultural and ethnohistorical context of the relevant bioregions and is adapted below.

NSW South Western Slopes

At the eastern margins of this bioregion, the Murrumbidgee River would have been a focus of occupation in the region, with the river supporting woodland and forest habitats housing a wide range of resources for the Aboriginal population to support themselves. The frequent floods of the Murrumbidgee River provided Aboriginal people with abundant resources, as pools left by the receding floodwaters would be filled with freshwater mussels, fish, yabbies, and aquatic plants (Kabaila 1998).

The NSW South Western Slopes are home to the Wiradjuri people. The Wiradjuri is the largest Aboriginal group in NSW, known as “the people of three rivers’, for the Wambool (the Macquarie River), the Kalari (the Lachlan River) and the Murrumbidjeri (the Murrumbidgee River) bordering their country. In the south of Wiradjuri country three local groups are known, the Murringbulla at Murrumburrah, the Kutamundra at Cootamundra, and the Narrungdera at Narrandera. The amended project footprint sits within Narrungdera country. Narrungdera boundaries ran approximately from Ganmain to Ardlethan, west to Mirrool Creek and along the Murrumbidgee River to Darlington Point (Howitt 1884; Wood 1992).

Recorded burials and ceremonial sites are rare in the region around Wagga Wagga, though there are a number of historical accounts of such sites. An 1861 article in *The Argus* reported on the burial of Wiradjuri man “Old Billy” near the racecourse camp at Wagga Wagga. He had died under suspicious circumstances and the chief constable of the Wagga Wagga police had visited the camp to investigate, finding that the body had already been prepared for burial with a grave dug ‘a short distance from the camp’ (*The Argus*, 20 November 1861). A local history of Wagga Wagga by J Baylis notes that the sandhills of Wagga Wagga were known burial grounds for Wiradjuri people (Baylis 1927).

Historical records of cultural practises in the Wagga Wagga region from the 1870s to the 1940s focus mainly on the ‘burbong’ or male initiation ceremonies and other ‘men’s business’ (Green 2002). It should not be assumed that women did not also have a ceremonial life with important places associated with this as well as places associated with other day to day activities. The male-centric focus of the historical record stems from the European recorders being men who would not have been privy to any ‘women’s business’ and often overlooked domestic or mundane tasks as being unimportant. Though the recorders were given some knowledge of these practises, the level of information given was similar to that given to children who had not yet been initiated as much of the knowledge was protected for only initiated men. The practise of ceremony declined quickly following European settlement in the region and by 1900 was no longer seen to happen, there is evidence that some of these ceremonial practises continued in secret till the 1930s and potentially beyond (Green 2002).

The first Europeans to visit the Wagga Wagga region were Sturt and his exploration party in 1829 during their travels on the Murrumbidgee. Diseases such as smallpox were introduced to Australia by colonists and had spread between Aboriginal populations ahead of European settlement so that by the early 1830s Aboriginal groups had already suffered dramatic population loss. This implies that early records of population numbers recorded by explorers are not an accurate measure of how many Aboriginal people would have lived in the region prior to the arrival of Europeans in Australia. In 1836 Thomas Mitchell traversed the country to the southeast of Wagga Wagga and reported that Europeans had settled the banks of the Murrumbidgee (Swan 1970). European settlement of the riverine plains and saltbush plains was swift and further dispossessed and decimated the remaining Aboriginal population. By the mid-1830s it was estimated that, of a possible population of 3,000, only 1,000 Aboriginal people survived (Garland 1984). The loss of fishing grounds and significant sites, as well as the murder of Aboriginal people, was retaliated through attacks with spears on cattle and stockmen. Clashes between European settlers and Aboriginal people were very violent, with the period from 1838 to 1841 being termed the 'Wiradjuri Wars'.

Aboriginal people are noted camping on the outskirts of Wagga Wagga throughout the mid-1800s, two noted sites are Hampden Bridge and at the racecourse situated next to the Murrumbidgee River (Garland 1984; Green 2002). Following the establishment of Warangesda Mission at Darlington Point and Brungle Mission near Tumut in the 1880s, remaining

Aboriginal people in the region would have been encouraged, often through force, to relocate to these missions. Only six Aboriginal people were counted in Wagga Wagga in the 1901 census (Green 2002:115) though this is likely a misrepresentation of the number of Aboriginal people in the region as the Commonwealth Constitution, which came into effect on 1 January 1901, stated, "in reckoning the numbers of people, Aboriginal natives shall not be counted". Aboriginal people were instead recognised under the *Flora and Fauna Act* (Green 2002:115).

South Eastern Highlands

The bioregion includes the towns of Orange, Bathurst and Lithgow in the north, Goulburn, Queanbeyan and Yass in the centre and Cooma, Jindabyne and Bombala in the south. The Lachlan, Macquarie, Murray, Murrumbidgee, Shoalhaven and Snowy Rivers all flow across the bioregion.

The Yass region was occupied by the Wiradjuri and Ngunawal Aboriginal language groups, with Robinson (in Mackaness 1941) noting that the people of Yass were referred to as Onerwal [Ngunawal]. Jackson-Nakano (2002) notes that the Wallabalooa tribe occupied the Yass and Boorowa districts in the early years of European settlement and, according to Bayley (in Jackson-Nakano 2002), *Warrambalulah* was the Aboriginal name for the area on which the Yass township was settled. Prior to European usurpation of their traditional lands Aboriginal society was an autonomous society with established seasonal economic practices. As European settlement rapidly absorbed Aboriginal territory, imposed boundaries and forced many Aboriginal people onto government reserves. Increasingly people became economically dependent on the missions and government due to the inability to access traditional lands or carry out traditional subsistence activities.

Relationships with early European settlers varied. In some cases, such as the Humes, Broughtons, Kennedys, Walkers and Howells, relationships with members of the Wallabalooa group were noted to be positive (Jackson-Nakano 2002); although these may be considered the exception rather than the norm. Although reserves of land in the Yass region were set aside for Aboriginal people from 1851, these parcels went largely unused with people preferring to live on the outskirts of towns and on stations located in their own country. Reports from the *Yass Courier* in 1857 and 1858 refer to a 'Blacks Camp', which is thought to be the Yass River Camp used by Aboriginal people throughout the 19th and 20th centuries (White and Cane 1986).

The passing of the *Robertson Land Acts* in 1861 disenfranchised many Aboriginal people across NSW, including the South Eastern Highlands, pushing people out of their country and reducing access to traditional resource gathering areas. However, within the Yass region a number of properties were either purchased or were gazetted by Aboriginal families. Some properties of note in the Yass region include Brickey's Creek, Blakeney Creek and Flakeney Creek (Kaibala 1998).

Towards the end of the 19th century, the European community of Yass demanded that the Aboriginal community be 'controlled', resulting in the reservation of a parcel of land at Oak Hill. It was reported that 13 houses were built at the site in 1888, and by 1890 it was recorded that 78 people were living at the site across 12 houses and four bark huts (White and Cane 1986). The occupation of the Oak Hill site was short lived with pressure from the Yass community in 1899 to remove Aboriginal people from the town entirely. Attempts to encourage people to move to other reserves were unsuccessful and so the Edgerton reserve was set up 20 kilometres from Yass in 1909. Many Aboriginal people refused to move to the Edgerton site petitioning to stay at Oak Hill, this resulted in the Oak Hill site being revoked. While some people initially moved to the Edgerton site it was abandoned by 1916, with people either moving into the Yass township or back to Oak Hill to a camp at the bottom of the hill along the Yass River (White and Cane 1986). This was a period of great difficulty for Aboriginal people as it was during this time that children were removed from their families. Between 1900 and 1915, 15 children were recorded as being removed from Aboriginal families in Yass. A further reserve, named Hollywood, was set up in the south of Yass near the cemetery in 1834 to an attempt to remove people from the Oak Hill site, however, the Hollywood reserve was a failure with many refusing to move or very quickly abandoning the site due to poor conditions. Following this period Aboriginal people were either resettled in Yass, including occupation of Oak Hill, or were moved to reserves further away from Yass.

Tindale (1974) considered that the Goulburn region was situated at the boundary of two tribes – the Gandangara to the north and the Ngunawal to the south. Early settlers describe large numbers of Aboriginal people (over 3,000) attending ceremonies in the Goulburn district (in Wyatt 1941:112). Large groups such as this would have collected from a number of neighbouring 'tribes' and the fact that Goulburn was the scene of the gathering suggests that it may have been centrally located between these tribes. However, early commentators often confused hordes or clan divisions, which were, in fact, more relevant to everyday life, with broad tribal groupings. Early ethnographers tended to describe any large groups of Aboriginal people as 'tribes'.

It has been observed that the word lists recorded from both the Ngunawal and Gandangara languages were virtually identical (Eades 1976:6). 'This may indicate that the tribal division was inaccurately recorded by Mathews (1904 1908), or that Aboriginal people to the north and south of Goulburn were linguistically related and had close social and kinship ties' (Koettig and Lance 1986:13). Estimates of the pre-European size of the Aboriginal population in the Goulburn region cannot be confidently based on the inadequate ethno-historical sources for the area.

By extrapolating Radcliffe-Brown's (1930:696) population estimate for the whole of Australia, and Tindale's (1940) tribe numbers, Flood estimated that the population density was about 1 person:36 square kilometres. She admits, however, that 'It is of course impossible to estimate the population of any one particular area from this crude index of population density for the tribal population as a whole, but such an index can be useful in making comparisons with other tribal territories containing similarly unequal resource zones' (Flood 1980:43).

Many early explorers to the Goulburn area noted the absence of a visible Aboriginal population. This could be due to a number of reasons including efforts by the local population to remain undetected but was also likely due to the population already being affected by the introduction of introduced diseases. A smallpox epidemic reported in Sydney in 1789 had likely spread to the Goulburn region prior to European movement through the area (Koettig and Lance 1986). A second smallpox epidemic in 1846-1847 had devastating effects on the remaining Aboriginal population of Goulburn, with the Bench of Magistrates estimating a population of only 25 remaining in Goulburn (Steele 2003). This does not, however, consider the people who may have moved to other parts of the region.

Material Culture

Ethnohistorical records of Aboriginal subsistence practices and material culture of the region are patchy. From records of the earliest European journey through Argyle County in 1798, it is recorded that local people "were covered in large skins, which reached down to their heels" (Eddy 1985:5). In the 1830s George Bennett recorded people on the Goulburn Plains making and wearing possum skin cloaks. He also recorded the construction of bark huts made out of tree branches with bark sheets (Bennett 1834). During a visit to the Goulburn area in 1836, James Backhouse recorded an Aboriginal woman eating 'sow-thistle'. This is believed to be a variety of the Asteraceae family (also including the yam daisy) (Koettig and Lance 1986). Other plant resources local to the area included flowers, nectar and fruits from edible plants, such as Melaleuca, Grevillia, Hakea and Banksia. Bennett observed Aboriginal people roasting echidnas and hunting platypus on watercourses in the eastern margins of the region, as well as individuals eating Banksia nectar (Bennett 1834). Possum, kangaroo and wallaby as well as fish and birds have also been recorded in observations of the traditional Aboriginal diet of the region (Flood 1980).

Local people lived in small and highly mobile family groups who came together regularly to participate in trade, marriage and ceremonial gatherings, both with members of their own language groups and with neighbouring groups. Ngunawal groups also took part in the Bogong moth collections over the summer months in the mountains of the Great Dividing Range. The moths were harvested from caves and rock crevices between October to March during their aestivation period. This food source was particularly important for the Aboriginal people living in the highlands, as the abundance of such a high-energy resource made it possible for large groups to gather in one place at the same time. This included people from different tribes whose normal home territory was as far as 300 kilometres away (Flood 1996:14). Initiation ceremonies, arrangement of marriages, corroborees, trade and exchange and the discussion and establishment of law and lore took place during these gatherings (Flood 1996).

As well as the seasonal resources of the highlands, Aboriginal people of the region had access to the inland river country. The varied geology and topography of the region provided diverse habitats for a range of flora and fauna. An early ethnographic account from naturalist George Bennett recorded the diet of the local inhabitants as including flying squirrel, kangaroo, wallaby, wombat, koala, possum, emu, duck, swan, snake, goanna, platypus, ant eggs, insects, fish, mussels, yabbies, plant tubers, berries and seeds (1834:173). The protein component of this diet was acquired in numerous ways including smoking out the animal by lighting a fire in the base of a hollow tree, burning large tracts of land and gathering the stranded animals, and cutting toe-holds in trees. Later recordings by Bennett describe the method of capturing platypus along the Yass River including use of a *daraga* or digging stick to dig out their burrows. Along the rivers and streams, snares and decoys would also have been used along with woven nets and traps. Aquatic resources including fish, eels, crustaceans and shellfish were utilised. Firing of the landscape may also have ensured the fruiting of certain plant species and allowed for new vegetation growth, which encouraged kangaroos and other grazing animals to the area. Extensive 'fire-stick' farming such as this has been recorded throughout the highlands in all seasons (Flood 1996:9).

The region remains important to local Aboriginal people, who have maintained their ties to the area through the sharing of knowledge and lore down generations. Aboriginal culture and cultural heritage is dynamic and continues to evolve in contemporary times. While the ethnohistorical and historical record may be limited in some areas, there is no denying the strong contemporary cultural associations and deep understandings that Aboriginal people and groups hold for the landscape. The value of the area to both the past and the present Aboriginal community is underscored by the ongoing cultural connection expressed by the contemporary Aboriginal community.

4 Archaeological Context

The following section summarises the archaeological background of the HumeLink Project and the surrounding region, as developed for the existing environmental assessment documentation and the HumeLink East HMP. The key references include:

- Section 9 of the EIS and Section 6.3 of the AR
- EIS Technical Report 2: Aboriginal Cultural Heritage Assessment Report (NOHC 2023a)
- AR Technical Report 2: Revised Aboriginal Cultural Heritage Assessment Report (NOHC 2024a).

4.1 Previously recorded sites and updated database searches

The Aboriginal Heritage Information Management System (AHIMS) is a database operated by Heritage NSW and regulated under section 90Q of the *National Parks and Wildlife Act 1974* (NPW Act). AHIMS contains information and records pertaining to registered Aboriginal archaeological sites (Aboriginal objects, as defined under the NPW Act) and declared Aboriginal places (as defined under the NPW Act) in NSW.

A total of 170 Aboriginal heritage items were identified from an AHIMS database search undertaken in April 2024 for the wider HumeLink project footprint, during preparation of the Revised ACHAR (NOHC 2024a). The AHIMS sites included Potential Archaeological Deposits (PADs), artefact scatters, isolated finds and modified trees. Of the 170 recorded sites, 39 of these were previously recorded by assessments not related to the HumeLink project; the remaining 131 sites were located as part of the fieldwork completed for the HumeLink project. Of these, 119 Aboriginal sites were identified within the HumeLink East portion of the amended project footprint and potential impact area, as detailed in the Revised ACHAR and listed in the HumeLink East HMP. Three AHIMS sites on the April 2024 searches were found to be located within, or in close proximity to, the current study area and unsurveyed areas:

HL-65 (AHIMS 52-1-0415)
Open context modified tree site located within unsurveyed property BY-003. The site comprises a Eucalypt with a single scar considered likely to be of Aboriginal origin, located adjacent to a minor stream margin in an upper drainage valley. The site was recorded during the original field survey undertaken for the HumeLink EIS (NOHC 2023a).

Bannaby 1 (AHIMS 52-1-0152)
Open context artefact site located within unsurveyed property BY-003. The site comprises a surface scatter of lithic artefacts recorded during survey for the Mt Piper-Marulan 500kV transmission line. At least eight surface artefacts were recorded across the end of a long spurline and on a small knoll crest west of the spur, overlooking a small drainage line associated with a spring-fed upper headwater tributary. The site was later subject to excavation which confirmed subsurface deposit (Haglund 1991; see Section 4.2).

BH-OS-1 (AHIMS 51-4-0048)
Open context artefact site located in proximity to unsurveyed access track AT-284 (YG-020). The site comprised approximately 20 grey and brown chert flaked stone artefacts including cores and primary flakes. Artefacts were recorded in disturbed exposures along both sides of Black Range Road, exposed by road upgrade works. The adjacent landforms overlooking a tributary of Woolgarlo Creek were considered to display potential for subsurface deposits.

A series of updated AHIMS searches for HumeLink East were undertaken by KNC between March-May 2025 during preparation of the HumeLink East HMP and the Addendum ACHAR. In total, 26 searches were conducted. These covered the entirety of the HumeLink East Project area and all previously unsurveyed areas included in the Addendum ACHAR. The updated search results were consistent with the findings of the Revised ACHAR and previous searches for recorded sites within the project footprint and unsurveyed areas, with two additions since the April 2024 searches. These comprised two newly identified sites, both registered in August 2024:

Cockatoo Rd Property #4 (AHIMS 56-3-0337)
Open context modified tree located within unsurveyed property MA-059-10. The site comprised a Eucalypt with scars on two sides, located on a partially cleared slope amongst rolling hills overlooking the Tumut River.

Cockatoo Property#5 (AHIMS 56-6-0336)
Open context artefact site located within unsurveyed property MA-059-10. The site comprised an isolated find of a hammerstone located in an exposure associated with a creekbank along a tributary of the Tumut River.

Previously recorded AHIMS sites within the unsurveyed areas are shown in Figure 6- Figure 8.

It was also noted that Mudjarn Nature Reserve is a gazetted Aboriginal place. While this does not extend into the unsurveyed areas it forms a key landscape feature in this part of the alignment.

Figure 6. 2025 AHIMS search results and previously recorded sites - BY003

Figure 7. 2025 AHIMS search results and previously recorded site - AT-284 (YG-020)

Figure 8. 2025 AHIMS search results and previously recorded sites - MA-059-10

4.2 Previous archaeological investigations in the region

Comprehensive review of previous archaeological studies and heritage recordings for the current study area and wider HumeLink Project has been undertaken. Existing project documentation prepared for the EIS and AR (NOHC 2023a and NOHC 2024a) details the archaeological background context of the NSW South Western Slopes and South Eastern Highlands regions and is adapted below. These studies provide context for the current assessment and informed the predictive modelling developed as part of the HumeLink ACHAR and Revised ACHAR as to the site types likely to be encountered by the project (see Section 4.4.1).

NSW South Western Slopes

In 1998, NOHC conducted a cultural heritage assessment for the Visy Pulp and Paper Mill (now the Tumut Kraft mill) at Gadara Plains, located 1.8 kilometres west of the current amended project footprint, eight kilometres south-west of Tumut, NSW. The 1998 study area covered around 10 square kilometres, comprising of the paper mill site (800 metres by 400 metres approximately) as well as adjacent areas under investigation as water storage and wastewater irrigation areas, intersecting with a 1.5 kilometre portion of the current amended project footprint south of the Snowy Mountains Highway. The assessment identified both Aboriginal and European heritage sites within this study area. The Aboriginal heritage sites included two artefact scatters, two possible modified trees, and eight isolated finds. Five areas of potential archaeological deposit were identified within the paper mill site area. Thirteen European sites and features were identified, ranging from negligible significance to low-to-moderate regional significance. Subsurface testing was conducted within the boundaries of the proposed mill site. Twenty-two test pits were excavated with nine artefacts recovered from three test pits.

Following the 1998 assessment of the Visy Pulp and Paper Mill Tumut, further work was required to assess the impact of a proposed extension of the area of mill irrigation on an area of land on which one of the three possible Aboriginal modified trees (A5) was located (NOHC 2006). As part of this extension Visy proposed to remove the possible Aboriginal modified tree (A5), located approximately 500 metres south of the current amended project footprint, before this could occur the NSW Department of Environment and Conservation (DEC) requested a reassessment of the tree. As a result of the comparison of the scar characteristics at site A5 against the criteria outlined in the DEC publication, it was concluded that the scar had a high likelihood of a natural origin (storm damage – branch tear) rather than being the result of past human activity. It was recommended that the designation of 'Aboriginal Object' (which currently applies to modified tree A5) be removed.

In 2002, the NSW NPWS commissioned a preliminary Aboriginal Heritage Survey (Dearling and Grinbergs, 2002) as part of preparations for a plan of management for several Nature Reserves (NR) and National Parks (NP) in the South West Slopes region. Surveys were undertaken at Benambra NP, Ellerslie NR, Livingstone NP and reserve, Minjary NP, Ulandra NR, and Queanbeyan Management Area NR. Six artefact scatters and five isolated finds were located at Minjary NP, which borders an approximately two-kilometre section of the current amended project footprint. The park was considered to have low potential to contain more sites. Minjary Mountain within the north-west of the park, approximately five kilometres from the current amended project footprint, was considered to be significant as a viewing point to other surrounding areas and was noted to potentially be associated with a men's initiation site (Freeman, D. pers. comm. in Dearling and Grinbergs, 2002).

In 2007, OzArk Environmental and Heritage Management conducted an assessment for the Wagga Wagga to Yass 132 kV Transmission Line for transmission line structure replacement works along the existing easement. As a result of the survey, four Aboriginal sites and one historic heritage feature were recorded. The Aboriginal sites consisted of four artefact scatters, two of which had associated PAD. Three of these sites fall within one kilometre from the current amended project footprint, with one site 50 metres north of amended project footprint. The historic site consisted of a ruined stone shepherd's hut. No Aboriginal or historic sites were to be impacted by the project.

New South Wales Archaeology Pty Ltd (NSW Archaeology, 2012) was commissioned to undertake an Aboriginal cultural heritage assessment for the Rye Park Wind Farm between Yass and Boorowa, NSW, intersecting with a three-kilometre section of the current amended project footprint at Days Road. Sixteen Aboriginal sites were identified during the assessment including three artefact scatters, 10 isolated finds, and three possible quartz quarrying sites which may have been used as stone procurement areas, 10 of these sites fall within one kilometre from the current amended project footprint. Based on the predictive modelling it was concluded that no subsurface testing was warranted within the areas to be impacted. Three European heritage items were recorded by the survey and were recommended to be avoided by the project but were not deemed significant enough to warrant heritage listing.

Kelleher Nightingale Consulting Pty Ltd (KNC, 2015) undertook an Archaeological and Heritage Management Report for upgrade works for a section of the Gocup Road which links Tumut and Gundagai and intersects the current amended project footprint. The upgrade works were required to address vehicle safety requirements and to accommodate the demands of modern freight services. This report incorporated results from previous surveys undertaken by KNC in 2012 in which 10 sites were identified including eight artefact scatters, an isolated artefact, and a potential archaeological deposit. KNC's 2015 study also incorporated a further six Aboriginal cultural sites which had been recorded by Waters Consultancy Pty Ltd as part of an Aboriginal cultural assessment (2015). These cultural sites included two ceremonial pathways, one seasonal pathway, one meeting place and camping area, one pathway associated with specific resource use and one remnant wetland that constituted a resource gathering area. Six of the previously recorded archaeological sites from KNC's 2012 survey were noted to overlap the identified Aboriginal cultural sites previously recorded by Waters Consultancy Pty Ltd.

The artefacts recorded within the assemblage were made up of predominately quartz with some tuff, dark volcanic and fined grained siliceous materials noted and were determined as being sourced from the local region. Sites were located on low gradient slopes, floodplains, ridge lines and spurs, and were generally within 200 metres of a water source. The majority of sites had medium to high level disturbance from the construction and maintenance of infrastructure and services, housing construction and erosion (KNC, 2015).

South Eastern Highlands

Koettig (1986a) surveyed a proposed water pipeline route between Bowning and Yass during which two small artefact scatters and two Aboriginal modified trees were recorded near Derringullen Creek, three of these sites were located within one kilometre of the current amended project footprint. The artefact scatters were both small in size consisting of three artefacts each. Following the survey, subsurface testing was carried out near Derringullen Creek at an area identified as having high potential for subsurface deposit. Testing revealed consistent distribution of artefacts in low densities over a 700 metre stretch adjacent to the creek (Koettig, 1986b).

In 1986, Koettig and Lance conducted an Aboriginal Resources Planning Study for the City of Goulburn. As part of this study, they developed a topographic Aboriginal site location model for the area to assess the archaeological sensitivity of four separate landscape zones, major watercourses, undulating hills and plains, hills, and residential areas. The majority of the sites identified by the study were located on basal slopes close to major waterways and within the undulating hills and plains zone. Stone artefact scatters were the dominant site type.

Brayshaw and Dallas (1990) surveyed an extended corridor of land for the proposed 500 kV transmission line between Mount Piper and Marulan. Twenty-six previously unrecorded sites were located during the route survey. Sandstone scarps and prominent ridgelines were considered to have the highest sensitivity for archaeological sites; creek and river flats and adjacent high ridgetops, the Wollondilly River flats, and adjacent hillslopes were identified as having high sensitivity; and gently undulating land, containing creeks and adjacent ridgelines that extended between Bannaby and

Marulan were identified as having moderate sensitivity for archaeological sites. Site 52-1-0152 (Bannaby 1) within the current study area was recorded at this time, comprising a surface artefact scatter across the crest of a knoll overlooking a spring-fed headwater creek. The site area was to be impacted by one of the transmission pylons and further investigation including text excavation was recommended.

A permit to carry out preliminary research and undertake investigation at the site was obtained from NPWS (Haglund 1991). Surface collection was undertaken along the track to be used for access as well as the area to be impacted by construction of a transmission pylon however the number of artefacts recovered was not noted in the report. Four test pits, 1 metre by 0.5 metres, were excavated within the pylon site, with each test pit placed across the approximate locations of the four pylon legs. A further seven test pits were excavated across the ridge crest, with pit sizes ranging from 0.5 metres by 0.25 metres to 1 metre by 0.25 metres. A total of 214 lithic artefacts were recovered from excavations with 105 of these coming from the four tests pits at the pylon location. The site was characterised as having several small intensively used areas separated by areas of sparse but widespread archaeological material. Following the excavations, it was concluded that construction of the pylon could go ahead with precautions in place to minimise impact to the archaeological deposit which included monitoring of the works by archaeologists and minimising the impact area.

NOHC (2007) undertook an Aboriginal cultural heritage assessment for the development of the Bannaby 500/330 kV substation, at the eastern end of the HumeLink Project footprint. The study identified 11 sites comprising seven artefact scatters and four isolated finds. One area of PAD was identified in the area of one of the artefact scatters. Following this assessment, it was recommended that if the sites were to be impacted by the project, a program of surface salvage be undertaken to avoid impact to the associated artefacts and if the existing road alignment was to be widened substantially, then a program of archaeological subsurface testing should be undertaken in the locality of the PAD to determine the extent and nature of the deposits to be disturbed by construction, and to provide appropriate management recommendations. The study determined that the proposed substation development would impact nine of the recorded 11 Aboriginal cultural heritage sites, including the PAD and so an Aboriginal Heritage Impact Permit (AHIP) was procured to salvage artefacts from eight of the sites and to undertake an archaeological excavation program at the PAD. This was undertaken by NOHC in 2008.

Over 400 stone artefacts were recovered from the subsurface testing and collection programs, with 220 collected from the surface assemblages and 229 recovered from the excavated pits (NOHC 2008). Thirty eight different assemblage elements were represented in the assemblage, indicating a wide range of manufacturing, retouching and most likely use-related tasks took place in the area. Flakes made up the greatest proportion of the assemblage, followed by flaked pieces and broken retouched flakes. A small number of cores and bipolar artefacts were located as well as a small grindstone top-stone (muller). Retouched artefacts made up a larger than average proportion of the assemblage, at 8.3 percent. Various kinds of notched and unnotched scrapers made up the bulk of the retouched assemblage (72 percent of retouched artefacts). The site was determined to be of moderate local significance.

A number of wind farms have been constructed around Crookwell, which span across an almost 12-kilometre section of the HumeLink East project footprint, intersecting at various points. There have been a number of archaeological assessments associated with the wind farms, leading to a good characterisation of the archaeological resource in the area.

The original Crookwell 1 wind farm underwent three phases of investigation prior to construction. The site was first subject to detailed archaeological surface survey (Bell and White 1996) recording one Aboriginal site, an artefact scatter of 20 quartz flakes. Poor visibility across this assessment area led Bell and White to conclude that in order to properly assess the archaeological potential, subsurface testing would be required. McDonald and Garling undertook the subsurface testing component in 1997 which involved the excavation of three 1 metre by 1 metre test pits at each of the eight turbine locations, totalling 24 test pits. Artefacts were recovered from nine of the test pits, with the assemblage totalling 54 lithic artefacts. One of the test pits contained a high density of artefacts, 32 in total (site CWF1), one pit contained seven artefacts while all other pits containing cultural material contained three or less artefacts (McDonald and Garling 1997). During these investigations a new classification of stone tool was identified, a small, backed tool later named ‘Pejar Point’, this was the first recorded find of this type of stone implement (McDonald and Garling 1998). Due to the high concentration of artefacts and the previously undescribed tool type it was recommended that further excavation and analysis be undertaken at site CWF1.

Open area excavation at site CWF1 was undertaken by McDonald and Garling in 1998, with an area of 25 square metres excavated to average depths of 30 centimetres. A total of 2,154 lithic artefacts were recovered from the excavations with evidence of on-site manufacture of backed artefacts including the ‘Pejar Points’ located in the testing phase. The artefacts were predominantly recovered from the top 20 centimetres of deposit. The raw material makeup of the assemblage was fairly limited, made up of quartz, silcrete and chalcedony. The site was interpreted as a single occupation event involving artefact manufacture and other utilitarian activities (McDonald and Garling 1998). Assessment of the Crookwell 2 Wind Farm began in 2004, with a field survey of the proposed development area (Hardy and Thomson 2004). As a result of the survey, 25 previously unrecorded sites were identified, consisting of 22 artefact scatters and three modified trees.

The combined assemblage of the artefact scatters totalled 105 artefacts, with the highest numbers of artefacts recorded at a site being 25; another two sites contained 11 artefacts each while all other sites contained less than ten. The site distribution seemed to be consistent with a model of low-density background scatter with occasional larger sites (Hardy and Thomson 2004). This observation was in line with the results of the analysis by McDonald and Garling at the Crookwell 1 site.

Based on the distribution of sites across the assessment area, Hardy and Thomson concluded that archaeological material was likely to be located along creek lines, the confluence of drainage lines, and along ridgelines and sloping areas. Based on this model they determined that five of the recorded sites had potential for subsurface deposit. They also recommended subsurface testing where recorded sites overlapped with proposed impacts, that subsurface testing be considered for all proposed turbine sites, and that testing of areas to be impacted by road construction be considered (Hardy and Thomson 2004).

Biosis undertook the subsurface testing component of the Crookwell 2 Wind Farm (Biosis 2005) with a focus on proposed impact areas including undertaking shovel probe transects for proposed tracks/roads, known archaeological sites, and transmission cable trenches, as well as test pitting at the substation area and the turbine locations. A total of 882 test pits and shovel probes were excavated, totalling an excavated area of approximately 217 square metres. Artefacts were recovered from 135 of the test pit and shovel probes excavated, with a total assemblage of 784 lithic artefacts recovered. Forty percent of the assemblage came from a single test pit which was interpreted as a single flaking event. The majority of the artefacts recovered were located between 10-15 centimetres below the ground surface. The average depth of the test pits was 15 centimetres, and the average depth of the shovel probes was 22 centimetres.

The majority of the artefacts were recovered on landforms identified as being archaeologically sensitive by Hardy and Thomson (2004) with higher densities of artefacts located on flats, crests, and upper slopes. The majority of the artefacts were produced from quartz and silcrete with smaller numbers of artefacts made up from a diverse range of materials including volcanics, chalcedony, rhyolite and tuff. While five backed points were recovered from excavations, with one displaying similar properties to the Pejar Point identified at Crookwell 1 Wind Farm, there was not enough detailed evidence to provide further information as to the nature of Pejar Points. Biosis later undertook salvage excavation at several proposed turbine locations in 2010. Two new sites were identified, and additional artefacts were located in association with previously recorded and tested sites PF10 and PJ09.

As part of ongoing work for the Crookwell 2 Wind Farm, Past Traces (2017) conducted an Aboriginal heritage assessment for the construction of an access road along Woodhouselee Road. Three Aboriginal sites were located during the survey program, including two small artefact scatters and a large artefact scatter with associated PAD. As an access road was proposed to cross this PAD (PJ56) subsurface testing was required to determine the nature of the site. Twelve test pits were excavated, resulting in the recovery of one artefact. Testing was also required for the construction of another temporary access track due to its proximity to PJ56. Eight test pits were excavated along the proposed road alignment at ten metre intervals. Only one artefact was recovered as part of this testing.

Assessment of the Crookwell 3 Wind Farm began in 2010, with a cultural heritage assessment undertaken by Anderson Environmental Consultants (Anderson 2010). Construction impacts for the wind farm included 30 new wind turbines along with associated infrastructure such as access roads and power line connections. As a result of the field survey, ten sites of Aboriginal heritage were recorded. Sites included six artefact scatters, and four isolated finds. The assemblage was predominantly silcrete with lesser quantities of quartz and included flakes, cores, broken debitage and a low number of flake tools. A number of these sites were located within the AHIMS search area for the current project however none are within the previously unsurveyed areas of HumeLink East. It was noted that archaeological visibility during survey was generally poor. In general, the potential for sub-surface archaeological material across the assessment area was assessed as low to moderate, especially in grazing paddocks with evidence of soil disturbance and pasture improvement activities.

Environmental Resources Management Australia (ERM) undertook an updated assessment for proposed layout changes at Crookwell 3 in 2014 (ERM 2014). This included a detailed review of background information and the results of the Anderson assessment, and a field survey. The field survey identified sixteen previously unrecorded Aboriginal cultural heritage sites. Several of the previously recorded sites could not be re-located during survey due to the effects of either low ground surface visibility (relating to vegetation cover) or subsequent disturbance due to vehicle, erosional or agricultural activities. Recorded artefact assemblages were dominated by silcrete, followed by quartz and a small quantity of quartzite, with artefact types primarily being flakes, broken flakes and occasional cores.

Three newly identified areas of PAD were also identified within the assessment area. PAD areas were also identified in association with eight recorded archaeological sites. These areas were considered to display moderate to high potential to reveal sub-surface Aboriginal archaeological deposits. The PAD areas were generally described within slightly raised flat or gently sloping terrain adjacent to a water source and sheltered from the elements, or within crests and sloping landforms with views of the surrounding landscape.

In 2012, Australian Museum Business Services (AMBS) undertook an Aboriginal Heritage Study for the entire Goulburn Mulwaree LGA for the Goulburn Mulwaree Council to inform future management of Aboriginal cultural heritage within the LGA. This study followed on from earlier work from Lance and Koettig (1986) and Fuller (1989) in relation to landform sensitivity for archaeological potential and assessing the importance of different landforms to the Aboriginal community. Within the review of previous archaeological work, it was found that the predictive model developed by Koettig and Lance (1986) and Fuller (1989) remained consistent with patterns in site recording for the Goulburn region. These AMBS findings were used as the basis for classification of landform potential for predictive archaeological sensitivity mapping.

Following the approval of AHIP C00043 associated with the Gullen Solar Farm, located between Crookwell and Goulburn intersecting with the current amended project footprint, NSW Archaeology Pty Ltd was commissioned to undertake management actions associated with the AHIP (Dibden, 2018). A cultural heritage and archaeological survey for Aboriginal areas, objects and places had been conducted in September 2015 by NSW Archaeology Pty Ltd. During the 2015 survey, 21 Aboriginal sites were located, including 11 artefact scatters, eight isolated finds, one sensitive archaeological landform, and two stone procurement areas (NSW Archaeology, 2015). Eight sites were protected from impact by no-go zones, one site was partially impacted, and 10 sites were impacted by the project.

4.3 HumeLink ACHAR and Revised ACHAR

The following section summarises the existing Aboriginal heritage assessment stages and identified Aboriginal heritage features within and adjacent to the overall HumeLink project footprint, as detailed in the ACHAR and Revised ACHAR (NOHC 2023a and 2024a).

4.3.1 Predictive model

Prior to archaeological fieldwork undertaken to inform the EIS (survey and test excavation), a predictive model was developed, as it was considered possible to predict the types and topographic contexts of sites which may occur within the overall HumeLink project footprint based on the results of previous surveys and analysis of archaeological records in similar landscape contexts. The predictive model identified artefact scatters to be the most likely site type to occur within the project footprint. Other sites with a moderate to high potential of occurring within the project footprint included isolated finds and modified trees. Isolated finds could occur anywhere in the landscape while modified trees were more likely to occur anywhere mature native trees had been retained, e.g. riparian corridors and isolated shade trees on agricultural land. Other sites, such as burials or ceremonial sites, had a lower potential of occurrence. The predictive model incorporated an assessment of archaeological sensitivity across the project footprint, to assess the potential of the landscape to contain Aboriginal heritage in order to inform potential field survey locations and predict potential sensitivity where the project footprint was not accessible.

A preliminary Aboriginal archaeological sensitivity model was developed for the project footprint based on the review of previously recorded AHIMS sites, an assessment of topographic contours and slope, a review of previous archaeological investigations within and near the project footprint and the hydrology along the project footprint. Additionally, land disturbance and land use were also analysed through aerial imagery to redefine the sensitivity map. The sensitivity model was further updated following each component of the archaeological field program (see Sections 4.3.2 and 4.3.3 below) and eventually refined into two models of archaeological sensitivity for the amended project footprint: one for surface sites and one for subsurface sites (see Section 4.4.1 below).

4.3.2 Field survey

The archaeological field survey program identified 118 previously unrecorded Aboriginal heritage sites within the overall HumeLink amended project footprint, which comprised 113 artefact scatters and isolated finds and five modified trees. Ten PADs were also identified in the project footprint.

Nine unscarred trees were also identified by RAPs during field surveys as trees of cultural significance. However, these nine trees were not modified and there was no physical evidence of Aboriginal use, meaning these trees comprised cultural values only (i.e. they were not Aboriginal objects as defined by the NPW Act). They were not included in the total count for newly recorded sites.

Open artefact scatters were the most common site type and may occur anywhere that Aboriginal people have travelled, hunted or camped. The survey did not find any burials, quarries or ceremonial sites. A majority of sites recorded during the field surveys were located on gentle slopes (49), followed by streambank (27), crest (25), moderate slopes (16), plain (8), steep slopes (7), ridge (4) and valley flat (2). The slope landform applied to the majority of the project footprint and most artefacts were found in this landform.

A total of 80.5 per cent of the amended project footprint was assessed during the EIS and AR surveys, with the remaining area unable to be accessed (these comprise the unsurveyed areas as identified in the Revised ACHAR, which form the majority of the current Addendum ACHAR study area).

Following the field survey, the archaeological sensitivity model was refined using multiple datasets to characterise the potential landform archaeological sensitivity of the project footprint for surface sites. The model incorporated criteria including field survey results, slope, previously recorded AHIMS site data, and large bodies of permanent water and waterways.

4.3.3 Test excavation

Archaeological subsurface test excavations were undertaken at five of the PADs identified by the field survey, and in 24 additional areas located across the project footprint (selected to further inform and refine the predictive model). Four PADs and 11 of the additional test locations were confirmed to contain subsurface archaeological material (i.e. confirmed archaeological sites). Archaeological material was not identified in all the areas investigated. Artefact density and distribution also varied across the different sites investigated.

The archaeological sensitivity model underwent a third stage of adjustment and review following the results of the subsurface test excavations. The location of archaeological test pits containing artefacts was reviewed and this data incorporated into the subsurface model. The final version of this model aimed to represent the likely subsurface archaeological sensitivity across the project footprint.

4.3.4 Summary of identified sites and assessed significance

The Aboriginal cultural heritage assessment process for the Revised ACHAR determined there were 178 Aboriginal archaeological sites and PADs located within the overall HumeLink project footprint. The majority of the sites were stone artefact occurrences including artefact scatters and isolated finds, as well as PADs and modified trees. In addition, nine cultural trees and one cultural site (Derringullen Creek Women's Site) were identified. A significance assessment was undertaken in accordance with the values of the Burra Charter, considering the historic value, scientific (archaeological) value, aesthetic value and the social (cultural) value of a place. Aboriginal cultural significance was assessed through consultation with the RAPs during the archaeological survey and consultation process.

Historic value
No information was provided by RAPs to suggest the project footprint was historically important in terms of persons, events, phases or activities in the Aboriginal community. This is likely due to the fact that the project footprint does not impact known Aboriginal reserves or early historical properties where documented significant historical interactions with Aboriginal people occurred.

Scientific (archaeological) value
Archaeological sites recorded during the archaeological survey and previously recorded sites were placed into the following assessment categories:

- potential archaeological deposits
- low scientific significance
- moderate (local) scientific significance
- high (local) scientific significance
- modified trees identified by RAPs
- sites indicated as destroyed by AHIMS and non-sites.

Following the results of the archaeological test excavation program any portions of the PADs that yielded artefacts or cultural material were assessed from a scientific perspective.

Low scientific significance was attributed to 114 sites that were identified as either highly disturbed (relative to the surrounding landscape) or, were assessed as having low or low to moderate subsurface archaeological potential. These sites had low numbers of artefacts (less than five) and little potential to provide data that would substantially add to our understanding of Aboriginal occupation and land-use in the local area, beyond the information they had already provided through being discovered and recorded during the Revised ACHAR study.

Moderate (local) scientific significance was attributed to 32 sites that were associated with areas of moderate to high or high potential for subsurface archaeological deposits and rarer site types such as modified trees and charcoal occurrences. Any subsurface deposits at these sites were predicted to contain a higher number of artefacts compared to the other sites in the survey area and, therefore, had potential to provide a large enough sample to enable analyses of assemblage compositions that could be used to derive statements on the technological systems being employed by Aboriginal groups living in this region.

High (local) scientific significance was attributed to four sites that were associated with areas of very high artefact numbers and high potential for subsurface archaeological deposits. Any subsurface deposits at these sites were predicted to contain a higher number of artefacts compared to the other sites in the survey area and, therefore, had

potential to provide a large enough sample to enable analyses of assemblage compositions that could be used to derive statements on the technological systems being employed by Aboriginal groups living in this region.

Aesthetic value
As noted in the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage* (OEH 2011), aesthetic value is often closely associated with social values. Culturally significant places are of high aesthetic value to the local Aboriginal community and expectations are that any development in the area would be sympathetic to such vistas. To date, RAPs have not identified any cultural landscape values or aesthetic values in the project footprint.

Social (or cultural) value
All archaeological objects and sites have cultural value for present-day Aboriginal people, as they were created by ancestral Aboriginal people and provide tangible evidence of past occupation of the landscape. All sites have cultural significance to present-day Aboriginal groups as manifestations of their ancestors' past occupation of the landscape. No objects or places were identified as having social (or cultural) value during the field survey that were not already identified by the RAPs. It was noted that some objects and places might have cultural value that were not communicated by RAPs during the field surveys. This could be the case for objects or places that are associated with information that is culturally restricted.

One potentially culturally significant location, Derringullen Creek Women's Site, was identified in the project footprint. This area was identified by a RAP as an important traditional women's site. Nine unmodified trees (i.e. cultural trees) were also identified by RAPs during field surveys. The RAPs that identified these trees reported that they felt these trees had cultural importance. These trees do not constitute Aboriginal objects under the NPW Act and are not archaeological sites. No identified cultural sites are located within the Unsurveyed Areas.

4.4 Regional character and site predictions

The ACHAR and Revised ACHAR described the following regional data to establish the archaeological character of the project area, and assist in formulating a predictive model for archaeological sensitivity for various site types that may occur in the area.

The occurrence and survival of archaeological sites is dependent on many factors including micro-topography and the degree of land surface disturbance. It should also be noted that for practical reasons, archaeological surveys tend to focus on environments identified as archaeologically sensitive based on previous research and aided by effective ground visibility. As a result, predictive site location models can tend to reflect previous survey bias and can become self-perpetuating.

Archaeological investigations within the NSW South Western Slopes and South East Highlands have been carried out since the late 1970s. Broad scale regional studies and research include Witter's (1980) work on site prediction in Australia and Flood's (1980) early synthesis of the archaeology of the highlands of south-eastern NSW.

Witter (1980) constructed one of the earliest models for Aboriginal site distribution in the region for the area situated between Canberra and Dalton. He suggested that occupation of the area was largely focused around tributary and major stream valleys in the mid to late Holocene arguing that large lowland camps were found almost exclusively in river valleys or gently sloping land, while medium sized lowland camps were found mainly on escarpments and saddles. He argued that seasonal movement entailed occupation of the tributary valleys and lower slopes during winter in order to be above cold air drainage but below cooler elevations and that these locations would have provided reliable water and the exploitation of a diversity of resource zones, while in summer the larger valley bottoms and higher elevated zones would have been used preferentially. Witter (1980) constructed two models of Holocene adaptation for the region, Riverine Oriented and Plateau Oriented. The Riverine model is relevant to the amended project footprint and was defined as a subsistence regime based on the semi-arid plains which was focused on the exploitation of aquatic plants such as Typha and Trig lochia and animals such as fish and crustacea. This economy was focused on the plain's woodlands close to major rivers with seasonal usage of semi-arid and dry temperate uplands. Subsistence within the Plateau region was considered to revolve around Acacia as a vegetable staple with an economy focused on ridges, slopes, and flats, with camp sites focused on permanent water.

In 1992, Witter carried out research for his PhD in the Boorowa and Upper Lachlan River region, analysing the archaeology of an area approximately 75 kilometres by 25 kilometres in size. Twenty- one sites were recorded in the Boorowa survey area, all sites were open artefact scatters. Microblade sites were common throughout all sections of the area, hearths were rare, and workshops (flaking events) were common. The basin sites were located adjacent to streams in valley bottoms. Quartz dominated the assemblages at all basin sites although silcrete was present at most, felsite and other materials were common and fine-grained volcanic material was often present (Witter, 1992:240). Within the ranges most sites were located in gullying scalds near water courses or seepages although some were found on ridge lines. Again, quartz was dominant although felsite and silcrete were also common (1992:241). Backed blades were recovered predominantly in sites located on foot slopes below the range country (Witter, 1992:214).

Witter's basic premise was that sites and their contents reflect Aboriginal decision making relative to cultural strategies and the local environment. Witter argues for the possibility that sites in the elevated country were probably occupied during winter, in association with active springs and that the valley was mostly occupied in summer or during drought. Witter acknowledges that variation in ground surface visibility may well be biasing the results as conditions allowing the detection of sites in the valley systems were very poor.

Across the Southern Tablelands region, it has been found that sites are rarely present on elevated topographies (Packard and Hughes, 1983; Past Traces, 2017) and that sites are generally located in flat areas close to water (Witter, 1980). In the Crookwell area, Biosis (2004:42) concluded that archaeological material was most likely to be located along creek lines, in the vicinity of the confluence of drainage lines, on broad, flat ridgelines and gently sloping areas. They concluded that the dominant character of the area consisted of 'background scatter' with higher density sites, which were the focus of knapping events.

Based on the results and analytical conclusions of previous archaeological records and surveys in similar landscape contexts it is possible to predict the types and topographic contexts of sites which may occur within the amended project footprint. From this existing body of work, the following set of broad site location criteria have been summarised for the Addendum ACHAR study area.

Artefact scatters
Open artefact scatters are likely to be the most common site type encountered. They may occur almost anywhere that Aboriginal people have travelled and may be associated with hunting or gathering activities, domestic camps, or the manufacture and maintenance of stone tools. The spatial extent and density of artefacts represented in these scatters can vary dramatically. Within the amended project footprint, artefact scatters tend to be dominated by assemblages of quartz, although silcrete and chert are also common, with low quantities of other rock types. Previous survey results suggest that artefact scatters are most likely to occur in well drained elevated contexts within riparian zones, flood plains and adjacent to water sources. Level or gently sloping surfaces are typical site locations, with few sites recorded from moderate to high gradient contexts. Within the amended project footprint, potential site locations include elevated banks, terraces, flood channels, paleochannels, water holes, lagoons and wetland basins. Larger and denser sites are more likely to occur in association with stable sedimentary contexts adjacent to (past or present) permanent water sources, and major tributaries.

Isolated finds
Isolated finds are artefacts which occur without any associated surface evidence for prehistoric activity or occupation. Isolated artefacts can occur anywhere in the landscape and may represent evidence of random loss or deliberate discard of artefacts, the remnant of a now dispersed and disturbed artefact scatter or an otherwise subsurface artefact scatter.

PADs
PADs are areas of moderate or higher potential for subsurface archaeological deposit to occur. These are commonly identified on the basis of landform types, surrounding archaeological material, disturbance, and a range of environmental and taphonomic factors. Areas of Pad are considered likely to occur within the study area.

Burials
Burials are generally found in soft sediments such as sand or alluvial silts, but may also occur in middens, rock shelters or hollow trees. Burials are generally only visible where there has been some disturbance of subsurface sediments or where some erosional process has exposed them. Burials on rocky hilltops have previously been recorded for the Goulburn district but it is unlikely that burials on rocky hilltops would have survived to the present day. Overall the likelihood of this site type occurring is low.

Modified trees
These sites may occur almost anywhere mature native trees have been retained, including fluvial corridors, larger stands of vegetation in greenfield sections, and isolated shade trees on grazing land. Modified trees result when bark has been removed from a tree for some particular purpose such as for the manufacture of a shield, canoe or coolamon. Scars may also be the result of making footholds in a tree to collect foodstuffs or to facilitate the removal of bark. However, identification of scars as Aboriginal cultural heritage can be problematic because some forms of natural trauma and European bark extraction create similar scars. Bark was also removed by Aboriginal people during the historic period for their own purposes and for roofing on early European houses making the distinction between European and Aboriginal cultural trees blurred. Much of the transmission line easement has been cleared of native vegetation, however pockets of mature native trees still remain. The potential for modified trees to survive within the amended project footprint is moderate to high.

Quarries
Either extraction or procurement, these sites are typically exposures of a geological raw material where evidence for human extraction and or preliminary processing has survived. Typically, these involve the extraction of siliceous rock types for the manufacture of artefacts or the removal of ochre. The probability of this site type is assessed as low.

'Bora' Grounds

'Bora' Grounds functioned as a prepared stage for initiation and other ceremonial activities which held a key role in the teaching and maintenance of the complex social and religious framework within Aboriginal society. They consist mostly of one or more circular rings defined by mounded earth, sand and/or rocks. There may also be an associated depression within the ring. A pathway generally connected two rings and was often many hundreds of metres long. Typically, one circle was associated with more public ceremonies and the second with restricted and sacred information.

Bora grounds can only be recognised or located either through detailed oral accounts or identifying surviving ground surface features. Unfortunately, most physical evidence of these sites is fragile and easily destroyed by minimal agricultural activities. Based on the cleared status of most of the transmission line easement, and the likely agricultural practices which have occurred since white settlement (ploughing and levelling, trampling by stock, crop cultivation, construction of drainage canals, fences, roads and access tracks), the potential for these more fragile/rare sites to have survived in the amended project footprint to the present day is considered low.

4.4.1 Archaeological sensitivity modelling

The final modelled archaeological sensitivity of the overall HumeLink project footprint was described in the Revised ACHAR (NOHC 2024a). Two models were developed, one for surface sites and one for subsurface sites. Both models incorporated landform, slope gradient, distance to water and stream order, distance to known archaeological sites, and landscape disturbance. The subsurface model also incorporated the results of the test excavation program (i.e. test pits that were found to contain artefacts). Areas with a greater percentage of high archaeological sensitivity were generally those with more areas that are gently sloped and close to water sources. Moderately sensitive areas were generally further away from water or had increased slope. Areas of low sensitivity were either highly sloped, far away from water sources or both.

Surface model

The three categories of archaeological sensitivity for surface sites were defined as follows:

- High Sensitivity:
  - Areas of good slope (0-6 degrees) within 350 metres of an order 2 stream or higher.
  - Areas of good slope within 100 metres of an archaeological site.
- Moderate Sensitivity:
  - Areas of moderate slope (6.01-11 degrees) within 350 metres of an order 2 stream or higher.
  - Areas of good slope (0-6 degrees) between 350 and 500 metres of an order 2 stream or higher.
  - Areas of moderate slope within 100 metres of an archaeological site.
- Low Sensitivity:
  - All other areas.

The unsurveyed portions of the project footprint (i.e. the current Addendum ACHAR study area, for HumeLink East) were categorised according to their sensitivity for previously unrecorded surface sites (NOHC 2024a:214-215). A sensitivity percentage was developed for each unsurveyed area, i.e. of the total unsurveyed area how much of the area (in percentage) was of high, moderate, low sensitivity and how much was disturbed (Table 2).

Table 2. Archaeological sensitivity estimates from NOHC 2024a (for HumeLink East)

NOHC survey unit[1]	Archaeological sensitivity estimate (%)			
	High	Moderate	Low	Disturbed
CG-SU01	14.7	54.6	14.1	16.6
CG-SU03	23.6	40.3	34.5	1.7
CG-SU04	0	19.7	80	0.4
CG-SU07	11.6	17.1	69.4	1.9
CG-SU14	24.1	36.2	38.2	1.5
CG-SU15	17.3	33.8	47	1.9
CG-SU16	1.7	35.8	52.5	10
SV-SU30	6.3	55.6	33.9	4.3
SV-SU33	16.1	27.5	49.1	7.3
SV-SU35	45.8	44.5	9.7	0
SV-SU36	0.5	4.5	94.9	0
SV-SU37	0	0	100	0
SV-SU39	94	3.2	1.4	1.4
SV-SU40	61.5	5.4	33.1	0

[1] See Appendix A

NOHC survey unit	Archaeological sensitivity estimate (%)			
	High	Moderate	Low	Disturbed
SV-SU41	10	22.1	67.9	0
SV-SU42	2.5	21.6	72.3	3.6
SV-SU43	21.5	39.7	38.8	0
SV-SU45	6.7	46.6	44.1	2.6
ULS-SU03	0.1	9.1	90.5	0.4
ULS-SU04	15.4	7.5	75.2	2
ULS-SU05	59.4	35	1	4.6
ULS-SU06	17.9	23.7	56.7	1.7
ULS-SU07	0	0	100	0
ULS-SU08	34	32.7	30.7	2.5
ULS-SU11	9.1	45.5	45.4	0
ULS-SU18	15.6	49.7	30.5	4.2
ULS-SU19	15.8	55.8	26.5	1.9
ULS-SU20	0	0	94.3	5.7
YV-SU01	7.2	27.7	62.6	2.5
YV-SU05	26.5	34.7	32.6	6.1
YV-SU07	35.2	43.1	18.8	2.9
YV-SU08	37.8	35.9	15.8	10.5

The models of archaeological sensitivity within the project footprint have continued to be updated and refined as the archaeological assessment process continues and new data from further surveys and excavations becomes available. Updates to the model have been informed by geomorphic assessment, archaeological significance review and updated archaeological assessment results. Identifying areas of moderate or high sensitivity involves consideration of landform/slope gradient, soil type and condition, existing and previous land use disturbance (agriculture, grazing, infrastructure etc)., geomorphic processes including flooding, erosion and colluvial movement, and a determination if the area retains sufficient integrity to have retained archaeological deposit.

Field surveys and test excavation within the current study area have provided data to inform updated sensitivity assessment. Following the field survey, the desktop sensitivity estimates developed by NOHC were refined for the current disturbance footprint based on the assessment results (see Section 5.4 and Table 4).

5 Additional Field Surveys

For the Addendum ACHAR assessment, archaeological field surveys within the previously unsurveyed areas were undertaken in accordance with CoA B31 and UMM AH3. The assessment comprised the disturbance footprint within all HumeLink East locations identified as 'unsurveyed areas' in the HumeLink environmental assessment documentation and HumeLink East HMP, and the additional proposed access track areas requiring survey[2].

Survey was undertaken in accordance with the requirements of the HumeLink East HMP and with field methods consistent with the Revised ACHAR and based on the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*. The assessment encompassed the current proposed disturbance footprint within the identified unsurveyed areas (see example Figure 9 below). Appendix B (Figure B-1 to Figure B- 41) shows the unsurveyed areas and the current proposed disturbance footprint. All the unsurveyed areas are within the existing, approved HumeLink project approval boundary. Survey sampling strategy, description of survey coverage and results are presented below.

5.1 Survey Sampling Strategy and Field Methods

The study area was divided on the basis of property holding ID and whether the unsurveyed area comprised the main transmission corridor, or additional access tracks requiring survey. Existing NOHC survey units developed for the unsurveyed areas (refer Appendix A) were employed to formulate survey coverage data and revised assessments of archaeological sensitivity. The field sampling strategy comprised a full coverage pedestrian field survey of the proposed disturbance footprint, with all landforms and landscape features inspected.

Figure 9 shows an example of the survey coverage area for part of property MA-100. The surveyed area comprises the current disturbance footprint within the previously unsurveyed areas, including the main transmission corridor and the specified access track area.

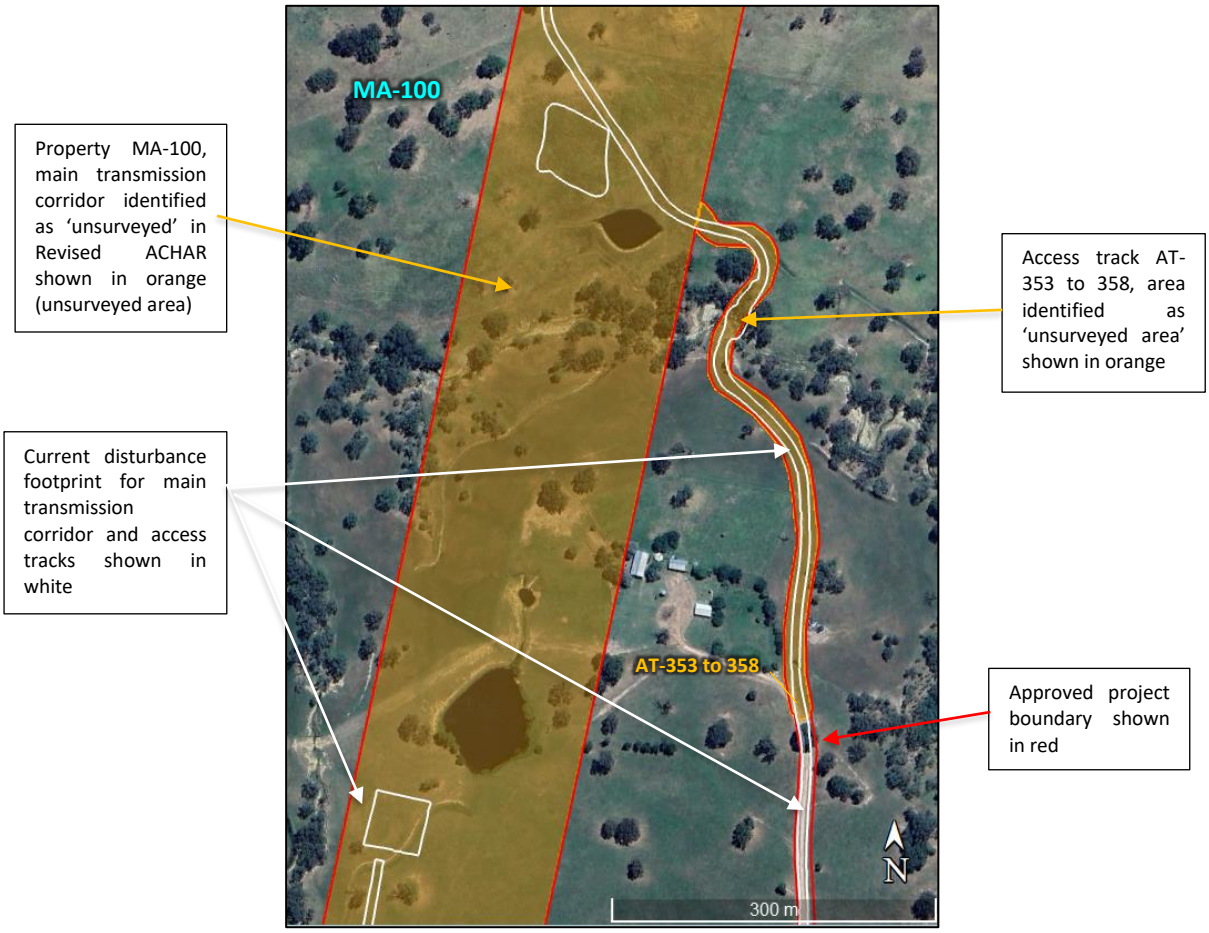


Figure 9. Survey coverage area

[2] Properties MA-059-01, YG-009, BY-152, BY-112-01A, BY-090, BY-070, BY-007 and access tracks AT-451 and AT-450 (MA-054), AT-256 (YG-009), AT-173 (BY-112-01A), and unnamed track (BY-006) have not yet been subject to survey.

Survey was undertaken by KNC Archaeologists Mark Rawson, Laura Patterson and Tristram Miller and field representatives from Pejar, Onerwal and Brungle-Tumut Local Aboriginal Land Councils. Surveys took place between December 2024 - July 2025.

The survey was equipped with high resolution aerial photography showing the approved project boundary, the proposed disturbance footprint and location of proposed project infrastructure elements, the location of any previously recorded sites, and previous NOHC sensitivity mapping, along with GIS data for use on a mobile mapping application in the field. A non-differential GPS receiver was used for spatial recordings. All GPS recordings were made using the Geocentric Datum of Australia (GDA) 1994 coordinate system (Zones 55 and 56).

The survey closely inspected any areas of surface exposure for artefacts, evidence of intact soils and any mature trees for evidence of cultural modifications. Assessments of archaeological potential were also made during the survey. These included an assessment of soil profile integrity, surface visibility and exposure, vegetation coverage, modern disturbance and current land use, with reference to previous sensitivity modelling.

5.2 Results

A total of 16 archaeological sites and 36 areas of PAD were identified within the study area as a result of the archaeological field surveys. Survey findings are described in Sections 5.2.1 and 5.2.2 below and summarised in Section 5.5 and Table 5. Appendix B provides mapping of the survey findings, with photographic records included in Appendix C. Appendix D contains newly recorded site descriptions.

Survey coverage estimates and a revised assessment of archaeological sensitivity based on the field survey results are presented in Sections 5.3 and Section 5.4. Table 3 provides estimated survey coverage for the disturbance footprint within each NOHC survey unit. Table 4 provides revised sensitivity percentages for the disturbance footprint within each NOHC survey unit based on the field survey results.

5.2.1 Main transmission corridor

The following Section describes the survey results for the proposed disturbance footprint within the main transmission corridor for the unsurveyed areas as described in the Revised ACHAR. Appendix A includes mapping of the unsurveyed areas with NOHC survey units, and Appendix B provides results mapping on recent satellite imagery.

Property ID / NOHC Survey Unit:	MA-047 / SV-SU33
Survey date:	24 March 2025
Personnel:	KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s):	Figure B- 1
Aboriginal sites identified:	HLE T PAD 16, HLE T PAD 19

Landforms comprised gentle to moderately steep mid hillslopes and gentle spurlines with minor drainage gullies between Deep Creek and Windowie Creek. Mostly cleared, with pasture grasses. Exposures were infrequent and ground surface visibility was low. Two areas of PAD were previously recorded in neighbouring property MA-047-01, HLE T PAD 16 and HLE T PAD 19. Survey confirmed that the margins of the landforms associated with these PADs extended partially into the disturbance footprint within the previously unsurveyed area. Subsequent testing of these PADs (separate to the CoA B31 program reported in the Addendum ACHAR) did not identify any Aboriginal objects and it was determined they did not constitute Aboriginal archaeological sites. Previous sensitivity modelling for this NOHC survey unit described areas of high, moderate and low sensitivity, with disturbed areas along existing infrastructure corridors and around dams. Based on the field survey and subsequent test excavation results, the current disturbance footprint was considered to display low archaeological sensitivity.

Property ID / NOHC Survey Unit:	MA-059-01 / N/A
Survey date:	Not yet surveyed
Personnel:	Not yet surveyed
Image reference(s):	Figure B- 33
Aboriginal sites identified:	Not yet surveyed

The property still requires survey in accordance with CoA B31 and will be assessed in accordance with the methodology described in Section 5.2 of the HumeLink East HMP. The current disturbance footprint does not extend within the unsurveyed area.

Property ID / NOHC Survey Unit: MA-059-07 / SV-SU39
Survey date: 2 December 2024
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 2
Aboriginal sites identified: N/A

Landform comprised a low lying floodplain west of Gocup Creek and the Tumut River. Existing disturbance was present from cropping and a top-dressed vehicle track. Survey did not identify any Aboriginal heritage sites, objects, areas of subsurface archaeological potential or features of significance within the current disturbance footprint. Previous sensitivity modelling for this NOHC survey unit described predominantly high sensitivity. Based on the field survey results, the current disturbance footprint was considered to display low archaeological sensitivity.

Property ID / NOHC Survey Unit: MA-059-08 / SV-SU39, SV-SU-40
Survey date: 2 December 2024
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 2
Aboriginal sites identified: HLE T PAD 22, HLE T PAD 38 (part)

Landform comprised a low-lying floodplain extending east and west along Gocup Creek and west from the Tumut River. This area includes grass covered flats, dry and water filled palaeochannel remnants, levees, creekbanks, and riverbank. The modern floodplain includes raised terrace/levee remnant features. Ground surface visibility was low due to pasture grasses, limited to areas of disturbed exposures along existing top-dressed vehicle tracks. All large trees, primarily River Red gums along the watercourses, were inspected for cultural modifications or scarring. Survey identified two areas of PAD: HLE T PAD 38 and HLE T PAD 22. HLE T PAD 38 was located on an area of level, elevated ground immediately next to and surrounded by a bend in Gocup Creek. This PAD is not impacted by the disturbance footprint. HLE T PAD 22 was located on a slight rise above a dry palaeochannel south of Gocup Creek and will be impacted by the disturbance footprint. Both PAD areas had zero visibility. Previous sensitivity modelling for this NOHC survey unit described primarily high and moderate sensitivity. Based on the field survey results, the current disturbance footprint was considered to display moderate sensitivity within the identified PADs and low archaeological sensitivity in the remainder.

Property ID / NOHC Survey Unit: MA-059-09 / SV-SU35, SV-SU39, SV-SU-40
Survey date: 2 December 2024
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 2
Aboriginal sites identified: HLE T PAD 8, HLE T PAD 38 (part)

Landform comprised a low-lying floodplain extending east and west along Gocup Creek and west from the Tumut River. This area includes grass covered flats, dry and water filled palaeochannel remnants, levees, creekbanks, and riverbank. The modern floodplain includes raised terrace/levee remnant features. Ground surface visibility was low due to pasture grasses, limited to areas of disturbed exposures along existing top-dressed vehicle tracks. All large trees, primarily River Red gums along the watercourses, were inspected for cultural modifications or scarring. The western part of the property was more disturbed, with moderate gradient slopes adjacent to Gocup Road disturbed by road and track construction and a large dam. Exposures were checked for artefacts but none were identified.

Survey identified two areas of PAD: HLE T PAD 38 and HLE T PAD 8. HLE T PAD 38 was located on an area of level, elevated ground immediately next to and surrounded by a bend in Gocup Creek. This PAD is not impacted by the disturbance footprint. HLE T PAD 8 was located further to the east across a mostly level area, on the broad western floodplain of the Tumut River, next to a tree lined older channel, and is impacted by the current disturbance footprint. Ground disturbance at both locations appeared to be low. Previous sensitivity modelling for this NOHC survey unit described primarily high and moderate sensitivity. Based on the field survey results, the current disturbance footprint was considered to display moderate sensitivity within the identified PADs and low archaeological sensitivity in the remainder.

Property ID / NOHC Survey Unit: MA-059-10 / SV-SU40, SV-SU41
Survey date: 2 July 2024 & 30 June 2025
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 3
Aboriginal sites identified: HLE T PAD 40 (including AHIMS 56-3-0336), HLE T PAD 39

The northern part of the survey area comprised gentle lower slopes and narrow creek flats surrounding a confluence of tributaries to the Tumut River. The central part of the survey area comprised steep slopes dropping down to the river floodplain. The southern part of the survey area comprised a saddle leading south west to a level, benched area within the lower slope adjacent to the river. Disturbance included graded vehicle tracks and farm infrastructure. Colluvial soil movement and erosion was also evident on the steeper slopes.

The locations of previously recorded AHIMS sites Cockatoo Rd Property #4 (AHIMS 56-3-0337) and Cockatoo Property#5 (AHIMS 56-6-0336) were also revisited and assessed. Modified tree site Cockatoo Rd Property #4 was relocated approximately 88 metres north east of its registered location at 610925E 6101946N and confirmed to be outside the approved project boundary. This site will not be impacted by the project and a site card update has been submitted to the AHIMS Registrar to correct the registered site location. The artefact previously recorded at Cockatoo Property#5 (AHIMS 56-6-0336) was not relocated during survey however the surrounding area was assessed as displaying moderate archaeological potential and designated HLE T PAD 40. At the southern end of the survey area, HLE T PAD 39 was recorded across a saddle and adjacent bench overlooking the Tumut River. Both PADs are impacted by the current disturbance footprint. Previous sensitivity modelling for this NOHC survey unit described primarily low sensitivity across the steeper slopes, with high and moderate sensitivity close to watercourses. Based on the field survey results, the current disturbance footprint was considered to display moderate sensitivity within the identified PADs and low archaeological sensitivity in the remainder.

Property ID / NOHC Survey Unit: MA-059-13 / SV-SU41, SV-SU42
Survey date: 3 December 2024
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 4
Aboriginal sites identified: N/A

Landforms comprised narrow, steep-sided ridges and rocky crests and saddles above a minor drainage valley, with views east towards Killimicat Creek and the Mudjarn Nature Reserve. Schist bedrock was exposed on crests and side slopes, and soils were thin, rocky and eroded with low archaeological potential. Survey did not identify any Aboriginal heritage sites, objects, areas of subsurface archaeological potential or features of significance within the current disturbance footprint. Previous sensitivity modelling for this NOHC survey unit described predominantly low sensitivity with areas of moderate sensitivity on crests and disturbance adjacent to Brungle Road. Based on the field survey results, the current disturbance footprint was considered to display low archaeological sensitivity.

Property ID / NOHC Survey Unit: MA-059-13A / SV-SU41
Survey date: 3 December 2024
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 4
Aboriginal sites identified: HLE T PAD 23

Landform comprised a dome shaped spur crest downslope of a saddle to the east, immediately above a sharp bend in Brungle Road. The landform had an elevated position looking out to Killimicat Creek and Mudjarn Nature Reserve. The area was mostly cleared on the crest, but some larger gum eucalypts were present amongst low pasture grass, with low apparent disturbance. The area was designated as HLE T PAD 23. This PAD is not impacted by the current disturbance footprint. Previous sensitivity modelling was not undertaken for this part of the NOHC survey unit. Based on field survey results, the PAD area displays moderate sensitivity. This property does not contain the current disturbance footprint.

Property ID / NOHC Survey Unit: MA-059-15 & MA-059-16 / SV-SU41, SV-SU42
Survey date: 11 March 2025
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 5
Aboriginal sites identified: N/A

Landforms comprised narrow crests and spur lines above steep-sided drainage gullies. Large, eroded exposures on crests and steeper slopes revealed shale and schist bedrock and B horizon clays with no topsoil. Many of the existing farm vehicle tracks were partially modified. Survey did not identify any Aboriginal heritage sites, objects, areas of subsurface archaeological potential or features of significance within the current disturbance footprint. Previous sensitivity modelling for this NOHC survey unit described predominantly low sensitivity with areas of moderate sensitivity on crests and disturbance adjacent to Brungle Road and areas of infrastructure. Based on the field survey results, the current disturbance footprint was considered to display low archaeological sensitivity.

Property ID / NOHC Survey Unit: MA-077 / SV-SU42, SV-SU43
Survey date: 4 June 2024 and 11 March 2025
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 6
Aboriginal sites identified: HLE T PAD 24

Landforms ranged from steep, rocky slopes and crests in the west, passing over gentle rises to gentle slopes and flats above Killimicat Creek in the east. Ground surface visibility was low due to pasture grass coverage, with some areas heavily disturbed with uneven ground surface due to tree clearing. HLE T PAD 24 was designated across a flat to gently sloping elevated landform above a bend in Killimicat Creek, south of the rising terrain leading into Mudjarn Nature Reserve.

There were large, older eucalypt gums along the property fence line and intact dark brown sandy loam was evident on surface exposures under the base of the trees. No surface artefacts were evident in these exposures, but the landform is well-defined with a good aspect and view to the creek, and appears to be intact. This part of the PAD will be impacted by the current disturbance footprint.

The assessed PAD area extends to the south east along access tracks which are not part of the current Addendum ACHAR study area. This southeastern part of the PAD had suffered higher apparent disturbance due to farm infrastructure and access tracks. Previous sensitivity modelling for this NOHC survey unit described predominantly low sensitivity in the steeper western part, with areas of moderate sensitivity and high sensitivity attached to landforms closer to Killimicat Creek and the gentler gradient landforms. Based on the field survey results, the HLE T PAD 24 area was considered to display moderate sensitivity, and low archaeological sensitivity in the remainder of the current disturbance footprint.

Property ID / NOHC Survey Unit: MA-077-01 / SV-SU36
Survey date: 2 December 2024
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 7
Aboriginal sites identified: N/A

Landforms comprised small crests and steep sideslopes leading into drainage gullies. Crests were exposed, with visible bedrock outcrop and thin stony soils with cobbles scattered across the surface. Slopes were sheet eroded and disturbed by vehicle and cattle tracks. Survey did not identify any Aboriginal heritage sites, objects, areas of subsurface archaeological potential or features of significance within the current disturbance footprint. Previous sensitivity modelling for this NOHC survey unit described predominantly low sensitivity with areas of moderate sensitivity closer to watercourses. Based on the field survey results, the current disturbance footprint was considered to display low archaeological sensitivity.

Property ID / NOHC Survey Unit: MA-085 / SV-SU30, SV-SU37, SV-SU45
Survey date: 13 May 2025
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 8
Aboriginal sites identified: N/A

Landforms comprised very steep mid to upper hill slopes surrounding a cleared, flat crest of a spurline. Underlying granite bedrock outcrops were present across the survey area, with soils thin and rocky. Small exposures of the underlying thin soils were inspected along the vehicle track and in areas of erosion on the crest but no artefacts were identified. Survey did not identify any Aboriginal heritage sites, objects, areas of subsurface archaeological potential or features of significance within the current disturbance footprint. Previous sensitivity modelling for this NOHC survey unit described primarily moderate and low sensitivity. Based on the field survey results, the current disturbance footprint was considered to display low archaeological sensitivity.

Property ID / NOHC Survey Unit: MA-088 / CG-SU14
Survey date: 11 March 2025
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 9
Aboriginal sites identified: HLE T26

Landforms comprised gentle lower slopes and narrow flats adjacent to Brungle Creek, rising steeply up slope to a ridge crest to the north and dropping again to a drainage gully below very steep slopes. Side slopes were very steep, verging on precipitous. The property has been cleared and is vegetated with pasture grasses and scotch thistle. Disturbance included vehicle and stock tracks and areas of earthmoving disturbance and erosion.

Archaeological site HLE T26 was recorded on an elevated slightly sloped rise above the Brungle Creek gully, forming part of the gentle lower slope off the ridge crest to the north east. Intact pale brown loam was present on this landform, with some small areas of rocky outcrop and impacted in some areas by stock movement. The site had good visibility with scattered sedge and low pasture grass. Artefacts were recorded in exposures along a narrow stock track. Artefacts included a silcrete proximal fragment, an FGS proximal fragment, an indurated mudstone/tuff (IMT) distal fragment and an FGS retouched tool made on a medial flake fragment. The recorded site extent includes the associated landform bordering the creek. The site will be impacted by the current disturbance footprint.

Previous sensitivity modelling for this NOHC survey unit described predominantly low sensitivity in the steeper eastern part, with areas of moderate sensitivity and high sensitivity attached to landforms closer to Brungle Creek and the northern drainage gully. Based on the field survey results, the HLE T26 site area was considered to display moderate sensitivity, and low archaeological sensitivity in the remainder of the current disturbance footprint.

Property ID / NOHC Survey Unit: MA-089 / SV-SU30
Survey date: 28 January 2025
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 8
Aboriginal sites identified: N/A

Landforms comprised steep midslopes off a hill crest to the south, bordered to the east and west by low order tributaries flowing north towards Brungle Creek. The area was cleared with a few scattered gums and abundant scotch thistle, offering poor ground surface visibility. Small areas of sheet erosion revealed bedrock schists with no remaining soil cover and small areas of rocky outcrop were also present. Survey did not identify any Aboriginal heritage sites, objects, areas of subsurface archaeological potential or features of significance within the current disturbance footprint. Previous sensitivity modelling for this NOHC survey unit described predominantly low sensitivity on stepper slopes with areas of moderate sensitivity to the north and disturbance adjacent to Brungle Creek Road and fencelines. Based on the field survey results, the current disturbance footprint was considered to display low archaeological sensitivity.

Property ID / NOHC Survey Unit: MA-094 / CG-SU01, CG-SU15, CG-SU16
Survey date: 25 March 2025
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 10
Aboriginal sites identified: HLE T27, HLE T28

Landforms within this survey area comprised a series of low spurs and gullies running north to Adjungbilly Creek, rising to the south to moderate to steeply sloping sideslopes below the elevated Forestry lands. The area has been cleared and used for agriculture. Disturbance was evident along existing vehicle tracks, and associated with stockyards, silos, earthworks, quarrying and farm sheds. Some cut and fill and drainage works were also evident at the northern end of the survey area. These disturbed exposures offered good visibility and were inspected for artefacts, with two archaeological sites identified: HLE T27 and HLE T28. Both were located on minor spur features impacted by track cut and fill overlooking Adjungbilly Creek to the north.

HLE T27 comprised two proximal fragments identified upon a 40 x 12 metre spur cut exposure on the southern side of track positioned between moderate-sized gullies to the east and west. Deposit was disturbed close to the track and sloping, thin and rocky further north and south along the spur. There was considered to be no potential for associated subsurface deposit. HLE T28 comprised a flake located upon track fill on the northern side of the track between the western gully and a prominent spur extending to a bend in Adjungbilly Creek. The artefact was on redeposited material moved downslope during track construction from the prominent spur landform, which was assessed as PAD and formed part of the recorded site extent. The southern end of the site extent closer to the access track had been partly impacted however the northern end closer to Adjungbilly Creek (outside the approved project boundary) appeared to be in better condition. The part of HLE T28 extending within the current disturbance footprint displays low potential.

Previous sensitivity modelling for these NOHC survey units described primarily moderate and low sensitivity, with areas of high sensitivity closer to Adjungbilly Creek and on a ridge crest at the southern end of the property. Areas of disturbance were also mapped based on utilities corridors and the track. Based on the field survey results, the current disturbance footprint was considered to display low archaeological sensitivity.

Property ID / NOHC Survey Unit: MA-100 / CG-SU03, CG-SU04
Survey date: 25 March 2025
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 11
Aboriginal sites identified: N/A

Landforms included broad, gentle to moderate gradient slopes separating minor spurs and ridgelines. Drainage features were low order tributaries to O'Briens Creek and Cart Road Creek, as well as Cart Road Creek itself. Larger channels tended to be gullied/incised due to erosion. Slopes were broad and featureless and ground disturbance appeared generally low. Ground surface visibility was very low due to pasture grasses, with small exposures along fencelines and vehicle/stock tracks and around the drainage margins. Vehicle tracks included a combination of unformed and partly formed paddock tracks along with well-formed, gravel farm tracks traversing the ridgelines, hillslopes and a deep gully crossing of Cart Road Creek. Previous sensitivity modelling for these NOHC survey units described a range of sensitivity, primarily low across the unfocused hillslopes rising to moderate and high adjacent to creeklines and on flatter areas of ground. Disturbance was mapped along existing tracks and around dams. Based on the field survey results, the current disturbance footprint was considered to display low archaeological sensitivity.

Property ID / NOHC Survey Unit: YG-034 / CG-SU07
Survey date: 9 December 2024
Personnel: KNC Archaeologist & Representatives from Onerwal LALC
Image reference(s): Figure B- 12
Aboriginal sites identified: HLE Y PAD 11 and HLE Y PAD 27

Landforms included mid hillslopes and saddles between rocky crests overlooking the river flats of the Murrumbidgee River to the west and south. Ground surface exposure was infrequent with low visibility due to grass cover however disturbance levels appeared generally low. Two PADs were recorded by the survey: HLE Y PAD 11 and HLE Y PAD 27. HLE Y PAD 11 was located across a small pass within a saddle, extending outside of the Addendum ACHAR study area. HLE Y PAD 27 was located across a broad saddle and adjacent lower gradient slopes overlooking Murrumbidgee River to the south. Both locations had few exposures however soils appeared intact. Both PADs would be impacted by the current disturbance footprint. Previous sensitivity modelling for this NOHC survey unit described generally low sensitivity for the western part of the area, with high and moderate sensitivity associated with the raised saddle features, with areas of disturbance along Nanangroe and Childowla Roads. Based on the field survey results, the current disturbance footprint was considered to display moderate sensitivity within the PAD areas and low sensitivity in the remainder.

Property ID / NOHC Survey Unit: YG-031 / CG-SU07, YV-SU01
Survey date: 9 December 2024
Personnel: KNC Archaeologist & Representatives from Onerwal LALC
Image reference(s): Figure B- 13
Aboriginal sites identified: HLE Y PAD 29, HLE Y PAD 13, HLE Y16 and HLE Y17

Landforms comprised a series of undulating rises and steep to moderate slopes adjacent to the southern side of Oak Creek. Exposed bedrock outcrops were scattered across these landforms with generally thin, eroded soils in the higher gradient areas. Exposures were present along stock tracks and in areas of sheet erosion, and around the disturbed walls of an excavated dam. Two PADs and two archaeological sites were recorded. HLE Y PAD 29 was located on a defined, level, benched knoll crest in the east of the surveyed area adjacent to Childowla Road. This area appeared to retain some depth of soil, becoming shallower and rockier towards the creek. HLE Y PAD 13 was recorded to the west, on the narrow flat and lower slope immediately adjacent to the creekbanks. To the south west, HLE Y17 comprised a surface artefact site recorded on the crest of a hill overlooking Oak Creek. Artefacts were recorded on a narrow stock track near a fenceline, including a good quality grey silcrete proximal fragment and an MGS proximal fragment. Both artefacts had macroscopic usewear. The assessed site extent includes the associated landform.

HLE Y16 comprised a large artefact scatter recorded in disturbed exposures around a dam, on a bench in a lower hillslope above a former (now dammed) tributary to Oak Creek. Artefact raw materials included pale grey to black cherts, Pale brown IM/Tuff, banded cherts, fine grained siliceous materials and yellow-red silcrete and quartz. Artefact types included tools, utilised flakes, distal and proximal flake fragments. Both sites were considered to display moderate potential for associated subsurface deposit. Both PADs and artefact sites would be impacted by the current disturbance footprint. Previous sensitivity modelling for these NOHC survey unit described generally low sensitivity for the slopes, with high and moderate sensitivity associated with the raised crest features. Based on the field survey results, the current disturbance footprint was considered to display moderate sensitivity within the PADs and artefact site areas and low sensitivity in the remainder.

Property ID / NOHC Survey Unit: YG-009 / YV-SU05
Survey date: Not yet surveyed
Personnel: Not yet surveyed
Image reference(s): Figure B- 14
Aboriginal sites identified: Not yet surveyed

The property still requires survey in accordance with CoA B31 and will be assessed in accordance with the methodology described in Section 5.2 of the HumeLink East HMP. The current disturbance footprint extends within the unsurveyed area.

Property ID / NOHC Survey Unit: BY-156 / YV-SU07
Survey date: 29 July 2025
Personnel: KNC Archaeologist & Representatives from Onerwal LALC
Image reference(s): Figure B- 15
Aboriginal sites identified: HLE Y PAD 30, HLE Y PAD 31, HLE Y PAD 32 and HLE Y32

Landforms included rocky crests and hillslopes in the west above headwater drainage lines, broad, low crests with gentler sideslopes in the centre of the area, and gentle lower slopes and creekflats with rises around the deep, gullied channel of Fairy Hole Creek. The easternmost part of the property contained a well-defined rocky knoll and saddle with moderate slopes.

Three areas of PAD and one surface site were recorded: HLE Y PAD 30, HLE Y PAD 31, HLE Y PAD 32 and HLE Y32. HLE Y PAD 30 was positioned across a flat, grassy clearing on a crest in the western part of the survey area between rocky outcrops of volcanic bedrock. The PAD area had low ground surface visibility but appeared to retain a moderate depth of soil with low levels of landscape disturbance and extensive views in all directions including west to the Derringullen Creek valley (approximately 1.1 kilometres away). The ridgecrest containing the PAD separates the catchments of Fairy Hole Creek in the east and Derringullen Creek in the west.

HLE Y PAD 31 was located on the eastern side of Wargeila Road, across a slight hollow on the northern flanks of a broad crest. Visibility was limited to narrow sheep trails, with pale brown sandy loam soils evident in exposure. The PAD occupies an elevated position looking to the confluence of a tributary and the main channel of Fairy Hole Creek. HLE Y PAD 32 was recorded along a prominent rise adjacent to and overlooking the main channel of Fairy Hole Creek. This area is shown on geological mapping as a narrow area of the O'Briens Creek Sandstone Member amongst surrounding volcanics, which has created a distinctive landform.

Surface site HLE Y32 was recorded between HLE Y PAD 31 and 32. The site comprised a waterworn, broken cobble manuport and surrounding slight rise landform on mid hillslopes which run to a first order tributary of Fairy Hole Creek. Low pasture grass limited ground surface visibility. The current disturbance footprint impacts HLE Y PAD 31, HLE Y PAD 30, and HLE Y32. Previous sensitivity modelling for this NOHC survey unit described predominantly high and moderate sensitivity around Fairy Hole creek and across elevated, flat crest landforms. Low sensitivity was ascribed to the unfocused intervening slopes, with areas of disturbance around dams and infrastructure corridors. Based on the field survey results, the current disturbance footprint was considered to display moderate sensitivity within the site/PAD areas and low sensitivity in the remainder.

Property ID / NOHC Survey Unit: BY-152 / YV-SU08
Survey date: Not yet surveyed
Personnel: Not yet surveyed
Image reference(s): Figure B- 16
Aboriginal sites identified: Not yet surveyed

The property still requires survey in accordance with CoA B31 and will be assessed in accordance with the methodology described in Section 5.2 of the HumeLink East HMP. The current disturbance footprint does not extend within the unsurveyed area.

Property ID / NOHC Survey Unit: BY-151 / YV-SU08
Survey date: 10 December 2024
Personnel: KNC Archaeologist & Representatives from Onerwal LALC
Image reference(s): Figure B- 16
Aboriginal sites identified: HLE Y PAD 5

Landform comprised gentle, mid slopes off the crest of a spurline. The area comprised a cleared paddock, with scattered exposures near eucalypt gums east of the proposed transmission tower site. The majority of the area had poor ground surface visibility. HLE Y PAD 5 was recorded across a slightly flatter section of the midslope in an area of lower apparent ground disturbance from farming, extending east towards a dirt access road. The PAD will be impacted by the current disturbance footprint. Previous sensitivity modelling for this NOHC survey unit described predominantly low sensitivity with areas of moderate sensitivity closer to the road. Based on the field survey results, the current disturbance footprint was considered to display moderate sensitivity within the assessed PAD area and low archaeological sensitivity in the remainder.

Property ID / NOHC Survey Unit: BY-150 / YV-SU08
Survey date: 10 December 2024
Personnel: KNC Archaeologist & Representatives from Onerwal LALC
Image reference(s): Figure B- 16
Aboriginal sites identified: HLE Y PAD 6

Landforms included a gentle, southerly sloping spurline and adjacent slopes above a dammed drainage line, overlooking a tributary of Cooks Creek to the south. Scattered rock outcrop was present. Ground surface visibility was low due to pasture grass coverage. Exposures were limited to areas of disturbance along the drainage line and dam, along the roadside and in areas of soil disturbance on the slopes. HLE Y PAD 6 was recorded across the spurline slopes adjacent to the drainage line, which evidenced an intact soil profile along the bank. The PAD will be impacted by the current disturbance footprint. Previous sensitivity modelling for this NOHC survey unit described predominantly high and moderate sensitivity around the creek and drainage line. Based on the field survey results, the current disturbance footprint was considered to display moderate sensitivity within the assessed PAD area and low archaeological sensitivity in the remainder.

Property ID / NOHC Survey Unit: BY-128-01 / ULS-SU03
Survey date: 14 May 2025
Personnel: KNC Archaeologist & Representatives from Onerwal LALC
Image reference(s): Figure B- 17
Aboriginal sites identified: HLE Y PAD 25, HLE Y PAD 28.

Landforms included a ridgeline occupied by Rye Park Road in the east and sideslopes grading down to a north-running Felled Timber Creek tributary in the central part of the area, rising again to a wooded ridgeline in the west. Slopes were of moderate to gentle gradient with occasional rocky outcrops. Exposures were infrequent and demonstrated pale brown loam in disturbed areas along tracks, fencelines and around cattle troughs. Some farming disturbance from vegetation clearing/mulching was also evident.

Two PADs were recorded: HLE Y PAD 25 and HLE Y PAD 28. HLE Y PAD 25 was located adjacent to the road and included the small ridgeline crest and gentle sections of adjacent upper slopes surrounding a first order drainage line. HLE Y PAD 28 was located to the west and occupied the wooded ridge crest. Only HLE Y PAD 25 is impacted by the current disturbance footprint. Previous sensitivity modelling for this NOHC survey unit described predominantly low sensitivity, with a smaller area of moderate sensitivity in the west closer to the drainage tributaries to Felled Timber Creek. Based on the field survey results, the current disturbance footprint was considered to display moderate sensitivity within the assessed PAD areas and low archaeological sensitivity in the remainder.

Property ID / NOHC Survey Unit: BY-112-01A / ULS-SU04
Survey date: Not yet surveyed
Personnel: Not yet surveyed
Image reference(s): Figure B- 18
Aboriginal sites identified: Not yet surveyed

The property still requires survey in accordance with CoA B31 and will be assessed in accordance with the methodology described in Section 5.2 of the HumeLink East HMP. The current disturbance footprint extends within the unsurveyed area.

Property ID / NOHC Survey Unit: BY-108 & BY-109 / ULS-SU04, ULS-SU05
Survey date: 10 December 2024 and 1 July 2025
Personnel: KNC Archaeologist & Representatives from Onerwal LALC
Image reference(s): Figure B- 19
Aboriginal sites identified: HLE G PAD 13

Landforms included a series of narrow ridgelines and spurs interspersed with low order drainage lines running north towards Merrill Creek in, broadening to wider crests and slopes in the east in BY-108 towards Middle Creek. The western part of the area in BY-109 displayed low potential due to steeper slope gradients and thin, rocky soil with outcropping bedrock. Exposures were limited to stock tracks, areas around dams and along fencelines.

One PAD was recorded, HLE G PAD 13. This was located on a hillslope in BY-108 off a crest overlooking Middle Creek to the east and a dammed, smaller drainage line to the west. Pale brown loam soils were visible in exposures along the fenceline and appeared generally intact. The PAD is impacted by the current disturbance footprint. Previous sensitivity modelling for these NOHC survey units described predominantly low sensitivity, with a smaller area of moderate and high sensitivity around Sapphire Road due to closer proximity to Middle Creek. Based on the field survey results, the current disturbance footprint was considered to display moderate sensitivity within the assessed PAD area and low archaeological sensitivity in the remainder.

Property ID / NOHC Survey Unit: BY-107 / ULS-SU05
Survey date: 10 December 2024
Personnel: KNC Archaeologist & Representatives from Onerwal LALC
Image reference(s): Figure B- 20
Aboriginal sites identified: HLE G PAD 14, HLE G PAD 15, HLE G PAD 16, HLE G PAD 17

Landforms comprised gentle hillslopes off the crest occupied by Sapphire Road above Middle Creek, down to a flat adjacent to a bend in the incised main creek channel. North of the creek, gentle north-easterly inclined slopes became steeper climbing to a ridge crest. The upper slopes and crest had scattered large areas of rock outcrop and thin soils and occasional larger gum trees. Surface visibility on the gentler gradient landforms was low due to tall grasses and scattered wattle regrowth along the creekline.

Four PAD areas were recorded during the survey. HLE G PAD 14 was recorded on the crest adjacent to Sapphire Road, with HLE G PAD 15 and HLE G PAD 16 occupying the gentle landforms bordering both sides of Middle Creek. HLE G PAD 15 and HLE G PAD 16 incorporated flatter areas of drainage as well as micro-topographic rises surrounding the main creekline. Intact soil deposit of yellow-brown sandy loam was visible in the infrequent exposures.

HLE G PAD 17 was recorded to the north east, on a level, less rocky spur crest off the main ridgeline above a creek tributary to the east, extending outside of the current Addendum ACHAR study area. Subsequent testing of this PAD (separate to the CoA B31 program reported in the Addendum ACHAR) did not identify any Aboriginal objects and it was determined it did not constitute an Aboriginal archaeological site. All four PADs were to be impacted by the current disturbance footprint following the survey. Previous sensitivity modelling for this NOHC survey unit described high and moderate sensitivity around Middle Creek, with a strip of disturbance along Sapphire Road. Based on the field survey results, the current disturbance footprint was considered to display moderate sensitivity within the assessed PAD areas and low archaeological sensitivity in the remainder.

Property ID / NOHC Survey Unit: BY-097 / ULS-SU06
Survey date: 26 March 2025
Personnel: KNC Archaeologist & Representatives from Onerwal LALC
Image reference(s): Figure B- 21
Aboriginal sites identified: HLE G PAD 18, HLE G PAD 19

Landforms comprised lower slopes extending east from Grabben Gullen Road, rising steeply to a thickly wooded crest overlooking Merrill Creek through the central part of the area. Landforms around the creek included lower slopes, benches and small sections of creek flats along the incised channels. To the west, slopes rise steeply to a small crest at the property boundary. Disturbance was evident through heavy ploughing in the western paddock, with areas of sheet erosion on steeper slopes and gully erosion along the drainage lines. Exposures revealed a red-brown clay loam of clay subsoil with abundant gravels.

Two areas of PAD were identified: HLE G PAD 18 and HLE G PAD 19. HLE G PAD 18 was located across a narrow area of gentle lower slope bordering the creekline in the central part of the survey area which had potential for intact soils. HLE G PAD 19 was recorded on the property boundary with neighbouring BY-101 (described above). Both PADs are impacted by the current disturbance footprint. The majority of this NOHC survey unit was previously assessed as displaying high and moderate sensitivity, with small areas of low sensitivity on steeper slopes. Based on the field survey results, the current disturbance footprint was considered to display moderate sensitivity within the assessed PAD areas and low archaeological sensitivity in the remainder.

Property ID / NOHC Survey Unit: BY-101 / ULS-SU06, ULS-SU07
Survey date: 26 March 2025
Personnel: KNC Archaeologist & Representatives from Onerwal LALC
Image reference(s): Figure B- 22
Aboriginal sites identified: HLE G PAD 19, HLE G PAD 21

Landforms included undulating flat-topped crests and moderate sideslopes interspersed with headwater drainage gullies running south east to Humes Creek. The area was predominantly cleared and used for pasture, with disturbance evident around dams, stock and vehicle tracks, areas of erosion and a small area of tree farming in the west. Exposures were infrequent and ground surface visibility was generally low.

Two PADs were recorded: HLE G PAD 19 and HLE G PAD 21. HLE G PAD 19 was located at the western edge of the survey area and extended into neighbouring property BY-097. The PAD comprised a small area of crest and upper slope off a broad spurline, bordered by two tributaries of Merrill Creek. The area was cleared with scattered regrowth eucalypts. The area was considered to display a moderate chance of intact deposit, with brown soil visible in small exposures around the trees. HLE G PAD 21 was located at the eastern end of the survey area across the gently sloping crest of a rise overlooking a drainage line. Both PADs are impacted by the current disturbance footprint. The majority of this NOHC survey unit was previously assessed as displaying low sensitivity, with small areas of moderate sensitivity adjacent to the small drainage lines and areas of disturbance around dams. Based on the field survey results, the current disturbance footprint was considered to display moderate sensitivity within the assessed PAD areas and low archaeological sensitivity in the remainder.

Property ID / NOHC Survey Unit: BY-090 / ULS-SU20
Survey date: Not yet surveyed
Personnel: Not yet surveyed
Image reference(s): Figure B- 23
Aboriginal sites identified: Not yet surveyed

The property still requires survey in accordance with CoA B31 and will be assessed in accordance with the methodology described in Section 5.2 of the HumeLink East HMP. The current disturbance footprint extends within the unsurveyed area.

Property ID / NOHC Survey Unit: BY-074 / ULS-SU08
Survey date: 8 May 2024 and 10 December 2024
Personnel: KNC Archaeologist & Representatives from Onerwal LALC
Image reference(s): Figure B- 24
Aboriginal sites identified: HLE G12

Landforms included mid hillslopes to lower slopes grading down to the drainage valley along Sawpit Creek. Slope gradient increased with distance from the creek up to elevated crests at the margins. The steeper landforms displayed scattered bedrock outcrops and scattered, natural quartz gravels. Surface artefact scatter HLE G12 was identified across the gentle western lower slope landform, bordered to the north by a drainage gully and to the east by the creek proper. Artefacts were identified in a disturbed, eroded drainage cut running perpendicular to Sawpit Creek. The surrounding landform was overgrown with pasture grasses and zero visibility. Artefacts comprised two good quality red and brown silcrete flakes. The site area displays moderate potential for subsurface deposit. The site will be impacted by the current disturbance footprint. The majority of this NOHC survey unit was previously assessed as displaying high and moderate sensitivity around Sawpit Creek, with low sensitivity across the steeper bordering slopes and crests to the east and west. Disturbance was mapped along the existing creek channel and fencelines. Based on the field survey results, the current disturbance footprint was considered to display moderate sensitivity within the assessed site area and low archaeological sensitivity in the remainder.

Property ID / NOHC Survey Unit: BY-072 / ULS-SU08
Survey date: 22 July 2025
Personnel: KNC Archaeologist & Representatives from Onerwal LALC
Image reference(s): Figure B- 25
Aboriginal sites identified: HLE G31, HLE G30

Landforms comprised a spurline crest and adjacent sideslopes in the east near Range Road, dropping down to a boggy drainage valley in the central part overlooked by small, elevated spurs. To the west, broad slopes rise to a broad ridgeline along the property boundary. Disturbance was evident from heavy cropping across the slopes and drainage valley. Extensive erosion on the steeper crest landforms revealed natural quartz gravels and red-brown clay subsoils with scattered bedrock outcrop. Two artefact sites were identified: HLE G30 and HLE G31. HLE G30 comprised an isolated find of a milky quartz proximal fragment located on an exposure adjacent to a heavily eroded 4WD track near Range Road. Larger exposures revealed outcropping bedrock and a lack of intact soil, and the site displayed low potential. HLE G30 is not impacted by the current disturbance footprint.

HLE G31 was located at the western end of the survey area, on the upper slopes of the broad ridgeline between Sawpit Creek and a smaller tributary of Kialla Creek. The site was an isolated find comprising a milky quartz medial flake fragment. The site location has been completely cultivated and heavily disturbed, with the artefact identified on a small exposure of remnant pale red-brown soil. Archaeological potential is low. HLE G31 will be impacted by the current disturbance footprint. The majority of this NOHC survey unit was assessed as low sensitivity, with areas of disturbance mapped around dams and along the main fenceline. A small area of moderate and high sensitivity was mapped adjacent to Range Road. Based on the field survey results, the current disturbance footprint was considered to display moderate sensitivity at the individual site locations and low archaeological sensitivity in the remainder.

Property ID / NOHC Survey Unit: BY-070 / ULS-SU08
Survey date: Not yet surveyed
Personnel: Not yet surveyed
Image reference(s): Figure B- 26
Aboriginal sites identified: Not yet surveyed

The property still requires survey in accordance with CoA B31 and will be assessed in accordance with the methodology described in Section 5.2 of the HumeLink East HMP. The current disturbance footprint extends within the unsurveyed area.

Property ID / NOHC Survey Unit: BY-046 / ULS-SU11
Survey date: 12 August 2025
Personnel: KNC Archaeologist & Representatives from Pejar LALC
Image reference(s): Figure B- 27
Aboriginal sites identified: N/A

Landforms included heavily eroded mid- to upper hillslopes and crests on steep terrain between Turrallo Creek and the Tarlo River. Ground surface visibility was generally low due to pasture grasses; however exposures were present along stock tracks, vehicle tracks and in steeper areas affected by erosion. Scattered quartz gravels and cobbles were present on the surface along with abundant bedrock outcropping in the western part of the survey area on very steep, almost precipitous slopes. Exposures were eroded down to red-brown B horizon gravelly clay and intact soils across the remainder of the disturbance footprint appeared thin or absent.

Previous sensitivity modelling for this NOHC survey units described a range of sensitivity, primarily low across the steeper terrain of the current proposed disturbance footprint, rising to moderate and high adjacent to minor drainage features and on flatter areas of ground. Based on the field survey results, the current disturbance footprint was considered to display low archaeological sensitivity.

Property ID / NOHC Survey Unit: BY-007 / ULS-SU18
Survey date: Not yet surveyed
Personnel: Not yet surveyed
Image reference(s): Figure B- 28
Aboriginal sites identified: Not yet surveyed

The property still requires survey in accordance with CoA B31 and will be assessed in accordance with the methodology described in Section 5.2 of the HumeLink East HMP. The current disturbance footprint does not extend within the unsurveyed area.

Property ID / NOHC Survey Unit: BY-006 / ULS-SU18
Survey date: 13 December 2024 and 04 August 2025
Personnel: KNC Archaeologist & Representatives from Pejar LALC
Image reference(s): Figure B- 28
Aboriginal sites identified: HLE G PAD 2, HLE G PAD 34

Landforms comprised mid to lower slopes off sloping spur crests adjacent to Bannaby Creek and tributaries. Terrain rose to the east and west with slope gradient increasing towards the margins of the survey area. Steeper landforms had surface cobbles and scattered rock outcrop. Exposures were present in several areas however no surface artefacts were identified. Short, steep slopes dropping to the creek gully revealed exposures of yellow-brown sandy loam with abundant alluvial gravels. Some disturbance was evident from drainage works, pig ruts, dams and soil contour banks. Further form the creek these revealed intact pale brown sandy soil profiles. Ground cover included pasture grasses and scattered sedge with low visibility. Two PADs were recorded during the survey: HLE G PAD 2 and HLE G PAD 34.

HLE G PAD 2 was located on the eastern side of Bannaby Creek, across the gentle lower slope on either side of the drainage tributary. Ground disturbance appeared low, limited to a soil contour bank. The south western part of the PAD was slightly more elevated and incorporated the midslope of a small crest landform. HLE G PAD 34 was recorded on the western side of Bannaby Creek, across gentle gradient elevated lower slopes off a small, eroded crest landform with scattered rock outcrop. The PAD area was positioned between Bannaby Creek and a small (dammed) drainage line. Both PADs are impacted by the current disturbance footprint.

The majority of this NOHC survey unit was previously assessed as displaying high and moderate sensitivity on the lower gradient landforms surrounding the watercourses, low on steeper gradient slopes and for the eroded drainage channels and disturbed around dams and along tracks. Based on the field survey results, the current disturbance footprint was considered to display moderate sensitivity within the assessed PAD areas and low archaeological sensitivity in the remainder.

Property ID / NOHC Survey Unit: BY-003 / ULS-SU19
Survey date: 13 December 2024
Personnel: KNC Archaeologist & Representatives from Pejar LALC
Image reference(s): Figure B- 29
Aboriginal sites identified: HLE G PAD 1, Bannaby 1 (AHIMS 52-1-0152), HL-65 (AHIMS 52-1-0415)

This area comprised elevated ridgeline crests and moderately steep side slopes above a second order north-running tributary of Bannaby Creek, with dendritic first order drainage running down the sideslopes to the central drainage gully. Narrow areas of gentler gradient lower slope were present alongside the drainage lines. Disturbance was evident from dam and road construction, soil contour banking, use of farm tracks and severe gully and sheet erosion along the creeklines. Exposures in these areas were inspected for artefacts but none were identified. Soils in exposure were pale brown and sandy, with visibility limited by pasture grass.

The recorded site location of modified tree site HL-65 (AHIMS 52-1-0415) was revisited, and the tree was relocated and confirmed to be outside the current disturbance footprint. Previously recorded artefact site Bannaby 1 (AHIMS 52-1-0152) was confirmed on the western ridge crest adjacent to the existing transmission line however no surface artefacts were located. One PAD was recorded, HLE G PAD 1. This was positioned along the spine of the eastern ridge crest, extending south across a saddle and towards another crest and upper slopes above a tributary drainage line. The PAD extends outside of the previously unsurveyed area of BY-003. Bannaby 1 and HLE G PAD 1 are impacted by the current disturbance footprint. HL-65 is not currently impacted.

Previous sensitivity mapping for this NOHC survey unit indicated high sensitivity along the more prominent ridgelines and spurs, moderate across the midslopes, and low on steeper slopes bordering the drainage lines and crests. Disturbance was mapped along Hanworth Road and around dams. Based on the field survey results, the current disturbance footprint was considered to display moderate sensitivity within the recorded site and PAD locations and low archaeological sensitivity in the remainder.

5.2.2 Access tracks

The following Section describes the survey results for the current disturbance footprint within proposed access tracks that were identified as "unsurveyed".

Access track(s) & Property ID: AT-463 (MA-047)
Survey date: 24 March 2025
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 1
Aboriginal sites identified: N/A

Unfocused slope above minor drainage line with no ground surface visibility. Survey did not identify any Aboriginal heritage sites, objects, areas of subsurface archaeological potential or features of significance within the disturbance footprint.

Access track(s) & Property ID: AT-449, AT-451, AT-452 (MA-051)
Survey date: 28 January 2025
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 30
Aboriginal sites identified: HLE T PAD 21

The majority of these tracks comprised areas of existing disturbance along existing, graded and top-dressed access tracks, or were across slopes considered too steep for any retention of archaeological deposit. HLE T PAD 21 was recorded across a gently inclined creekflat landform adjacent to a tributary of Sandy Creek, on either side of the existing disturbed vehicle track. The PAD is impacted by the current disturbance footprint. The remaining track areas display low potential.

Access track(s) & Property ID: AT-451, AT-450 (MA-054)
Survey date: Not yet surveyed
Personnel: Not yet surveyed
Image reference(s): Figure B- 30
Aboriginal sites identified: Not yet surveyed

The access tracks still require survey in accordance with CoA B31 and will be assessed in accordance with the methodology described in Section 5.2 of the HumeLink East HMP. The current disturbance footprint does impact this unsurveyed area.

Access track(s) & Property ID: AT-443 (MA-059A)
Survey date: 24 March 2025
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 31
Aboriginal sites identified: N/A

This area comprised a partly formed, moderately steep, rocky and eroded 4WD track alongside a fence-line. The route traversed hillslope landforms along the fence to the north-west and then a spur feature immediately to the west. Survey did not identify any Aboriginal heritage sites, objects, areas of subsurface archaeological potential or features of significance within the disturbance footprint.

Access track(s) & Property ID: AT-442, AT-441, AT-440, AT-439, AT-437 and unnamed track (MA-059-02)
Survey date: 28 January 2025 & 18 June 2025
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 32**,** Figure B- 33
Aboriginal sites identified: HLE T PAD 41, HLE T PAD 42

The majority of these tracks comprised areas of existing disturbance along existing access tracks or were across steep or unfocused slopes with minor drainage features. Two PADs were identified, both in the southern part of the surveyed area. HLE T PAD 41 and HLE T PAD 42 were located on gentle, open lower slopes with only low levels of disturbance. Small exposures revealed intact sandy granite-derived soil profiles. The PAD landforms represent the lower-gradient portions of this landscape. Both PADs are impacted by the current disturbance footprint. The remaining track areas display low potential.

Access track(s) & Property ID: AT-439, AT-434 (MA-059-03)
Survey date: 18 June 2025
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 34
Aboriginal sites identified: N/A

AT-439 comprised the current Rocky Gully Road and was highly disturbed. AT-434 was an unformed route through cleared farm paddocks across a creek gully, and a rough farm track up steep slopes to a spur at the northern end. Survey did not identify any Aboriginal heritage sites, objects, areas of subsurface archaeological potential or features of significance within the disturbance footprint.

Access track(s) & Property ID: AT-431 and unnamed track area (MA-059-09 / MA-059-08)
Survey date: 2 December 2024
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 2
Aboriginal sites identified: N/A

Proposed tracks were located on low-lying, heavily grassed areas of the Gocup Creek floodplain with very low archaeological potential. Survey did not identify any Aboriginal heritage sites, objects, areas of subsurface archaeological potential or features of significance within the disturbance footprint.

Access track(s) & Property ID: AT-428, AT-426, unnamed track area (MA-059-10)
Survey date: 2 July 2024 & 30 June 2025
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 3
Aboriginal sites identified: HLE T PAD 39, HLE T PAD 40 (including AHIMS 56-3-0336)

The northern part of the survey area comprised gentle lower slopes and narrow creek flats surrounding a confluence of tributaries to the Tumut River. The southern part of the survey area comprised a saddle leading south west to a level, benched area within the lower slope adjacent to the river. HLE T PAD 40 was recorded on the low gradient landforms at the northern end, in the vicinity of and including previously recorded AHIMS site 56-3-0336. At the southern end of the survey area, HLE T PAD 39 was recorded across a saddle and adjacent bench overlooking the Tumut River. Both PADs are impacted by the current disturbance footprint. The remaining track areas display low potential.

Access track(s) & Property ID: AT-423, unnamed track area (MA-059-12 / MA-059-13 / MA-059-13A)
Survey date: 3 December 2024
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 4
Aboriginal sites identified: HLE T TRE 1, HLE T PAD 23

These areas included an existing track up moderate to steep slopes to a rocky, exposed ridge crest and saddle bordered by steep slopes, and a short section of sideslopes below a defined crest to the north east above Bungle Road. HLE T PAD 23 was recorded on a defined knoll crest above a bend in Brungle Road. This PAD is not impacted by the current disturbance footprint. HLE T TRE 1 comprised a potential modified tree site (a directional/ring tree) located on the ridge crest. The site is not impacted by the current disturbance footprint. The remaining track areas display low potential.

Access track(s) & Property ID: AT-419, AT-420 (MA-059-15) & AT-417, AT-418, AT-416 (MA-059-16)
Survey date: 11 March 2025
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 5
Aboriginal sites identified: N/A

The proposed tracks are located across steep hill slopes and upper slopes off crests, as well as steep slopes into gullies, and were heavily eroded. Portions of most tracks had been modified for farmer access. The landforms were considered too steep for intact soils and were typically eroded to red-brown clay subsoils and background gravels. Survey did not identify any Aboriginal heritage sites, objects, areas of subsurface archaeological potential or features of significance within the disturbance footprint.

Access track(s) & Property ID: AT-412, unnamed track area (MA-077-01)
Survey date: 2 December 2024
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 7
Aboriginal sites identified: N/A

These area comprised unfocused moderate gradient mid hill slopes above steep drainage gullies. Survey did not identify any Aboriginal heritage sites, objects, areas of subsurface archaeological potential or features of significance within the disturbance footprint.

Access track(s) & Property ID: AT-353 to 358 (MA-100)
Survey date: 25 March 2025
Personnel: KNC Archaeologist & Representatives from Brungle Tumut LALC
Image reference(s): Figure B- 11
Aboriginal sites identified: N/A

This track area was positioned across the eastern midslopes of a low crest containing a farmhouse and outbuildings. An existing partly formed farm track ran through the area and other disturbance was evident from cropping and soil contour bank works. The track crosses a deep, eroded gully around Cart Road Creek. Exposures were inspected for artefacts but none were identified. Survey did not identify any Aboriginal heritage sites, objects, areas of subsurface archaeological potential or features of significance within the disturbance footprint.

Access track(s) & Property ID: AT B W 52 (YG-025 / AT027B)
Survey date: 3 December 2024
Personnel: KNC Archaeologist & Representatives from Onerwal LALC
Image reference(s): Figure B- 35
Aboriginal sites identified: N/A

The track crosses lower slopes and boggy areas around the headwaters of Black Range Creek then rises up steep, cleared slopes with abundant rock outcrop towards a spur and steep saddle between knolls. Sheet erosion on slopes was evident, with gully erosion along the drainage lines. The survey area mostly followed an existing access track, eroded down to red-brown subsoils and partly top-dressed. Survey did not identify any Aboriginal heritage sites, objects, areas of subsurface archaeological potential or features of significance within the disturbance footprint.

Access track(s) & Property ID: AT-290, unnamed track areas, AT-288 (YG-024)
Survey date: 29 January 2025
Personnel: KNC Archaeologist & Representatives from Onerwal LALC
Image reference(s): Figure B- 36
Aboriginal sites identified: HLE Y21

Landforms comprised steep, eroded slopes leading down to a broad crest overlooking a Bogolong Creek tributary at AT-290 in the west, and a boggy drainage depression and slopes up to a small rise at AT-288 east of Burrinjuck Road. The small unnamed track areas were located on a featureless midslope and in a gullied, eroded area next to the tributary creekline. One archaeological site was identified in the western part of the survey area. HLE Y21 comprised a small artefact scatter on the existing track and gate on the broad crest landform of AT-290. A silcrete medial flake fragment, chert flake, and IMT flake were recorded in a large sheet erosion exposure. Potential for subsurface deposit was assessed as low due to extensive erosion and disturbance. The site will be impacted by the current disturbance footprint. The remaining track areas display low potential.

Access track(s) & Property ID: AT-287, AT-286, AT-284 to 286, AT-285, AT-284, AT-283 (YG-020)
Survey date: 29 January 2025 and 15 July 2025
Personnel: KNC Archaeologist & Representatives from Onerwal LALC
Image reference(s): Figure B- 37**,** Figure B- 38
Aboriginal sites identified: HLE Y29, HLE Y30, HLE Y PAD 23, HLE Y PAD 24

These proposed access tracks included a range of landforms. Gradients were steeper in the west, rising and falling over broad crests with moderately inclined side slopes and minor drainage lines. Two archaeological sites were identified in the western part of the survey area. HLE Y29 comprised a good quality pink silcrete angular fragment identified in an exposure along the dam wall of a modified tributary of Burnt Hut Creek. The assessed site extent included the gentle bordering slopes to the east and south which were less disturbed. HLE Y30 was located to the west, and comprised a silcrete core tool identified in an area of bulldozer disturbance on a gentle midslope overlooking a boggy/swampy area associated with the creek tributary. Intact soil profiles were visible in exposure and the site area was assessed as incorporating the associated landform.

PAD sites HLE Y PAD 23 and HLE Y PAD 24 were recorded at the eastern end of the survey area, on gentle, low gradient landforms overlooking a confluence of small tributaries to Woolgarlo Creek flowing south east to the Murrumbidgee River. HLE Y PAD 23 included a small rise and low slope bordered to the west by a boggy low-lying area and to the north and east by the creekbank. HLE Y PAD 24 incorporates the landform associated with previously recorded site BH-OS-1 (AHIMS 51-4-0048, located outside the project boundary). These areas were favourable landforms and appeared to retain some depth of soil. Both sites and PADs will be impacted by the current disturbance footprint. The remaining track areas display low potential.

Access track(s) & Property ID: AT-256 (YG-009)
Survey date: Not yet surveyed
Personnel: Not yet surveyed
Image reference(s): Figure B- 14
Aboriginal sites identified: Not yet surveyed

The access track still requires survey in accordance with CoA B31 and will be assessed in accordance with the methodology described in Section 5.2 of the HumeLink East HMP. The current disturbance footprint does impact this unsurveyed area.

Access track(s) & Property ID: AT-174 (BY-113 / BY-111)
Survey date: 27 March 2025
Personnel: KNC Archaeologist & Representatives from Onerwal LALC
Image reference(s): Figure B- 18
Aboriginal sites identified: HLE G PAD 8

This proposed access track was located east of the confluence of Merrill Creek with the Lachlan River. The sections of track north of Merrill Creek were steeply sloping and eroded, with no archaeological potential. South of the creek, landform comprised broader, gentler lower slopes rising to an elevated low crest overlooking the confluence. This area was designated as HLE G PAD 8 with moderate potential for subsurface deposit. Deep, pale brown soils were visible in localised areas of pig rut disturbance. The PAD would be impacted by the current disturbance footprint. The remaining track areas display low potential.

Access track(s) & Property ID: AT-173 (BY-112-01A)
Survey date: Not yet surveyed
Personnel: Not yet surveyed
Image reference(s): Figure B- 18
Aboriginal sites identified: Not yet surveyed

The access track still requires survey in accordance with CoA B31 and will be assessed in accordance with the methodology described in Section 5.2 of the HumeLink East HMP. The current disturbance footprint does impact this unsurveyed area.

Access track(s) & Property ID: AT-163 (BY-107)
Survey date: 10 December 2024
Personnel: KNC Archaeologist & Representatives from Onerwal LALC
Image reference(s): Figure B- 20
Aboriginal sites identified: HLE G PAD 14, HLE G PAD 15

This short section of track incorporated a crest landform at Sapphire Road sloping down to the east towards Middle Creek. Ground surface visibility was low to zero. The proposed access track intersected the southern margins of PADs HLE G PAD 14 and HLE G PAD 15. HLE G PAD 14 was recorded on the crest adjacent to Sapphire Road, with HLE G PAD 15 occupying the gentle slope to flat landform bordering Middle Creek. Both PADs are impacted by the current disturbance footprint. The remaining track areas display low potential.

Access track(s) & Property ID: AT-152 to 152p1 (BY-097)
Survey date: 26 March 2025
Personnel: KNC Archaeologist & Representatives from Onerwal LALC
Image reference(s): Figure B- 21
Aboriginal sites identified: N/A

This survey area included short sections of proposed track area west of Merrill Creek. Landforms comprised lower slopes extending east from Grabben Gullen Road, rising steeply to a thickly wooded crest overlooking Merrill Creek through the central part of the area. Survey did not identify any Aboriginal heritage sites, objects, areas of subsurface archaeological potential or features of significance within the disturbance footprint.

Access track(s) & Property ID: AT-150, AT-148 (BY-101)
Survey date: 26 March 2025
Personnel: KNC Archaeologist & Representatives from Onerwal LALC
Image reference(s): Figure B- 22
Aboriginal sites identified: N/A

These track areas comprised unfocused midslope landforms with low to no ground surface visibility and only minor drainage. Survey did not identify any Aboriginal heritage sites, objects, areas of subsurface archaeological potential or features of significance within the disturbance footprint.

Access track(s) & Property ID: AT-146 (BY-100)
Survey date: 26 March 2025
Personnel: KNC Archaeologist & Representatives from Onerwal LALC
Image reference(s): Figure B- 22Figure B- 39
Aboriginal sites identified: N/A

This small, proposed track area was located on an upper slope overlooking a drainage line, with low ground surface visibility and no landscape focus. Survey did not identify any Aboriginal heritage sites, objects, areas of subsurface archaeological potential or features of significance within the disturbance footprint.

Access track(s) & Property ID: AT-068, AT-067 to 068 (BY-044)
Survey date: 30 January 2025
Personnel: KNC Archaeologist & Representatives from Pejar LALC
Image reference(s): Figure B- 39
Aboriginal sites identified: N/A

The southern section of proposed access track was located across very steep slopes on the eastern margins of the Turrallo Creek drainage valley. Disturbance was evident along a narrow creek crossing and in areas of erosion and soil movement. Rock outcrop was visible on the surface and exposed background gravels with no intact soil. The northern part of the survey area along AT-067 to 068 comprised the steep lower slope of a southerly running ridgeline bordered by Turrallo Creek and a tributary. The area was thickly vegetated with blackberries and exotic weeds, with zero visibility. Survey did not identify any Aboriginal heritage sites, objects, areas of subsurface archaeological potential or features of significance within the disturbance footprint.

Access track(s) & Property ID: AT-015 (BY-008)
Survey date: 31 January 2025
Personnel: KNC Archaeologist & Representatives from Pejar LALC
Image reference(s): Figure B- 40
Aboriginal sites identified: N/A

The proposed track alignment crosses mid hillslopes off eroded crests to the east and west. The track partially follows an existing, informal 4WD track. Areas of erosion were common, with evidence of soil movement and rocky, background gravels in exposure and scattered cobbles amongst the pasture grass. Ground surface visibility was low off areas of disturbance. Survey did not identify any Aboriginal heritage sites, objects, areas of subsurface archaeological potential or features of significance within the disturbance footprint.

Access track(s) & Property ID: Unnamed track area (BY-006)
Survey date: 13 December 2024 and 04 August 2025
Personnel: KNC Archaeologist & Representatives from Pejar LALC
Image reference(s): Figure B- 28
Aboriginal sites identified: N/A

This small, unsurveyed access track area was located on a steep mid hillslope with zero ground visibility. The area displayed no potential due to gradient. Survey did not identify any Aboriginal heritage sites, objects, areas of subsurface archaeological potential or features of significance. The current disturbance footprint does not impact this area.

Access track(s) & Property ID:	AT-011, AT-010 (BY-005)
Survey date:	28 March 2025 and 23 July 2025
Personnel:	KNC Archaeologist & Representatives from Pejar LALC
Image reference(s):	Figure B- 41
Aboriginal sites identified:	N/A

AT-011 primarily comprised an existing eroded vehicle track crossing steep gully slopes of a Bannaby Creek tributary. Surrounding slopes are extremely steep up to the narrow spur crests to the south east and south west. The slope was severely eroded with red-brown exposed clay and colluvium towards the creek crossing. Steep, precipitous slopes occur off the ridgeline. AT-010 was located on a cleared crest, with some scattered cobbles on the surface and low pasture grass. Survey did not identify any Aboriginal heritage sites, objects, areas of subsurface archaeological potential or features of significance within the disturbance footprint.

5.3 Survey coverage

Ground surface exposure and visibility was generally low throughout the unsurveyed areas. Exposures were present in areas of contemporary land use disturbance including existing vehicle tracks, around dams, and associated with agricultural infrastructure such as fencelines, gates and farm buildings. Animal activity such as stock movement/tracks and pig rutting also created exposures in some areas. The majority of the study area is cleared and vegetated with pasture grasses, offering zero ground surface visibility in the majority of the alignment. Natural exposures were present in areas of sheet erosion, especially associated with areas of disturbance, and gully erosion along incised creeklines and drainage channels. Many of these were modified with inline farm dams. In most cases, these exposures were eroded down to basal clays or the rocky interface above underlying bedrock, particularly on steeper gradient slopes where soils were shallow and colluvial movement was greater.

Where exposures were present, visibility tended to be limited by scattered vegetation including pasture grasses, tussock and sedges, leaf litter, and background gravels. The nature of background coarse fragments varied along the project alignment, reflecting the complex underlying geologies present. In the eastern half of the study area, natural quartz gravels were especially prevalent, necessitating careful inspection to determine if the material was artefactual or not. Topdressing materials including blue metal and sandstone rubble were also encountered along vehicle tracks.

Survey coverage estimates were recorded for the current disturbance footprint within each NOHC survey unit and are given in Table 3 below. It is noted that ground surface visibility and exposure as reported below for the current disturbance footprint is generally higher than that offered by the remainder of the study area. This is primarily due to the project's use of existing vehicle tracks and access points (with greater visibility due to higher levels of disturbance), and more intensive ground inspection by the survey team within the proposed impact area.

Table 3. Survey coverage analysis

Survey Unit	NOHC survey	KNC survey	Landform	Survey unit area (m^2)	Visibility %	Exposure %	Effective coverage area (m^2) (survey unit area x visibility % x exposure %)	Effective coverage % (effective coverage area / survey unit area x 100)
CG-SU01	Partially completed	Completed	Streambank	3387	60	30	609.99	18%
CG-SU03	Partially completed	Completed	Gentle slopes	124568	30	15	5605.56	45%
CG-SU04	Partially completed	Completed	Crest	115563	70	15	12134.12	11%
CG-SU07	Partially completed	Completed	Streambank & crest	25363	80	30	6048	24%
CG-SU14	Partially completed	Completed	Steep slopes	21658	60	25	3150	15%
CG-SU15	Partially completed	Completed	Steep slopes & crest	18335	70	15	1925.49	11%
CG-SU16	Not completed	Completed	Moderate slopes	23018	60	30	4143.24	18%
SV-SU30	Partially completed	Completed	Moderate slopes	5771	60	30	1038.78	18%
SV-SU33	Partially completed	Completed	Gentle slopes	25741	60	20	3088.92	12%
SV-SU35	Completed	Completed	Crest & moderate slopes	17732	50	25	2216.5	12%
SV-SU36	Partially completed	Completed	Moderate slopes	57376	60	30	10327.68	18%
SV-SU37	Completed	Completed	Valley flat	6777	60	30	1219.86	18%
SV-SU39	Not completed	Completed	Valley flat	3543	50	25	354.3	10%
SV-SU40	Not completed	Completed	Streambank	3708	50	25	463.5	12%
SV-SU41	Partially completed	Completed	Crest	8230	40	15	493.8	6%
SV-SU42	Not completed	Completed	Crest	28385	50	25	3548.12	12%
SV-SU43	Partially completed	Completed	Streambank	9741	60	30	1753.38	18%
SV-SU45	Partially completed	Completed	Valley flat	5735	40	30	688.2	12%

Survey Unit	NOHC survey	KNC survey	Landform	Survey unit area (m^2)	Visibility %	Exposure %	Effective coverage area (m^2) (survey unit area x visibility % x exposure %)	Effective coverage % (effective coverage area / survey unit area x 100)
ULS-SU03	Partially completed	Completed	Plain	14958	30	10	448.74	3%
ULS-SU04	Partially completed	Partially completed	Gentle slopes & streambank	8168	20	20	326.72	4%
ULS-SU05	Partially completed	Completed	Gentle slopes	86652	60	30	15597.36	18%
ULS-SU06	Not completed	Completed	Moderate slopes	27054	40	20	2164.32	8%
ULS-SU07	Partially completed	Completed	Gentle slopes	12398	40	15	743.88	6%
ULS-SU08	Partially completed	Partially completed	Crest & gentle slopes	6807	40	50	1361.4	20%
ULS-SU11	Partially completed	Completed	Streambank & steep slopes	11,512	40	50	2302.4	20%
ULS-SU18	Partially completed	Partially completed	Streambank & steep slopes	49723	40	20	3977.84	8%
ULS-SU19	Partially completed	Completed	Moderate slopes & crest	67852	30	10	2035.56	3%
ULS-SU20	Partially completed	Not completed*	Crest					
YV-SU01	Partially completed	Completed	Ridge	32488	20	15	972	3%
YV-SU05	Partially completed	Not completed*	Crest					
YV-SU07	Partially completed	Completed	Crest	73288	50	15	5496.6	8%
YV-SU08	Partially completed	Partially completed	Moderate slopes & streambank	43717	25	15	2732.31	6%

*Survey units containing properties which have not yet been surveyed still require completion.

5.4 Revised archaeological sensitivity estimates

While ground surface exposure and visibility were generally low across the project footprint, numerous surface sites were identified and recorded, and estimations of archaeological sensitivity have been updated for the current disturbance footprint based on the field survey findings and ground-truthing of the model. Moderate/high sensitivity was ascribed to identified surface site locations and areas with at least moderate potential for subsurface deposits (PADs). Low/disturbed sensitivity was ascribed to areas of lower potential due to unsuitable landform or landscape disturbance.

Table 4. Archaeological sensitivity estimates following field survey

Property ID / NOHC survey unit	Updated estimate for disturbance footprint following field survey	
	Moderate/High	Low / Disturbed
MA-047 / SV-SU33	2	98
MA-059-01 / N/A	N/A - area not currently impacted	
MA-059-07 / SV-SU39	0	100
MA-059-08 / SV-SU39, SV-SU-40	40	60
MA-059-09 / SV-SU35, SV-SU39, SV-SU-40	30	70
MA-059-10 / SV-SU40, SV-SU41	20	80
MA-059-13 / SV-SU41, SV-SU42	35	65
MA-059-13A / SV-SU41	N/A - area not currently impacted	
MA-059-15 & MA-059-16 / SV-SU41, SV-SU42	0	100
MA-077 / SV-SU42, SV-SU43	15	85
MA-077-01 / SV-SU36	0	100
MA-085 / SV-SU30, SV-SU37, SV-SU45	0	100
MA-088 / CG-SU14	35	65
MA-089 / SV-SU30	0	100
MA-094 / CG-SU01, CG-SU15, CG-SU16	15	85
MA-100 / CG-SU03, CG-SU04	0	100
YG-034 / CG-SU07	60	40
YG-031 / CG-SU07, YV-SU01	30	70
YG-009 / YV-SU05	0	100
BY-156 / YV-SU07	35	65
BY-152 / YV-SU08	N/A - area not currently impacted	
BY-151 / YV-SU08	100	0
BY-150 / YV-SU08	50	50
BY-128-01 / ULS-SU03	40	60
BY-112-01A / ULS-SU04	Not yet surveyed - access unavailable	
BY-108 & BY-109 / ULS-SU04, ULS-SU05	10	90
BY-107 / ULS-SU05	70	30
BY-097 / ULS-SU06	20	80
BY-101 / ULS-SU06, ULS-SU07	10	90
BY-090 / ULS-SU20	Not yet surveyed - access unavailable	
BY-074 / ULS-SU08	60	40
BY-072 / ULS-SU08	5	95
BY-070 / ULS-SU08	Not yet surveyed - access unavailable	
BY-046 / ULS-SU11	0	100
BY-007 / ULS-SU18	N/A - area not currently impacted	
BY-006 / ULS-SU18	50	50
BY-003 / ULS-SU19	55	45

5.5 Summary

Sixteen Aboriginal archaeological sites and 36 areas of PAD were identified within the unsurveyed areas assessed as part of the field survey program. These included several previously recorded sites, and a number of new recordings (Appendix D). Outside of the PAD areas and identified sites, the remainder of the disturbance footprint was generally considered to display low archaeological potential and sensitivity due to combinations of archaeologically unfavourable topography, natural erosional, colluvial or fluvial processes and disturbance from land use practices.

Recommendations for further investigation of identified sites and PADs were developed based on the principles outlined in Section 5.2 of the HumeLink East HMP, and whether the PAD or site area stands to be impacted by the current disturbance footprint. Archaeological test excavation was subsequently carried out for locations where it was determined that further investigation was required to establish the nature and extent of the potentially impacted archaeology. Table 5 below summarises the archaeological findings of the field survey and whether further investigation in the form of test excavation is recommended. It is noted that some currently impacted PADs/sites have not yet been subject to testing (See Section 12.2) due to access restrictions, and similarly that three properties (BY-112-01A, BY-090 and BY-070) and additional access track locations (AT-451 and AT-450 (MA-054), AT-256 (YG-009), and AT-173 (BY-112-01A)) within the current proposed disturbance footprint still require field survey (see Section 12.1).

Table 5. Field survey results and recommendations

Survey Area	Name	Type	Currently impacted?	Test excavation recommended?
MA-047	HLE T PAD 16	PAD	Yes	No (already completed under UMM AH5)
	HLE T PAD 19	PAD	Yes	No (already completed under UMM AH5)
MA-059-08	HLE T PAD 22	PAD	Yes	Yes
MA-059-08 / MA-059-09	HLE T PAD 38	PAD	No	Yes if disturbance footprint changes
MA-059-09	HLE T PAD 8	PAD	Yes	Yes
MA-059-10, AT-426	HLE T PAD 40 (including AHIMS 56-3-0336)	Surface artefact site and PAD	Yes	Yes
MA-059-10, AT-428	HLE T PAD 39	PAD	Yes	Yes
MA-059-13A, unnamed track area	HLE T PAD 23	PAD	No	Yes if disturbance footprint changes
MA-077	HLE T PAD 24	PAD	Yes	Yes
MA-088	HLE T26	Surface artefact site and PAD	Yes	Yes
MA-094	HLE T27	Surface artefact site	Yes	No
	HLE T28	Surface artefact site	Yes	No
YG-034	HLE Y PAD 11	PAD	Yes	Yes
	HLE Y PAD 27	PAD	Yes	Yes
YG-031	HLE Y PAD 29	PAD	Yes	Yes
	HLE Y PAD 13	PAD	Yes	Yes
	HLE Y16	Surface artefact site and PAD	Yes	Yes
	HLE Y17	Surface artefact site and PAD	Yes	Yes
BY-156	HLE Y PAD 30	PAD	Yes	Yes
	HLE Y PAD 31	PAD	Yes	Yes
	HLE Y PAD 32	PAD	No	Yes if disturbance footprint changes
	HLE Y32	Surface artefact site and PAD	Yes	Yes
BY-151	HLE Y PAD 5	PAD	Yes	Yes
BY-150	HLE Y PAD 6	PAD	Yes	Yes
BY-128-01	HLE Y PAD 25	PAD	Yes	Yes
	HLE Y PAD 28	PAD	No	Yes if disturbance footprint changes
BY-108	HLE G PAD 13	PAD	Yes	Yes
BY-107, AT-163	HLE G PAD 14	PAD	Yes	Yes

Survey Area	Name	Type	Currently impacted?	Test excavation recommended?
BY-107, AT-163	HLE G PAD 15	PAD	Yes	Yes
BY-107	HLE G PAD 16	PAD	Yes	Yes
	HLE G PAD 17	PAD	Yes	Yes
BY-101	HLE G PAD 21	PAD	Yes	Yes
BY-101 / BY-097	HLE G PAD 19	PAD	Yes	Yes
BY-097	HLE G PAD 18	PAD	Yes	Yes
BY-074	HLE G12	Surface artefact site and PAD	Yes	Yes
BY-072	HLE G31	Surface artefact site	Yes	No
	HLE G30	Surface artefact site	No	No
BY-006	HLE G PAD 2	PAD	Yes	Yes
	HLE G PAD 34	PAD	Yes	Yes
BY-003	HLE G PAD 1	PAD	Yes	Yes
	Bannaby 1 (AHIMS 52-1-0152)	Surface artefact site and PAD	Yes	Further testing not required. Recommend salvage excavation.
	HL-65 (AHIMS 52-1-0415)	Modified Tree	No	No
AT-451 (MA-051)	HLE T PAD 21	PAD	Yes	Yes
AT-441 (MA-059-02)	HLE T PAD 41	PAD	Yes	Yes
	HLE T PAD 42	PAD	Yes	Yes
AT-423 (MA-059-13)	HLE T TRE 1	Potential modified tree	No	No
AT-290 (YG-024)	HLE Y21	Surface artefact site	Yes	No
AT-287 (YG-020)	HLE Y29	Surface artefact site and PAD	Yes	Yes
AT-286 (YG-020)	HLE Y30	Surface artefact site and PAD	Yes	Yes
AT-284 (YG-020)	HLE Y PAD 23	PAD	Yes	Yes
	HLE Y PAD 24	PAD	Yes	Yes
AT-174 (BY-113)	HLE G PAD 8	PAD	Yes	Yes

6 Archaeological Test Excavation

Review of existing archaeological data and subsequent field survey within the accessible unsurveyed areas for the current disturbance footprint identified 16 archaeological sites and 36 areas of PAD. Recommendations for further investigation of identified sites and PADs were developed based on the principles outlined in Section 5.2 of the HumeLink East HMP, and whether the PAD or site area stands to be impacted by the current project disturbance footprint. Archaeological test excavation was subsequently carried out for locations where it was determined that further investigation was required to establish the nature and extent of the potentially impacted archaeology and where access was available.

The purpose of the test excavation program was to collect information about the nature and extent of subsurface Aboriginal objects through excavation of a sample of identified areas. The test excavation program was undertaken at locations across the study area where further archaeological information was considered necessary, based on the extent of potential impact from the proposed works and assessed archaeological potential. Aims, methodology and results of the test excavation program are presented below.

6.1 Aims

The purpose of the test excavation program was to collect information about the presence/absence, nature, extent and condition of subsurface Aboriginal objects through excavation of a sample of the test areas. Test excavation aimed to build on the information already obtained through existing archaeological assessment for the areas carried out in accordance with the requirements of UMM AH3, the HumeLink East HMP and the *Code of Practice*. Test excavation results were then used to further inform the archaeological assessment. The first priority during the archaeological program was to minimise, as far as practicable, the risk of harm to objects under investigation. Additional goals of the test excavation were to assess the boundary of any archaeological deposits in relation to the disturbance footprint, to investigate the relationship between specific topographic features and archaeological deposits and to observe the effects of disturbance on archaeological deposits. This information was sought to assist in interpreting the archaeological landscape and aid management of the archaeological resource.

6.2 Sampling strategy and methodology

Field methodology was developed and carried out in accordance with the HumeLink East HMP and Heritage NSW *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*. The test excavation program was specifically designed to target questions of artefact survivability through assessing the intactness of the deposit. Testing methodology was consistent with that previously employed for the HumeLink project and the requirements of the HumeLink East HMP. In accordance with the *Code of Practice* and HumeLink East HMP methodology, test excavation units measured 50cm x 50cm (0.25m^2). Site datums were recorded at each test area, with test units then aligned along transects. The spacing of units along transects was generally 10 metres, with 15, 20, 30 and 40 metre intervals occasionally employed due to localised disturbances and the size of the investigation areas.

Test transects and squares were positioned to test identified archaeological elements within the disturbance footprint and occasionally at alternate track and tower site locations to inform the design process. At a number of areas, biodiversity restrictions limited ground disturbance including archaeological testing within the tower sites and track areas. The sampling area was also restricted to ensure an adequate sample of areas where project impacts are likely, without having significant impact on the archaeological value of any identified sites or in areas where no disturbance is currently proposed. Changes and refinements to the proposed disturbance footprint over the course of the program did not affect sampling of the general PAD landforms. The current proposed disturbance footprint is shown on the results mapping.

Easting/northing GPS coordinates (GDA 94, Zones 55 and 56) were taken at the north-west corner of each excavation unit. The test units were then given an arbitrary identifying number (e.g. TS1, TS2, TS3, etc.). A total of 183, 50cm x 50cm units were excavated during the program across the tested areas. Excavated totals for each test area are shown in Table 6. It was considered that sufficient information was recovered from the excavated sample at each area to adequately characterise the presence/absence and nature of the archaeology.

The first excavation unit at each test area was excavated in 5cm spits onto a culturally sterile deposit (generally basal clay or bedrock) to determine the nature of the subsurface deposit and the presence or absence of artefactual material. Based on the results of the first excavation square, subsequent squares in each area were excavated in 10cm spits until culturally sterile deposits were reached. Data including a detailed deposit description, excavated features and unit depths, was recorded by the excavators on standardised excavation unit recording sheets. At the end of the excavation program, all squares were photographed, and soil section profiles were recorded. Site plans were prepared for each excavated area showing the location of test squares and their relationship to the surrounding environment including the current disturbance footprint, landform/topography, vegetation, drainage and areas of disturbance.

Additional photographs were taken showing the field conditions at each area during testing. Plates 1-4 show typical test conditions across the investigated unsurveyed areas. All excavation was undertaken using hand tools. All excavated material was placed in buckets and dry sieved on site using a nested 2.5 millimetre wire mesh screen. Sieved spoil was retained for backfilling the test excavation squares at the completion of the excavation. A field catalogue of recovered artefacts was maintained to track artefact counts and recovery locations as the test excavation progressed. Following the completion of the excavation program, artefacts were retained for more detailed analysis including a precise recording of size, raw material and technical attributes. This information was compiled into a lithics database (Appendix E).

Table 6. Test excavation sample

Test Area	No. of test squares	TS numbers	Total sample
HLE T PAD 21	15	TS65 – TS79	3.75m^2
HLE T PAD 41	4	TS540 - TS543	1m^2
HLE T PAD 42	6	TS534 - TS539	1.5m^2
HLE T PAD 8	8	TS99 - TS106	2m^2
HLE T PAD 39	14	TS562 - TS575	3.5m^2
HLE T PAD 40	10	TS576 - TS585	2.5m^2
HLE T PAD 24	30	TS122 – TS151	7.5m^2
HLE Y PAD 27	29	TS396 - TS424	7.25m^2
HLE Y PAD 29	9	TS435 - TS443	2.25m^2
HLE Y PAD 5	12	TS53 – TS64	3m^2
HLE Y PAD 6	10	TS39 – TS52	2.5m^2
HLE G PAD 14	6	TS173 – TS178	1.5m^2
HLE G PAD 15	9	TS179 – TS187	2.25m^2
HLE G PAD 16	6	TS188 – TS193	1.5m^2
HLE G12	15	TS158 – TS172	3.75m^2

Plate 1. View south at HLE T PAD 39, hillslope overlooking Tumut River. Excavation and sieving in progress at TS573 and TS575.

Plate 2. View east at HLE Y PAD 27 on saddle landform. Excavation and sieving in progress at TS411, TS410 and TS409.

Plate 3. View northeast at HLE T PAD 21. Excavation and sieving in progress at TS65 and TS66.

Plate 4. View north at HLE Y PAD 6. Excavation and sieving in progress at TS41 and TS42.

6.3 Results

Test excavation was carried out by KNC and site officers from Pejar, Onerwal and Brungle-Tumut Local Aboriginal Land Councils in August-September 2024 and May-June 2025 in accordance with the approved methodology developed for the HumeLink East HMP and the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*. A total of 15 locations within the unsurveyed areas (one site and 14 PADs) were subject to test excavation, resulting in the confirmation of subsurface archaeological deposit at the existing site and nine of the PADs.

6.3.1 HLE T PAD 21

HLE T PAD 21 was located on a lower hillslope and alluvial flat bordering an existing disturbed access track north of a low order tributary, approximately 1.2 kilometres northeast of Sandy Creek. The PAD was located within the proposed disturbance footprint for access track AT-451 within property MA-051. Test squares were placed adjacent to the access track within the study area within the current disturbance footprint. The eastern part of the track beyond the dam was steeper, becoming rocky and heavily eroded and was not considered part of the PAD. Previous land use of the immediate area includes use as a grazing pasture and construction of the access track, with dam construction along drainage lines.

A total of 15, 50cm x 50cm test squares were excavated across the test area, giving a total excavated sample of 3.75m^2. Squares were placed within five separate transects following the alignment of the access track within the unsurveyed area and project boundary. Transect 1 (TS65-TS67) was oriented east-west, located on the western side of the PAD area north of the access track. Transect 2 (TS68-TS70) was oriented northeast to southwest on the southern side of the access track. Transect 3 (TS71 to TSTS73) was also located on the southern side of the access track, oriented east to west. Transect 4 (TS74 to TS76) was located south of the access track oriented northwest to southeast. Transect 5 (TS77 to TS79) was located at the eastern extent of the tested area, oriented northeast to southwest south of the access track. Test squares were placed at 10 or 20 metre intervals.

Test square distribution and results at HLE T PAD 21 are shown on Figure 13.

Plate 5. View east across hillslope at HLE T PAD 21. Excavated TS66 in foreground, excavation in progress at TS67 in background. Constructed access track on right.

Plate 6. View east at HLE T PAD 21, excavated TS 79 in midground. Steep rocky hillslope on left, drainage channel on right.

Soils and disturbance

The nature of the deposit varied across the 15 test squares at HLE T PAD 21, this variation resulting from land use disturbance and bioturbation. Disturbance was present from the existing access track running through the centre of the test area and a dam located north of the centre of the test area. Low to high levels of disturbance were present throughout all test squares, likely related to construction of the access track involving modification and truncation of soils with redeposited soil and mixing of the upper A unit soil profiles identified. Bioturbation from grass roots and insect activity was evident throughout all test squares.

Test squares displayed varying shallow to deep deposit depths, with the shallowest depth of 15cm encountered at TS65 and the deepest deposit of 80cm encountered at TS74. The remainder of test squares ranged between 25cm to 50cm depth. Soils generally consisted of a dark greyish brown silty loam with small gravels and varying levels of mottling from disturbance overlying a brown silty clay loam or grey silt. Some test squares contained large sandstone fragments up to 200mm in size. Where present, basal clays consisted of a brown silty clay with gravels continuing. The upper humic O horizon was generally shallow and consisted of a dark greyish brown silty loam with abundant grass roots. Charcoal was present as infrequent flecking throughout all test squares, indicating natural bushfires or use of fire in land clearing activities. Figures 10-12 illustrate the soil profiles at HLE T PAD 21.

Figure 10. TS70 south section and soil profile description

I. 0-2cm: Dark greyish brown silty loam, loose compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 2-23cm: Dark greyish brown silty loam, moderate compaction. Mixed redeposited soil. Gravels (<20mm, ~10%). Large sandstone fragments (<200mm). Scattered charcoal flecks. Diffuse boundary to:
III. 23-30cm: Brown silty clay loam, moderate-high compaction. Gravels increasing in abundance (~15%), charcoal flecks and sandstone fragments continuing.
IV. Base: Brown silty clay, high compaction. Gravels continuing.

Figure 11. TS74 north section and soil profile description

I. 0-1cm: Dark greyish brown silty loam, loose compaction. Humic with frequent grass roots. Diffuse boundary to:
II. 1-40cm: Dark greyish brown silty loam mottled with yellowish brown, moderate compaction. Mixed redeposited soil. Poorly sorted gravels (2-40mm, ~15%). Large sandstone fragments (<200mm). Scattered charcoal flecks. Diffuse boundary to:
III. 40-80cm: Grey silt, high compaction. Gravels increasing in abundance (~25%). Continues into base.

Figure 12. TS79 west section and soil profile description

I. 0-3cm: Dark greyish brown silty loam, loose compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 3-45cm: Dark greyish brown silty loam mottled with yellowish brown, moderate compaction. Mixed redeposited soil. Gravels (<10mm, ~20%). Scattered charcoal flecks. Diffuse boundary to:
III. 45-50cm: Grey silt, high compaction. Gravels increasing in abundance (~30%). Continues into base.

Artefact distribution

No artefacts were recovered from the test program at HLE T PAD 21.

Summary

No artefacts were recovered from the test program at this location. The area is not a PAD or archaeological site.

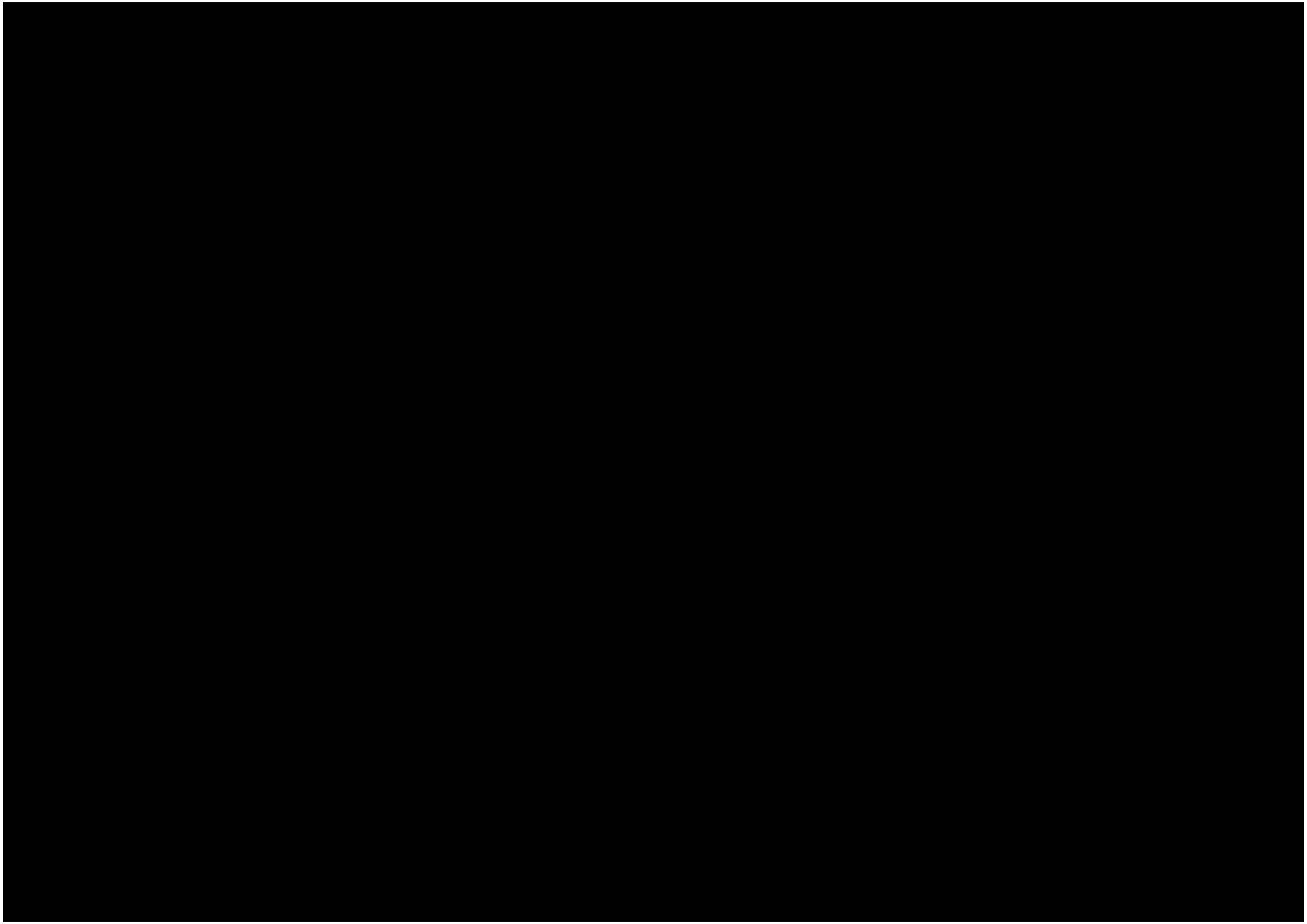


Figure 13. Test excavation results - HLE T PAD 21 (AT-451; property MA-051)

6.3.2 HLE T PAD 41

HLE T PAD 41 comprised a small PAD area located on the gentle slopes of a ridgeline approximately 700 metres east of Meadow Creek, overlooking a spring to the northwest. Test squares were placed within the portion of the PAD that overlapped the unsurveyed access track alignment for AT-441 within the study area at MA-059-02. Previous land use disturbance included existing access tracks, tree clearing and use as a grazing pasture.

A total of four test squares (50cm x 50cm) were excavated within the test area, giving a total excavated sample of 1m^2. Squares were aligned along two northeast to southwest oriented transects with each transect containing two test squares. Transect 1 (TS540 and TS541) was located on the western side of an existing access track and Transect 2 (TS542 and TS543) was located on the eastern side of the access track. All test squares were spaced at 10 metre intervals. Test square distribution and results at HLE T PAD 41 are shown on Figure 18.

Plate 7. View north at HLE T PAD 41. Excavated TS541 in midground, excavation in progress at TS542 in background at right. Existing access track on right.

Plate 8. View south at HLE T PAD 41. Disturbance from existing access track running north-south through PAD area. Excavation in progress at TS542 (left) and TS540 (right) in background.

Soils and disturbance

Soil profiles at HLE T PAD 41 were generally consistent across the four test squares. Bioturbation from grass roots and insect activity was evident throughout the test area, with disturbance from an animal burrow at TS541 and tree roots at TS540 and TS543.

Test squares displayed moderate deposits. The shallowest deposit was encountered at TS543, reaching a maximum depth of 20cm. All remaining test squares reached a maximum depth of 30cm. Soils consisted of a greyish brown sandy loam overlying a reddish brown sandy loam. Basal clays consisted of reddish brown sandy clays. The upper humic O horizon was well developed, consisting of a dark greyish brown sandy loam with abundant grass roots. All squares contained sub-rounded quartz and granite gravels measuring <10mm in size. Charcoal was present as infrequent flecking throughout all test squares, indicating natural bushfires or use of fire in land clearing activities. Figures 14-15 illustrate representative soil profiles at HLE T PAD 41.

I. 0-5cm: Dark greyish brown sandy loam, loose compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 5-8cm: Greyish brown sandy loam, moderate compaction. Gravels (<10mm, ~5%). Diffuse boundary to:
III. 8-30cm: Reddish brown sandy loam, moderate compaction. Gravels increasing in abundance (~15%), scattered charcoal flecks. Clay content increasing with depth. Animal burrow from 22cm to base in north and south section. Diffuse boundary to:
IV. Base: Reddish brown sandy clay, high compaction.

Figure 14. TS541 south section and soil profile description

I. 0-3cm: Dark greyish brown sandy loam, loose compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 3-8cm: Greyish brown sandy loam, moderate compaction. Gravels (<10mm, ~5%). Diffuse boundary to:
III. 8-20cm: Reddish brown sandy loam, moderate compaction. Gravels increasing in abundance (~15%), scattered charcoal flecks with a larger patch in southeast corner. Clay content increasing with depth. Diffuse boundary to:
IV. Base: Reddish brown sandy clay, high compaction.

Figure 15. TS543 south section and soil profile description

Artefact distribution

One artefact was recovered at HLE T PAD 41 from one of the four excavated test squares (TS541) (Table 7). The artefact was recovered from Spit 2 (10-20cm depth). The extrapolated mean artefact density across the test area was very low at 1 artefact/m^2.

Table 7. Artefact distribution – HLE T PAD 41

Square number	n
TS 540	0
TS 541	1
TS 542	0
TS543	0

Lithic characteristics

The artefact recovered from HLE T PAD 41 was a milky white quartz complete flake from TS541 (ID 581). The flake measured between 15-20mm in maximum dimension and weighed 1.51 grams. The flake contained a scarred platform and axial termination with a length greater than width flake shape. No cortex or usewear was present on the artefact.

Summary

The presence of subsurface archaeological material within the test area led to the designation of archaeological site HLE T4 (Figure 63). Potential for further subsurface deposit was assessed as low.

6.3.3 HLE T PAD 42

HLE T PAD 42 was located approximately 140 metres north of HLE T PAD 41 on a ridgeline containing gentle to moderate slopes from the northeast, outcropping granite, saddles, knolls and a bench, overlooking the spring to the south. Previous land use disturbance included use as a grazing pasture, construction of access tracks and mechanical tree clearing with bulldozer clearing lines visible on the surface at the northern side of the test area. The PAD was located within the proposed disturbance footprint for access track AT-441 within property MA-051.

A total of six test squares (50cm x 50cm) were excavated within the test area, giving a total excavated sample of 1.5m^2. Test squares were placed on the northern and southern sides of an existing access track within the study area alignment. Squares were aligned along one northeast to southwest oriented transect (TS534-TS538) along the ridgeline. An additional test square (TS539) was placed 90 metres southwest and 10 metres southeast of TS538 adjacent to a small knoll to test the extent of the PAD area. Test squares were placed at 10 and 40 metre intervals to avoid visible surface disturbances.

Test square distribution and results at HLE T PAD 42 are shown on Figure 18.

Plate 9. View northeast along ridgeline from southern end of PAD area at HLE T PAD 42. Access track runs northeast to southwest through test area.

Plate 10. View northeast at HLE T PAD 42, excavated TS536 in foreground. Access track on right, outcropping granite in background at right.

Soils and disturbance

The nature of the deposit varied across the six test squares at HLE T PAD 42, this variation resulting from historical land use disturbance and bioturbation. Disturbance from tree clearing activity was evident within the soil profiles at TS535 (Figure 16) and TS537 with mixing of the upper A unit horizon. Bioturbation from grass roots and insect activity was evident throughout all test squares, with tree roots observed within the deposit at TS535, TS537 and TS538. Visible surface disturbance included an access track running northeast to southwest through the test area and mechanical tree clearing lines.

Test squares displayed shallow to moderate deposit depths, with the shallowest depth of 10cm encountered at TS536 on the central, moderately sloping portion of the test area and the deepest deposit of 40cm encountered at TS535 at the elevated north-eastern portion of the test area. All remaining test squares reached a maximum depth of 30cm. Soils generally consisted of a greyish brown sandy loam overlying a reddish brown sandy loam. Basal clays consisted of reddish brown sandy clays, with partial granite bedrock encountered at TS536 (Figure 17) and TS539. The upper humic O horizon consisted of a greyish brown sandy loam with abundant grass roots. All squares contained sub-rounded quartz and granite gravels measuring <20mm in size with larger bedrock fragments measuring <150mm encountered at TS536, TS537 and TS539.Charcoal was present as infrequent flecking throughout all test squares, indicating natural bushfires or use of fire in land clearing activities.

Figures 16-17 illustrate the soil profiles at HLE T PAD 42.

I. 0-5cm: Greyish brown sandy loam, loose compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 5-40cm: Greyish brown sandy loam, mottled with reddish brown, moderate compaction. Gravels (<20mm, ~5%), scattered charcoal flecks and charcoal staining. Tree roots. Diffuse boundary to:
III. Base: Reddish brown sandy clay, high compaction.

Figure 16. TS535 west section and soil profile description

I. 0-2cm: Dark greyish brown sandy loam, moderate compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 2-10cm: Dark greyish brown sandy loam, moderate compaction. Gravels (<10mm, ~2%), scattered charcoal flecks. Diffuse boundary to:
III. Base: Granite bedrock northeast side, reddish brown sandy clay southwest side. High compaction.

Figure 17. TS536 east section and soil profile description

Artefact Distribution

No artefacts were recovered from the test program at this location.

Summary

No artefacts were recovered from the test program at this location. The area is not a PAD or archaeological site.

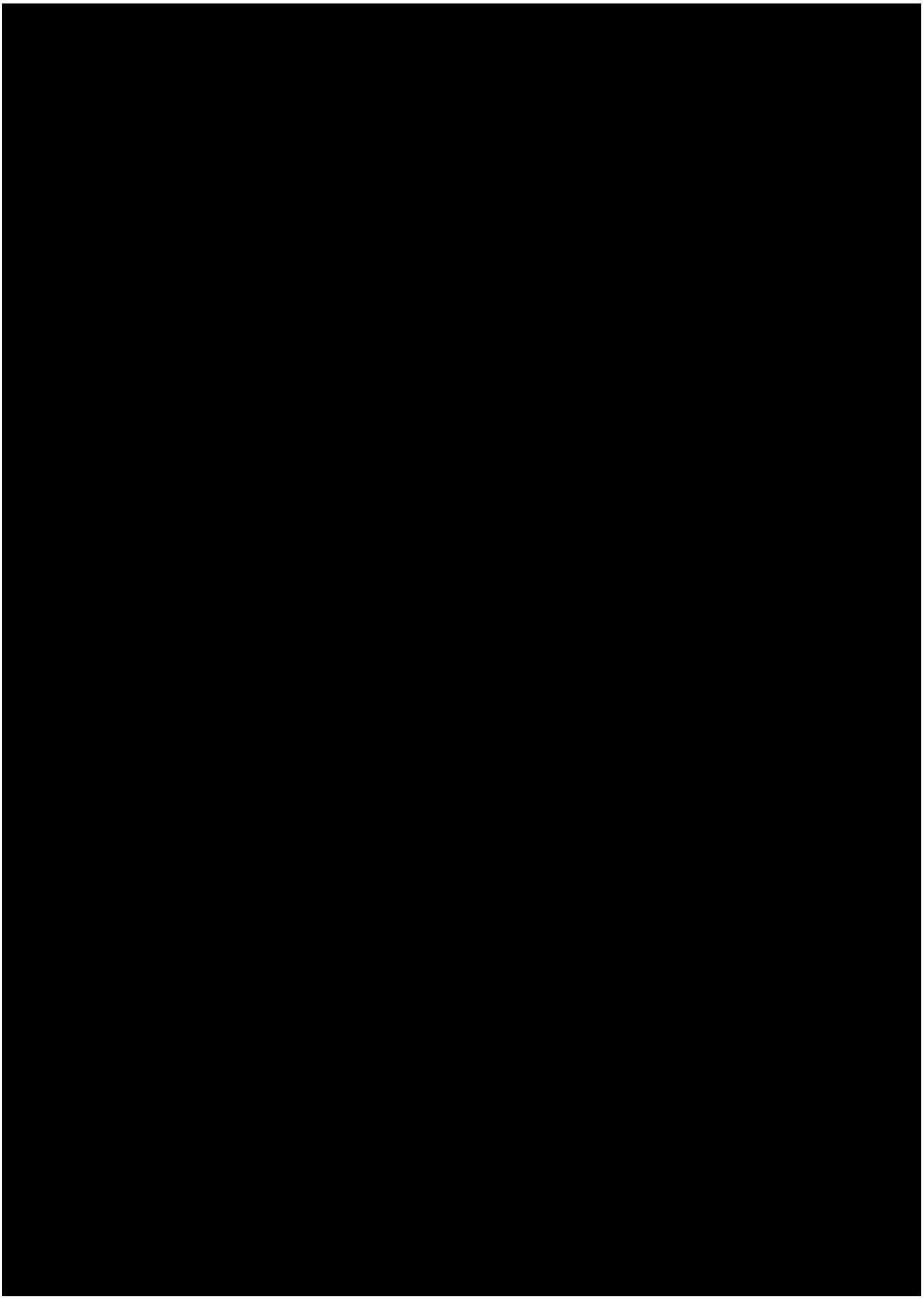


Figure 18. Test excavation results - HLE T PAD 41 and HLE T PAD 42 (AT-441; property MA-059-02)

6.3.4 HLE T PAD 8

HLE T PAD 8 comprised an alluvial flat landform located above a tributary of Gocup Creek, approximately 30 metres northeast of Gocup Creek and 430 metres west of the Tumut River within MA-059-09. Test squares were placed on the eastern side of the PAD area within the current disturbance footprint on the eastern and western sides of a drainage depression. Previous land disturbance included use as a grazing pasture and construction of a fenceline, and flooding from the creek.

A total of eight test squares (50cm x 50cm) were excavated across the test area, giving a total excavated sample of 2m^2. Squares were aligned along four northwest to southeast oriented transects with each transect containing two test squares. Transect 1 (TS99-TS100) and Transect 2 (TS101-TS102) were located on the eastern side of the PAD area, east of the drainage depression. Transect 3 (TS103-TS104) and Transect 4 (TS105-TS106) were located west of the drainage depression. All test squares were spaced at 10 metre intervals. Test square distribution and results at HLE T PAD 8 are shown on Figure 21.

Plate 11. View southwest across alluvial flat at HLE T PAD 8. Gocup Creek tributary on left.

Plate 12. View east at HLE T PAD 8, excavated TS101 in midground.

Soils and disturbance

Soil profiles at HLE T PAD 8 were generally consistent across the eight test squares, with some microtopographic variation. Test squares on the western side of the test area were located in a lower-lying portion of the landform and contained pebble inclusions, likely indicating impacts from flood effects. Bioturbation from grass roots and insect activity was evident throughout the test area.

Test squares displayed moderate depth deposits. The shallowest deposits were encountered at TS101, TS102, TS105 and TS106, reaching a maximum depth of 20cm. The maximum deposit depth of 45cm was encountered at TS99 on the most elevated portion of the landform within the eastern side of the test area and at TS103 on the western side of the drainage depression. Soils consisted of a brown silty loam with ironstone and quartz gravels. Deposits on the western side of the drainage depression contained additional fine pebble inclusions, potentially indicating flooding activity at this location. Basal clays consisted of reddish brown silty clays. The upper humic O horizon was well developed, consisting of a dark brown silty loam with abundant grass roots. Figures 19-20 illustrate representative soil profiles at HLE T PAD 8.

I. 0-3cm: Dark brown silty loam, loose compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 3-45cm: Brown silty clay loam, moderate compaction. Gravels (<10mm, ~2%). Clay content increasing with depth. Diffuse boundary to:
III. Base: Reddish brown silty clay, high compaction.

Figure 19. TS99 west section and soil profile description

I. 0-3cm: Dark brown silty loam, loose compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 3-30cm: Brown silty clay loam, moderate compaction. Gravels (including fine pebbles) (<10mm, ~2%). Clay content increasing with depth. Diffuse boundary to:
III. Base: Reddish brown silty clay, high compaction.

Figure 20. TS104 east section and soil profile description

Artefact Distribution

No artefacts were recovered from the test program at this location.

Summary

No artefacts were recovered from the test program at this location. The tested part of the area is not a PAD or archaeological site. The remaining portion of the PAD to the west (not tested - outside the current disturbance footprint) is maintained as PAD due to a slightly higher elevation and moderate potential for subsurface deposit (Figure 64).

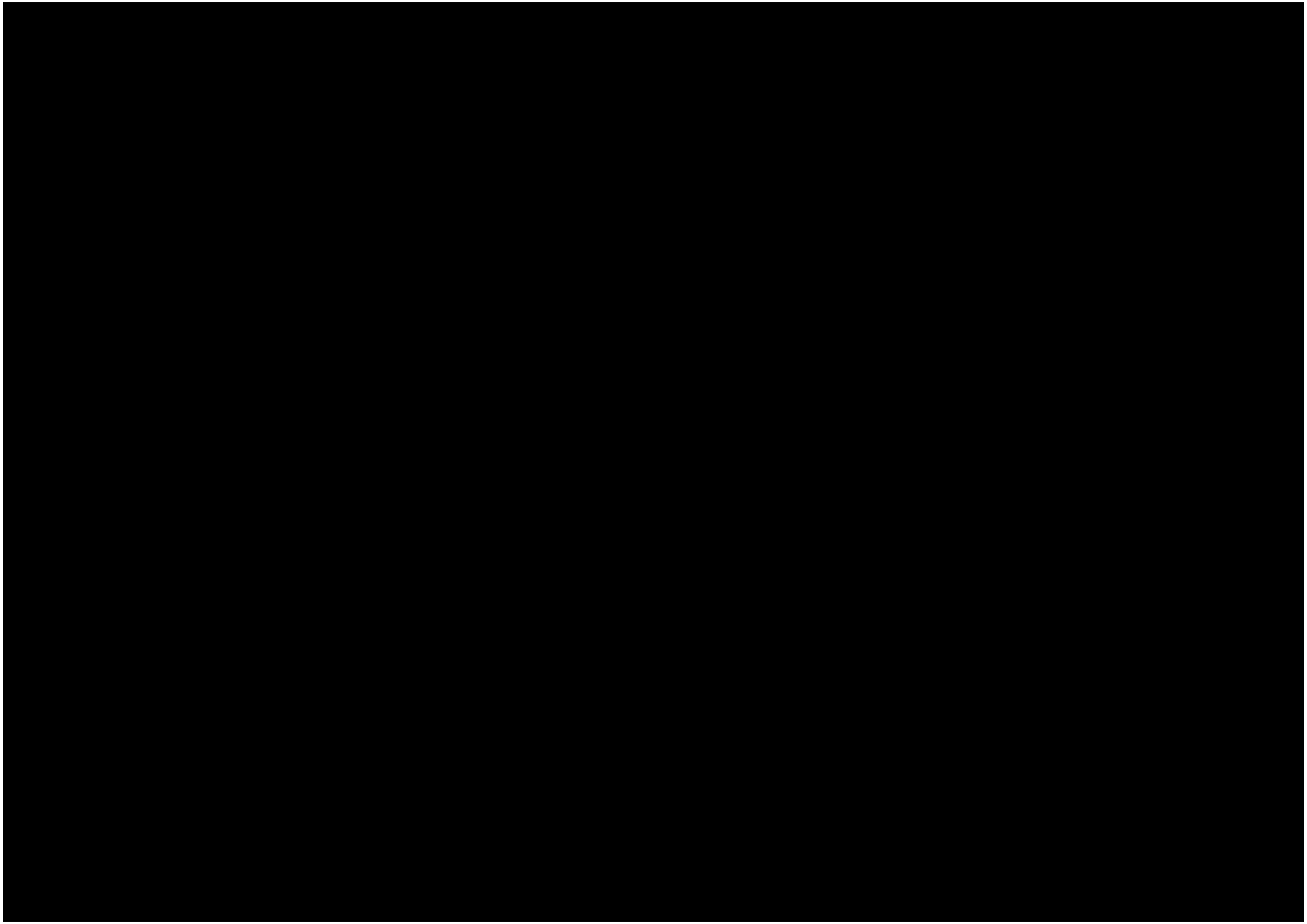


Figure 21. Test excavation results - HLE T PAD 8 (property MA-059-09)

6.3.5 HLE T PAD 39

HLE T PAD 39 was located across elevated landforms overlooking the Tumut River and floodplain to the west. Landforms included the mid to lower slopes of a hill and an elevated saddle between a spur and the hill. Slopes were moderate to steep with some microtopographic spurs and gently sloping benches present, while the saddle formed a natural pass leading down to the river. Previous land use disturbance included use as a grazing pasture, construction of access tracks and various farm related infrastructure including fencelines, a concrete slab, concrete posts, and a concrete water trough. Flood debris was observed high on the slope, indicating that this area had been inundated during past flood events. The PAD was located within the proposed disturbance footprint for access track AT-428 and property MA-051.

A total of 14 test squares (50x50cm) were excavated across the slope and saddle landforms, giving a total excavated sample of 3.5m^2. Squares placed on the saddle were aligned along two east to west oriented transects adjacent to the access track, including Transect 1 (TS562-TS565) and Transect 2 (TS567-TS568). One additional test square (TS566) was placed five metres north of TS563. A second additional test square (TS569) was placed to the southwest between the access track and a fenceline. Squares on the hillslope landform above Tumut River were aligned along two northeast to southwest oriented transects, including Transect 3 (TS570-TS573) and Transect 4 (TS574-TS575). Most test squares were spaced at 10 metre intervals, with one interval of 20 metres between TS571 and TS572.

Test square distribution and results at HLE T PAD 39 are shown on Figure 26.

Plate 13. View south at HLE T PAD 39. Excavated TS571 in foreground, hillslope descending to the Tumut River. Microtopographic spur extending from the left in background.

Plate 14. View southwest at HLE T PAD 39 saddle landform with disturbance from access tracks. Excavation in progress at TS566 and TS564.

Soils and disturbance

Soil profiles at HLE T PAD 39 varied due to the impacts of land use disturbance, landform type and bioturbation. Land use disturbance was evident on the saddle landform portion of the test area with mixing of the upper ~15cm of the A unit soil profiles, introduced clay fill and truncated soils likely resulting from construction of the access tracks. A more intact, shallow deposit with less soil mixing was identified at TS567. The lower hillslope portion of the test area contained mostly shallow soils variably impacted by colluvial soil movement. Bioturbation from grass roots and insect activity was evident throughout all test squares.

Test squares displayed generally shallow deposit depths, with the shallowest depth of 5cm encountered at TS562 and TS566 on the northern side of the saddle and at TS570 and TS571 on the upper, steeper portion of the hillslope. The deepest deposit of 30cm was encountered at TS575 on the lower portion of the hillslope towards the Tumut River. All remaining test squares ranged between 8-20cm depth. Soils consisted of a greyish brown silty loam and reddish brown silty clay loams. Basal clays consisted of reddish brown silty clays. The upper humic O horizon consisted of a greyish brown silty loam with abundant grass roots. Most test squares contained high amounts of shale and siltstone bedrock material measuring up to 100mm, with a higher abundance encountered within test squares on the hillslope portion of the test area. The deepest deposit encountered at TS575 contained minimal bedrock material with additional sub-rounded quartz gravels, likely due to its closer proximity to the river and the underlying Quaternary Alluvium geology that borders the river. Charcoal was present as infrequent flecking throughout all test squares, indicating natural bushfires or use of fire in land clearing activities.

Figures 22-25 illustrate the soil profiles at HLE T PAD 39.

Figure 22. TS563 east section and soil profile description

I. 0-5cm: Light greyish brown silty loam, loose compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 5-15cm: Mottled greyish brown silty loam and reddish brown silty clay. High compaction. Shale and siltstone bedrock fragments (<40mm, ~40%). Scattered charcoal flecks. Diffuse boundary to:
III. Base: Reddish brown silty clay, high compaction. Bedrock material continuing.

Figure 23. TS567 north section and soil profile description

I. 0-1cm: Dark greyish brown silty loam, loose compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 1-10cm: Dark greyish brown silty loam, moderate compaction. Shale and siltstone bedrock fragments (<30mm, ~3%). Scattered charcoal flecks. Diffuse boundary to:
III. Base: Reddish brown silty clay, high compaction. Increase in shale and siltstone bedrock fragments (<50mm, ~30%).

Figure 24. TS572 south section and soil profile description

I. 0-4cm: Greyish brown silty loam, loose compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 4-10cm: Reddish brown silty clay loam. High compaction. Shale and siltstone bedrock fragments (<100mm, ~60%). Scattered charcoal flecks. Diffuse boundary to:
III. Base: Reddish brown silty clay, high compaction. Bedrock material increasing.

Figure 25. TS575 west section and soil profile description

I. 0-1cm: Dark brown silty loam, loose compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 1-12cm: dark brown silty loam, moderate compaction. Mixed shale and sub-rounded quartz gravels (<10mm, 3%). Scattered charcoal flecks. Diffuse boundary to:
III. 12-30cm: Reddish brown silty clay loam, moderate compaction. Gravels increasing in abundance (~15%). Clay content increasing with depth.
IV. Base: Reddish brown silty clay, high compaction. Gravels continuing.

Artefact distribution

A total of 20 artefacts were recovered from the test excavation undertaken at HLE T PAD 39. Artefacts were recovered from 10 of the 14 excavated test squares (72% of test squares). The spatial distribution of artefacts was characterised by a low artefact density across the tested area with the highest artefact density encountered at TS567 (n=4), located on the upper saddle landform (Table 8). The extrapolated mean artefact density was generally low across the site area at 5.7 artefacts/m2, with an extrapolated high point of 16 artefacts/m^2 at TS567.

Test excavation results revealed that artefacts were predominantly located on the upper saddle landform, with lower numbers of artefacts identified on the hillslope. The majority of artefacts were recovered from depths between 0-10cm (n=16), with smaller quantities of artefacts recovered from between 10-20cm and 20-30cm depth (each, n=2).

Table 8. Artefact distribution – HLE T PAD 39

Square number	n	Square number	n
TS 562	3	TS 569	0
TS 563	3	TS 570	0
TS 564	3	TS 571	0
TS 565	2	TS 572	0
TS 566	0	TS 573	1
TS 567	4	TS 574	0
TS 568	1	TS 575	3

Lithic characteristics

Quartz was the primary raw material excavated during testing of HLE T PAD 39 (n=10, 50%) with FGS (n=4, 20%), chert, IMT (each, n=2, 10%), silcrete and igneous (each, n=1, 5%) also present. The majority of artefacts were small in size with 80% of artefacts measuring less than 25mm in maximum dimension (Table 9).

Table 9. Raw Material Size Classes and Quantities – HLE T PAD 39

Raw Material	Size Class (Millimetres)							Total	%
	5-10	10-15	15-20	20-25	25-30	30-35	35-40		
Quartz	3	2	1	3	0	1	0	**10**	***50***
FGS	1	0	1	2	0	0	0	**4**	***20***
Chert	0	0	1	0	0	0	1	**2**	***10***
IMT	0	0	1	0	1	0	0	**2**	***10***
Silcrete	0	0	0	0	1	0	0	**1**	***5***
Igneous	0	0	0	1	0	0	0	**1**	***5***
Total	**4**	**2**	**4**	**6**	**2**	**1**	**1**	**20**	***100***
%	***20***	***10***	***20***	***30***	***10***	***5***	***5***	***100***	

The assemblage consisted of medial flake fragments (n=6, 30%), cores (n=4, 20%), proximal flake fragments and distal flake fragments (each, n=3, 15%), complete flakes (n=2, 10%), one bipolar flake and one core fragment (each, n=1, 5%). (Table 10). Core types included three multidirectional cores and one bipolar core (Plate 15). One broken backed quartz artefact was identified from 0-10cm depth at TS564 (ID #329). Four artefacts had edge damage macroscopically consistent with usewear. Two quartz artefacts and one silcrete artefact retained 1-30% of rough granular cortex. Quartz artefacts consisted of a milky white appearance.

Table 10. Lithic Types – HLE T PAD 39

	Core	Flake	Bipolar Flake	Proximal Fragment	Medial Fragment	Distal Fragment	Core Fragment	Total
Quartz	3	1	1	0	3	2	0	**10**
FGS	0	1	0	1	1	0	1	**4**
Chert	0	0	0	1	1	0	0	**2**
IMT	0	0	0	0	1	1	0	**2**
Silcrete	1	0	0	0	0	0	0	**1**
Igneous	0	0	0	1	0	0	0	**1**
Total	**4**	**2**	**1**	**3**	**6**	**3**	**1**	**20**
%	***20***	***10***	***5***	***15***	***30***	***15***	***5***	***100***

Plate 15. Left: silcrete multidirectional core from TS564 Spit 1 (0-10cm depth) – ID 330. Right: quartz bipolar core from TS567 Spit 1 (0-10cm depth) – ID 337.

Surface Artefacts

A total of 13 surface artefacts were identified at HLE T PAD 39 during the test excavation program. Surface artefacts were located on the saddle landform in the northern portion of the test area on an access track exposure at the junction between three access tracks (Plate 16). The track area was heavily disturbed and compacted by machinery and vehicle activity. Artefacts consisted of quartz, FGS, IMT and igneous material types with complete flakes, flake fragments and cores present (Plate 17). The artefacts were not in situ however they have likely derived from the immediate area, exposed due to disturbance. Surrounding test squares evidenced a low density deposit of 3-4 artefacts per square.

Plate 16. HLE T PAD 39 access track exposure containing surface artefacts.

Plate 17. A sample of artefacts identified on surface exposure at HLE T PAD 39. Left: FGS medial flake fragment. Middle: Igneous multidirectional blade core. Right: Quartz complete flake.

Summary

The presence of surface and subsurface archaeological material within the test area led to the designation of archaeological sites HLE T16 and HLE T17 (Figure 65), separated by landform and a steeper area of slope where no artefacts were recorded. Site HLE T16 incorporated the low density subsurface deposit in the southern part of the test area on the slope overlooking the Tumut River. Site HLE T17 incorporated the surface artefacts and surrounding low density subsurface deposit in the disturbed saddle landform. Potential for further intact subsurface deposit at both sites was assessed as low.

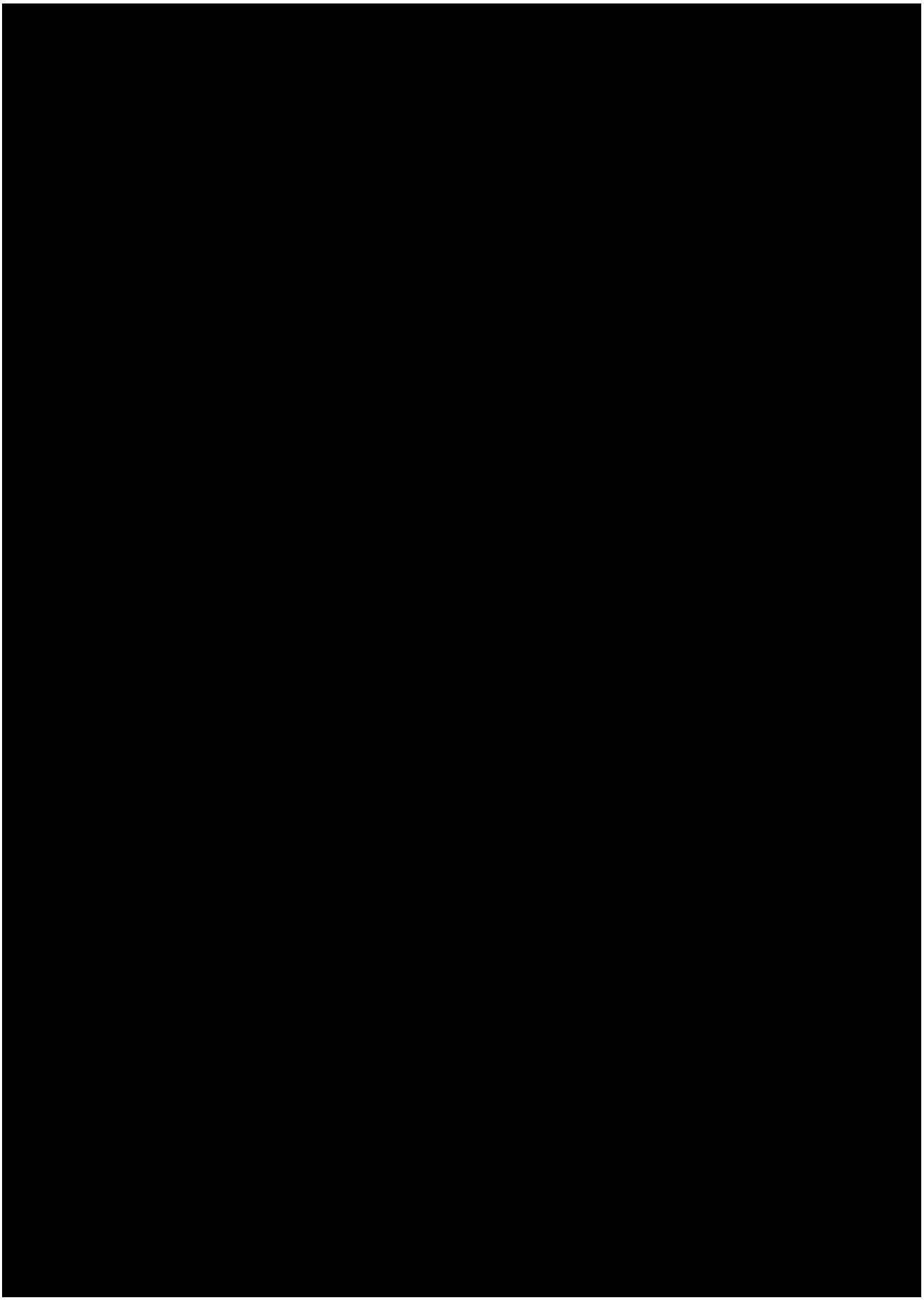


Figure 26. Test excavation results - HLE T PAD 39 (AT-428 and property MA-059-10)

6.3.6 HLE T PAD 40

The HLE T PAD 40 test area was located approximately 330 metres north of the Tumut River on a gently sloping spur bench overlooking the Tumut River billabong to the southwest and a tributary gully to the north, within MA-059-10. Soils in this portion of the project area are mapped as containing naturally occurring asbestos, severely limiting the portion of the PAD that could be investigated, including in the vicinity of previously recorded surface artefact site AHIMS 56-3-0336. Testing was concentrated in the western part of the PAD outside of the hazard. Only minor land use impacts were present, including use as a grazing pasture and construction of fencelines.

A total of 10 test squares (50cm x 50cm) were excavated across the test area, giving a total excavated sample of 2.5m^2. Three transects running northeast to southwest were placed on the bench landform, including Transect 1 (TS576 and TS577), Transect 2 (TS580-TS583) and Transect 3 (TS579 and TS584). One additional test square (TS578) was placed 10 metres southeast of TS577. One test square (TS585) was placed to the northeast within the small portion of tower site 5C1/5C2-425 that was not mapped as containing asbestos, on a gentle spur slope. Test squares were placed at five or 10 metre intervals, with one interval of 15 metres between TS582 and TS583.

Test square distribution and results at HLE T PAD 40 are shown on Figure 30.

Plate 18. View north at HLE T PAD 40 gently sloping bench landform. Excavated TS577 in foreground, excavation in progress at TS581 (left) and TS582 (right) in background.

Plate 19. View northeast at northern portion of HLE T PAD 40 test area. Excavated TS585 in foreground. Gentle slope from a spur to the east.

Soils and disturbance

The nature of the deposit was generally consistent within the test squares on the western bench landform, with a different deposit encountered at TS585 in the northern portion of the test area. The landforms appeared to be in relatively good condition, utilised as a grazing pasture with only minor land use impacts. Bioturbation from grass roots and insect activity was evident throughout the test area.

In general, soils were of shallow to moderate depths. Soil depths ranged from 15cm at TS584 to 30cm at TS577 and TS580. The remaining test squares ranged between 16-28cm depth. Soils on the spur bench generally consisted of a brown silty loam overlying a layer of gravelly greyish brown silty loam, overlying a reddish brown silty clay loam with large bedrock fragments. Basal clays consisted of a reddish brown silty clay with weathered shale and siltstone bedrock encountered on the flatter western side of the bench at TS577, TS578, TS580, TS581, TS582 and TS584. All squares contained gravels and bedrock fragments of shale, siltstone and quartz. The upper humic O horizon consisted of a greyish brown silty loam with abundant grass roots. The deposit at TS585 contained highly compact soils consisting of a greyish brown silty loam overlying a bleached pale brown silty clay loam. The test square contained a well-developed upper humic O horizon and basal clay consisted of a bleached pale brown silty clay. In contrast to the spur bench soils, the deposit at TS585 contained less abundance of gravels, did not contain large bedrock fragments and contained bleached A2 and scattered Fe/Mn flecks and nodules. This indicates intermittent waterlogging at this location, but not flood energy sufficient to result in fluvial erosion.

Bioturbation was present throughout all test squares, including impacts from insect activity and grass roots. Charcoal was present as infrequent flecking throughout all test squares, indicating natural bushfires or use of fire in land clearing activities.

Figures 27-29 illustrate representative soil profiles at HLE T PAD 40.

Figure 27. TS1581 south section and soil profile description

I. 0-3cm: Greyish brown silty loam, loose compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 3-8cm: Brown silty loam, high compaction. Gravels (<10mm, ~5%), scattered charcoal flecks. Diffuse boundary to:
III. 8-16cm: Dark greyish brown silty loam, high compaction. Increase in gravel abundance (<50mm, ~40%). Diffuse boundary to:
IV. 16-20cm: Reddish brown silty clay loam, high compaction. Large shale and siltstone bedrock fragments (<150mm, ~60 %). Clay content increasing with depth. Diffuse boundary to:
V. Base: Weathered shale and siltstone bedrock.

Figure 28. TS584 south section and soil profile description

I. 0-1cm: Greyish brown silty loam, moderate compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 1-5cm: Brown silty loam, high compaction. Gravels (<10mm, ~5%), scattered charcoal flecks. Clear boundary to:
III. 5-12cm: Dark greyish brown silty loam, high compaction. Increase in gravel abundance (<60mm, ~50%). Diffuse boundary to:
IV. 12-15cm: Reddish brown silty clay loam, high compaction. Large shale and siltstone bedrock fragments (<200mm, ~60 %). Clay content increasing with depth. Diffuse boundary to:
V. Base: Weathered shale and siltstone bedrock.

Figure 29. TS585 west section and soil profile description

I. 0-5cm: Dark greyish brown silty loam, moderate compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 5-12cm: Greyish brown silty loam, high compaction. Moderate bioturbation. Gravels (<10mm, ~5%). Scattered charcoal flecks. Diffuse boundary to:
III. 12-25cm: Bleached pale brown silty clay loam, High compaction. Gravels increasing (<20mm, ~10%). Fe/Mn flecks and nodules (<10mm, ~3%). Clay content increasing with depth. Diffuse boundary to:
IV. Base: Bleached pale brown silty clay, high compaction.

Artefact distribution

A total of 240 artefacts were recovered from the test excavation undertaken at HLE T PAD 40. Artefacts were recovered from all of the of 10 excavated test squares (100% of test squares). The spatial distribution of artefacts was characterised by a high mean artefact density (96 artefacts/m^2) across the tested area.

The highest artefact density was encountered at TS581 (n=98), located on the flat portion of the bench landform. High artefact densities were also encountered at TS582 (n=37) and TS584 (n=31) which were both located five metres from TS581. This likely indicates a concentration of activity within this portion of the landform and suggests that the archaeological integrity of the site has been largely unimpacted by disturbance. Artefact densities in the remaining test units ranged between 2-18 artefacts per square (Table 11). The extrapolated high point was 392 artefacts/m^2 at TS581.

Test excavation results revealed that the highest density of artefacts was present within the western side of the test area on the spur bench overlooking the billabong and gully tributary. A low artefact density was encountered in the northern portion of the tested at TS585 (n=3), extrapolated to 12 artefacts/m^2.

The majority of artefacts were recovered from depths between 0-10cm (n=148), followed by 10-20cm depth (n=69) and 20-30cm depth (n=23). The vertical distribution of artefacts was characterised by a predominance of artefacts within the uppermost 10cm of the deposit.

Table 11. Artefact distribution – HLE T PAD 40

Square number	n	Square number	n
TS 576	14	TS 581	98
TS 577	12	TS 582	37
TS 578	10	TS 583	18
TS 579	2	TS 584	31
TS 580	15	TS 585	3

Lithic characteristics

Quartz was the primary raw material identified at the test area (n=82, 34.2%), followed by IMT (n=69, 28.8%) and chert (n=39, 16.3%) (Table 12). Minor components of silcrete (n=18, 7.5%), quartzite (n=13, 5.4%), FGS (n=9, 3.8%), igneous (n=8, 3.3%) and MGS (n=2, 0.8%) were also present. IMT artefacts were primarily recovered from TS581 with 58% of all IMT artefacts within the assemblage recovered from this test unit (Plate 20).

Artefacts were mostly small in size, most commonly between 10-15mm in maximum dimension (n=78, 32.5%), with a total of 89.6% of artefacts measuring less than 25mm. Smaller quantities of artefacts were present in the larger size categories of 25-30mm (n=15, 6.3%), 30-35mm (n=6, 2.5%) and 35-40mm (n=4, 1.7%). Variability was observed in the size class between quartz and IMT artefacts, with 74.4% of all quartz artefacts measuring less than 15mm in maximum dimension and 65.2% of all IMT artefacts measuring greater than 15mm in maximum dimension, potentially indicating that these materials were being utilised for different activities. No artefacts were larger than 40mm. The largest artefact was an IMT complete flake measuring 39.38mm in length (ID 420).

Table 12. Raw Material Size Classes and Quantities – HLE T PAD 40

Raw Material	Size Class (Millimetres)							Total	%
	5-10	10-15	15-20	20-25	25-30	30-35	35-40		
Quartz	27	34	15	4	1	0	1	**82**	***34.2***
IMT	8	16	24	9	7	3	2	**69**	***28.8***
Chert	13	14	5	4	2	0	1	**39**	***16.3***
Silcrete	2	4	6	5	0	1	0	**18**	***7.5***
Quartzite	1	5	2	1	3	1	0	**13**	***5.4***
FGS	2	1	2	1	2	1	0	**9**	***3.8***
Igneous	1	3	3	1	0	0	0	**8**	***3.3***
MGS	0	1	0	1	0	0	0	**2**	***0.8***
Total	**54**	**78**	**57**	**26**	**15**	**6**	**4**	**240**	***100***
%	***22.5***	***32.5***	***23.8***	***10.8***	***6.3***	***2.5***	***1.7***	***100***	

The assemblage consisted predominantly of complete flakes (n=75), comprising 31.3% of the total assemblage (Table 13). This was followed by medial flake fragments (n=54, 22.5%), proximal flake fragments (n=43, 17.9%), distal flake fragments (n=41, 17.1%), angular fragments (n=20, 8.3%), cores and split flakes (each, n=3, 1.3%), with one core fragment also present (n=1, 0.4%). Cores consisted of one unifacial rotated chert microblade core (ID 475, Plate 21), one quartz bipolar core (ID 508) and one IMT multidirectional core (ID 509, Plate 21). One broken flake conjoin was present at TS582, with a quartzite proximal fragment (ID 506) and distal fragment (ID 507) refitting to form a complete flake.

Eleven artefacts had edge damage macroscopically consistent with usewear. Four retouched artefacts were present (IMT n=2, chert and silcrete each, n=1), including one IMT thumbnail scraper recovered from Spit 1 (0-10cm depth) at TS584 (ID 579) (Plate 22). Five backed artefacts were identified, including two complete IMT Bondi Points, one complete chert geometric microlith, one complete quartz backed blade and one broken undiagnostic backed silcrete artefact (Plate 22). The chert geometric microlith was recovered from Spit 3 (20-30cm depth) at TS576, while all other backed artefacts were recovered from Spit 1 (0-10cm depth) at TS581 and TS584.

Table 13. Lithic Types – HLE T PAD 40

	Flake	Split Flake	Proximal Fragment	Medial Fragment	Distal Fragment	Angular Fragment	Core	Core Fragment	Total
Quartz	19	0	12	21	22	7	1	0	**82**
IMT	21	2	11	20	6	7	1	1	**69**
Chert	14	0	12	5	4	3	1	0	**39**
Silcrete	11	1	2	2	2	0	0	0	**18**
Quartzite	3	0	4	2	3	1	0	0	**13**
FGS	4	0	0	1	2	2	0	0	**9**
Igneous	2	0	1	3	2	0	0	0	**8**
MGS	1	0	1	0	0	0	0	0	**2**
Total	**75**	**3**	**43**	**54**	**41**	**20**	**3**	**1**	**240**
%	***31.3***	***1.3***	***17.9***	***22.5***	***17.1***	***8.3***	***1.3***	***0.4***	***100***

Platform types were predominantly plain (n=60) and focal (n=21), with lesser numbers of crushed (n=12), scarred (n=11), ridged (n=9), faceted (n=6) and cortical (n=2) also present. Termination types were mostly feather (n=63) and axial (n=37) with hinge (n=8), crushed (n=6) and plunging (n=5) terminations also present. Flake shape for complete flakes mostly consisted of longer than wide forms (n= 37), followed by wider than long (n=19), length equal to width (n=11) and elongate (n=8).

Cortex was present on chert, IMT, quartz, quartzite, FGS and silcrete artefacts, with nine artefacts retaining 1-30% of cortex and four artefacts retaining 31-60% cortex. Cortex type was predominantly cobble (n=8), with four artefacts displaying a plain, flat, featureless cortex (chert and IMT) as well as one quartz artefact displaying a rough granular cortex. This suggests that raw materials were sourced predominantly from stream pebbles and cobbles with some exploitation of rocky outcrops or streams very close to their source. No Igneous or MGS artefacts retained cortex. Cortex was present on 5.4% of the total assemblage.

Heat exposure was evident on five IMT artefacts with variation in colour and the presence of crenate fracture surfaces indicating that the material was affected by heating, whether deliberately or due to exposure to bushfires. Quartz artefacts were predominantly a milky white type with one transparent crystal quartz flake also identified (ID 473). Silcrete artefacts included fine grained and regular varieties.

Plate 20. IMT complete flakes from TS581 Spit 1 (0-10cm depth) – ID 417-430

Plate 21. Left: chert unifacial rotated microblade core from TS581 Spit 1 (0-10cm depth) – ID 475. Right: IMT multidirectional core from TS582 Spit 1 (0-10cm depth) – ID 509.

Plate 22. Left: Quartz backed blade and IMT Bondi Point from TS581 Spit 1 (0-10cm depth) – ID 477 and 478. Right: IMT retouched thumbnail scraper from TS584 Spit 1 (0-10cm depth) – ID 579.

Summary

The presence of subsurface archaeological material within the test area led to the designation of archaeological site HLE T18 (Figure 66). Potential for further subsurface deposit within the remaining PAD and site area is assessed as moderate to high. The high densities encountered on the western bench landform indicate that the test program has intercepted a distinct activity area, likely associated with reduction of IMT material (i.e. a knapping event) at TS581 given the concentration of this type of lithic debitage recorded. The range of raw material types, reduction types and tools present indicates that other activities were also occurring around the creek tributary and have been preserved in archaeological deposit of good integrity. The wider site extent of HLE T18 is considered to include the surface artefact identified as part of previously recorded site AHIMS 56-3-0336.

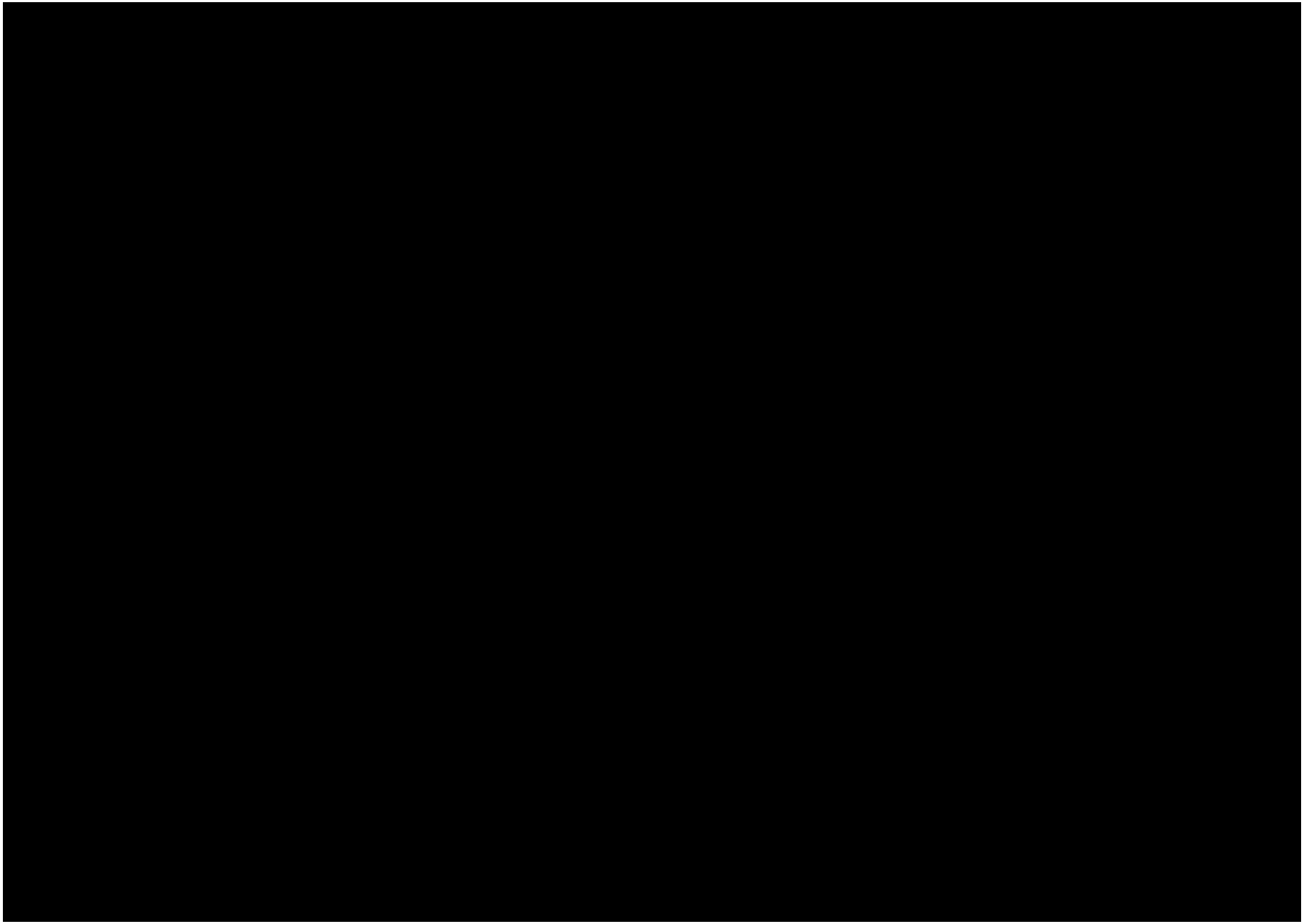


Figure 30. Test excavation results - HLE T PAD 40 (property MA-059-10)

6.3.7 HLE T PAD 24

HLE T PAD 24 comprised a large area located across a gentle, elevated lower hillslope on the southern side of Killimicat Creek. The landform overlooked a bend in Killimicat Creek with a tributary running north-south through the PAD area. Test squares were placed across the north western, central and south eastern parts of the PAD. Test squares in the north western part of the PAD intercepted the unsurveyed area assessed for the Addendum ACHAR (MA-077), with the remaining squares excavated along the access track within MA-079 (not an unsurveyed area). The test area was located to the southeast of registered Aboriginal Place Mudjarn Nature Reserve. Previous land use of the PAD area included use as a grazing pasture and construction of a dam, fencelines, farm buildings and access tracks.

A total of 30 test squares (50cm x 50cm) were excavated across the test area, giving a total excavated sample of 7.5m^2. A total of eight transects were placed across the test area. Two transects running northwest to southeast were placed in the central portion of the test area on the western side of the tributary, including Transect 1 (TS122-TS124) and Transect 2 (TS125-TS126). One additional test square (TS127) was placed on the eastern side of an access track.

Three transects were aligned north to south along the eastern side of a fenceline on the northwestern side of the PAD area, including Transect 3 (TS128-TS131, TS 133, TS134, TS137, TS138), Transect 4 (TS135, TS136, TS147-TS149) and Transect 5 (TS150-TS151). One additional test square (TS132) was placed seven metres west of Transect 3.

Three transects running northwest to southeast were placed at the southeastern end of the test area on the eastern side of the tributary, including Transect 6 (TS139-TS42), Transect 7 (TS143-TS144) and Transect 8 (TS145-TS146). Most test squares were spaced at 10 metre intervals with an interval of 20 metres between TS129 and TS130. Access restrictions at the time of the test program prevented further sampling of the current disturbance footprint within the unsurveyed area however extensive testing was undertaken of the eastern part of the same landform.

Test square distribution and results at HLE T PAD 24 are shown on Figure 35.

Plate 23. View southeast across hillslope at southeastern end of test area at HLE T PAD 24. Excavated TS144 in foreground, excavated TS143, TS139 and TS140 in background.

Plate 24. View north at hillslope, northwestern portion of HLE T PAD 24. Excavated TS131 in foreground, excavation in progress at TS133 in background. Landform slopes down to Killimicat Creek in background.

Soils and disturbance

The nature of the deposit varied across the 30 test squares at HLE T PAD 24, this variation resulting from historical land use disturbance and bioturbation. Disturbance from agricultural activity was evident within soil profiles throughout the entire test area from ploughing and construction of access tracks. This included mixing of the upper A unit horizon throughout all soil profiles and introduced clay fill material at TS140 (Figure 33).

In general, soils were of moderate depth. Soil depths ranged from 20cm at TS135, TS142 and TS140 to 40cm at TS124 and TS150 with most test squares reaching a maximum depth of 30cm. All deposits were variably impacted by agricultural activity with low to high levels of disturbance identified. The lower 20cm of the deeper deposit at TS150 remained intact (Figure 34).

Soils generally consisted of a greyish brown silty loam overlying a reddish yellow/reddish brown silty loam. Basal clays consisted of red silty clays. The upper humic O horizon consisted of a greyish brown silty loam with abundant grass roots.

Bioturbation was present throughout all test squares, including impacts from insect activity and grass roots. All squares contained ironstone and quartz gravels measuring up to 30mm. Charcoal was present as infrequent flecking throughout all test squares, indicating natural bushfires or use of fire in land clearing activities.

Figures 31-34 illustrate representative soil profiles at HLE T PAD 24.

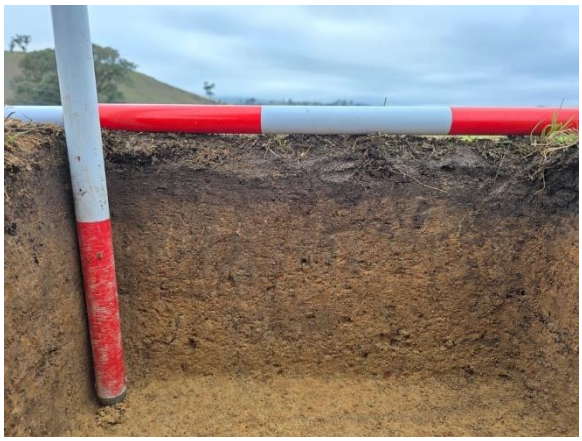


Figure 31. TS122 east section and soil profile description

I. 0-3cm: Very dark grey silty loam, moderate compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 3-7cm: Very dark grey silty loam, moderate compaction. Diffuse boundary to:
III. 7-30cm: Reddish yellow silty loam mottled with dark greyish brown, moderate compaction. Gravels (<30mm, ~3 %), scattered charcoal flecks. Clay content increasing with depth. Diffuse boundary to:
IV. Base: Reddish brown silty clay, high compaction. Gravels continuing.

Figure 32. TS133 south section and soil profile description

I. 0-2cm: Greyish brown silty loam, moderate compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 2-12cm: Greyish brown silty loam mottled with reddish yellow, moderate compaction. Diffuse boundary to:
III. 12-30cm: Reddish yellow silty loam mottled with dark greyish brown, moderate compaction. Gravels (<30mm, ~3%), scattered charcoal flecks and fragments. Clay content increasing with depth. Diffuse boundary to:
IV. Base: Red silty clay, high compaction. Gravels and charcoal continuing.

Figure 33. TS140 east section and soil profile description

I. 0-2cm: Dark greyish brown silty loam, moderate compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 2-5cm: Grey clay fill mixed with dark greyish brown silty loam, high compaction. Clear boundary to:
III. 5-20cm: Reddish brown silty loam, moderate compaction. Gravels (<20mm, ~5%), scattered charcoal flecks. Clay content increasing with depth. Diffuse boundary to:
IV. Base: Reddish brown silty clay, high compaction. Gravels continuing.

Figure 34. TS150 north section and soil profile description

I. 0-3cm: Dark greyish brown silty loam, moderate compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 3-7cm: Dark greyish brown silty loam mottled with light reddish brown, moderate compaction. Diffuse boundary to:
III. 7-20cm: Light reddish brown silty loam mottled with greyish brown, moderate compaction. Gravels (<20mm, ~2%), scattered charcoal flecks and fragments. Diffuse boundary to:
IV. 20-40cm: Light reddish brown silty loam, moderate-high compaction. Gravels and charcoal continuing. Diffuse boundary to:
V. Base: Red silty clay, high compaction. Gravels continuing.

Artefact distribution

A total of 180 artefacts were recovered from the test excavation undertaken at HLE T PAD 24. Artefacts were recovered from 26 of the 30 excavated test squares (86.7% of test squares). The spatial distribution of artefacts was characterised by a moderate mean artefact density (24 artefacts/m^2) across the tested area. The highest artefact count was encountered at TS150 (n=26), located on the lower portion of the slope above Killimicat Creek, in the northwestern part of the PAD. Similar artefact counts were encountered within this area at TS133 (n=25) and TS134 (n=23) with the remaining test units containing between 0-10 artefacts per square (Table 14). The extrapolated high point was 104 artefacts/m^2 at TS150, a relatively high artefact density.

Test excavation results revealed that the highest density of artefacts was present within this northwestern side of the test area overlooking the bend in Killimicat Creek. Lower artefact densities were encountered in the southern portion of the PAD area where test squares were located further from the creek proper, and disturbance tended to be higher along the existing track and closer to the current farm operations.

The majority of artefacts were recovered from between 10-20cm depth (n=98), followed by 0-10cm depth (n=45), 20-30cm depth (n=36) and 30-40cm depth (n=1). The vertical distribution of artefacts was characterised by a predominance of artefacts between 10-20cm depth within the deposit.

Table 14. Artefact distribution – HLE T PAD 24

Square number	n	Square number	n	Square number	n
TS 122	8	TS 132	8	TS 142	5
TS 123	0	TS 133	25	TS 143	0
TS 124	7	TS 134	23	TS 144	7
TS 125	0	TS 135	5	TS 145	3
TS 126	1	TS 136	4	TS 146	3
TS 127	0	TS 137	6	TS 147	10
TS 128	2	TS 138	2	TS 148	4
TS 129	3	TS 139	3	TS 149	2
TS 130	6	TS 140	7	TS 150	26
TS 131	2	TS 141	5	TS 151	3

Lithic characteristics

A variety of raw material types were identified at HLE T PAD 24. Quartz was the primary material present (n=91, 50.6%), followed by IMT (n=26, 14.4%), silcrete (n=20, 11.1%) and FGS (n=18, 10%) (Table 15). Minor components of igneous (n=10, 5.6%), chert (n=6, 3.3%), chalcedony (n=3, 1.7%), quartzite (n=3, 1.7%) and MGS (n=3, 1.7%) were also present. Artefacts were mostly small in size, most commonly between 5-10mm (n=48, 26.7%) and 10-15mm (n=46, 25.6%) in maximum dimension, with 94% of artefacts measuring <30mm. The largest artefact (60-65mm) was a silcrete complete flake from spit 2 (10-20cm depth) at TS144 (ID #129).

Table 15. Raw Material Size Classes and Quantities – HLE T PAD 24

Raw Material	Size Class (Millimetres)										Total	%
	5-10	10-15	15-20	20-25	25-30	30-35	35-40	40-45	50-55	60-65		
Quartz	30	27	15	8	6	1	0	3	1	0	**91**	***50.6***
IMT	5	5	9	2	4	1	0	0	0	0	**26**	***14.4***
Silcrete	5	3	4	2	2	0	2	1	0	1	**20**	***11.1***
FGS	4	7	4	1	1	1	0	0	0	0	**18**	***10.0***
Igneous	1	0	2	3	4	0	0	0	0	0	**10**	***5.6***
Chert	1	1	1	2	1	0	0	0	0	0	**6**	***3.3***
Chalcedony	2	0	0	1	0	0	0	0	0	0	**3**	***1.7***
Quartzite	0	2	0	1	0	0	0	0	0	0	**3**	***1.7***
MGS	0	1	0	1	1	0	0	0	0	0	**3**	***1.7***
Total	**48**	**46**	**35**	**21**	**19**	**3**	**2**	**4**	**1**	**1**	**180**	***100***
%	***26.7***	***25.6***	***19.4***	***11.7***	***10.6***	***1.7***	***1.1***	***2.2***	***0.6***	***0.6***	***100***	

The assemblage consisted predominantly of complete flakes (n=61), comprising 33.9% of the total assemblage (Table 16). This was followed by medial flake fragments (n=34, 18.9%), distal flake fragments (n=32, 17.8%), proximal flake fragments (n=22, 12.2%), angular fragments (n=13, 7.2%), cores (n=10, 5.6%), split flakes (n=4, 2.2%), bipolar flakes and core fragments (each, n=2, 1.1%). Five artefacts had edge damage macroscopically consistent with usewear. Two retouched artefacts were present (silcrete and IMT) including an IMT convex scraper fragment from Spit 2 (10-20cm) at TS138 (ID #103, Plate 27). Two quartz backed artefacts were identified, including a complete Bondi Point recovered from spit 2 (10-20cm depth) at TS131 (ID #29, Plates 27-28).

Table 16. Lithic Types – HLE T PAD 24

	Flake	Bipolar Flake	Split Flake	Proximal Fragment	Medial Fragment	Distal Fragment	Angular Fragment	Core	Core Fragment	Total
Quartz	25	2	1	11	16	17	11	7	1	**91**
IMT	11	0	1	1	6	5	1	1	0	**26**
Silcrete	8	0	1	1	5	3	0	1	1	**20**
FGS	7	0	1	1	4	3	1	1	0	**18**
Igneous	5	0	0	3	0	2	0	0	0	**10**
Chert	2	0	0	1	2	1	0	0	0	**6**
Chalcedony	1	0	0	1	0	1	0	0	0	**3**
Quartzite	0	0	0	2	1	0	0	0	0	**3**
MGS	2	0	0	1	0	0	0	0	0	**3**
Total	**61**	**2**	**4**	**22**	**34**	**32**	**13**	**10**	**2**	**180**
%	***33.9***	***1.1***	***2.2***	***12.2***	***18.9***	***17.8***	***7.2***	***5.6***	***1.1***	***100***

Platform types were predominantly plain (n=44), with lesser numbers of focal (n=17), crushed (n=11), scarred (n=10), faceted (n=3), ridged and cortical (each, n=2). Termination types were mostly feather (n=45) and axial (n=33) with hinge (n=9), crushed (n=8) and plunging (n=4) terminations also present. Flake shape for complete flakes mostly consisted of longer than wide forms (n= 33), followed by wider than long (n=17), elongate (n=9), and length equal to width (n=4). Core types consisted of multidirectional (n=6), unifacial (n=2), asymmetric alternating and unifacial rotated (each, n=1).

Cortex was present on quartz, IMT, silcrete, chert, FGS and quartzite, with 12 artefacts retaining 1-30% of cortex and five artefacts retaining 31-60% cortex. Cortex types were predominantly rough granular (n=11), with a plain, flat, featureless cortex also present (n=4). Two silcrete artefacts retained cobble cortex (n=2). The high number of rough granular and plain cortex types suggests that raw materials were predominantly sourced from rocky outcrops or streams very close to their source, rather than stream pebbles and cobbles transported for longer distances. No igneous, chalcedony or MGS artefacts retained cortex. Cortex was present on 9.4% of the assemblage.

Heat exposure was present with variation in colour, lustre and the presence of crenate fracture surfaces on some select artefacts indicating that the material was affected by heating, whether deliberately or due to exposure to bushfires. Heat exposure was identified only on quartz and silcrete artefacts (n=7). Quartz artefacts were predominantly a milky white with some partially transparent white quartz also identified. Silcrete artefacts included regular and fine grained varieties.

Plate 25. Example of igneous artefacts at HLE T PAD 24. Top left: TS144 Spit 1 (0-10cm depth) – ID 124-125. Right: TS150 Spit 2 (10-20cm depth) – ID 169-174. Lower left: TS150 Spit 3 (20-30cm depth) – ID 175.

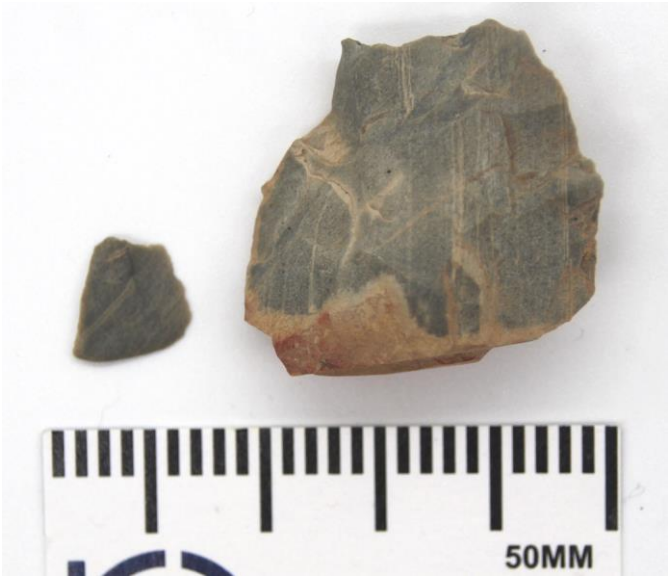


Plate 26. FGS complete flake and asymmetric alternating core of the same FGS material from TS132 Spit 2 (10-20cm depth) – ID 36 and 37.

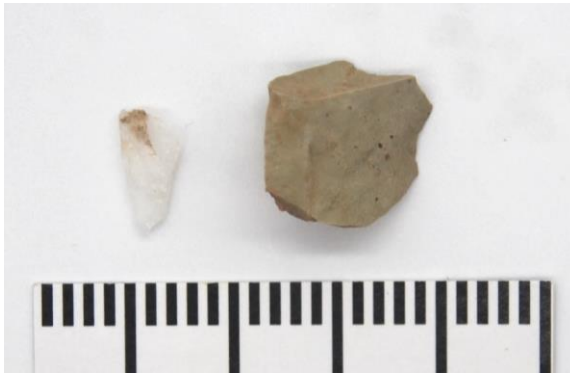


Plate 27. Left: quartz backed Bondi Point from TS131 Spit 2 (10-20cm depth) – ID 29. Right: IMT retouched convex scraper fragment from TS138 Spit 2 (10-20cm depth) – ID 103.

Plate 28. Detail of backing on quartz Bondi Point from TS131 Spit 2 (10-20cm depth) – ID 29.

Surface Artefacts

Three surface artefacts were identified at HLE T PAD 24 during the test excavation program. Surface artefacts were located on the central portion of the test area on an access track exposure south of a farm gate between TS126 and TS127 (Plate 29). The track area was heavily disturbed and compacted by machinery and vehicle activity, with little soil remaining. Artefacts consisted of three complete flakes of FGS, IMT and quartzite material measuring between 30-35mm in maximum length (Plate 30). The artefacts are not in situ but are considered likely to have derived from the immediate area given the low density, dispersed deposit encountered in this part of the test area and similarity to recorded subsurface artefacts.

Plate 29. View north at HLE T PAD 24 access track exposure containing surface artefacts.

Plate 30. Surface artefacts identified at HLE T PAD 24. FGS, IMT and quartzite complete flakes.

Summary

The presence of surface and subsurface archaeological material within the test area led to the designation of two archaeological sites, HLE T42 and HLE T43. HLE T42 was designated in the north western part of the test area and incorporated the higher density deposit on the gently sloping, elevated landform overlooking Killimicat Creek. This site extends within the unsurveyed area (Figure 68). HLE T43 comprised the lower density subsurface and surface deposit identified along the more disturbed access track, across slopes on either side of the drainage tributary. Given the variation in artefact density and deposit integrity, these were considered to form two distinct archaeological deposits. Potential for further deposit at HLE T42 was considered to be moderate, and low at HLE T43. HLE T43 is not within the unsurveyed area assessed for the Addendum ACHAR and is not considered further in this document for the purposes of impact assessment or mitigation.

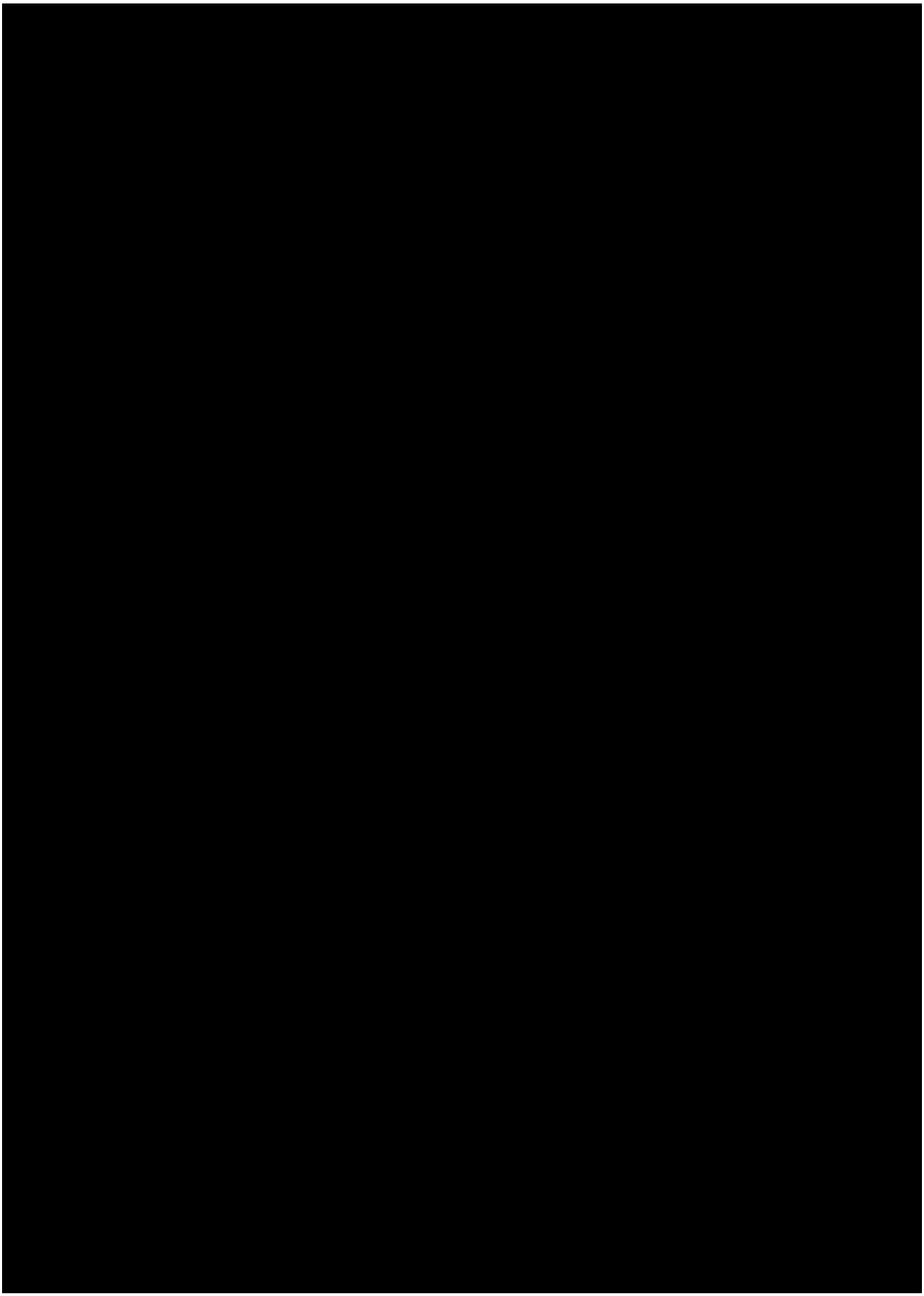


Figure 35. Test excavation results - HLE T PAD 24 (properties MA-077 and MA-079)

6.3.8 HLE Y PAD 27

HLE Y PAD 27 comprised a large PAD area located approximately 200 metres north of the Murrumbidgee River and 180 metres south of Oak Creek within YG-034. Landforms included a saddle to the west, an east-west running ridgeline and the gentle slopes off the ridgeline in the northern portion of the PAD area. The PAD area was elevated, overlooking a prominent bend in the Murrumbidgee River to the south. Test squares were placed between a proposed transmission tower site to the north and a second tower site to the west on the saddle landform. Test squares were also placed along the access track portion of the study area between the two tower sites, with squares placed along the ridgeline on landform features including small knolls to the east and west and a central saddle. Previous land use of the PAD area included use as a grazing pasture, construction of fencelines and use of a farm vehicle track.

A total of 29 test squares (50cm x 50cm) were excavated across the test area, giving a total excavated sample of 7.25m^2. Three northwest to southeast running transects were placed on the gently sloping northern end of the test area at the tower site, including Transect 1 (TS398, TS401, TS406 and TS407), Transect 2 (TS397, TS400, TS402 and TS403) and Transect 3 (TS396 and TS399). Two additional test squares were placed to the northeast of TS403 along a gently sloping minor spur, including TS404 and TS405. Most test squares were spaced at 10 metre intervals with one interval of 30 metres between TS398 and TS406. Two northeast to southwest oriented transects were placed at the western tower site saddle landform, including Transect 4 (TS408-TS412) and Transect 5 (TS413-TS416). One additional test square (TS417) was placed 10 metres northwest of TS415. All test squares within this portion of the test area were spaced at 10 metre intervals. Test squares along the access track ridgeline included Transect 6 (TS418-TS420) running northeast to southwest on the western side of the access track alignment. Test squares were placed on the northern and southern sides of the farm track on a knoll feature, with test squares spaced at 10 metre intervals. One test square (TS421) was placed at the centre of the test area on the southern side of the farm track on the saddle. Transect 7 (TS422-TS424) was placed on the eastern side of the access track alignment on a knoll across the western and eastern sides of the farm track, running northeast to southwest with test squares spaced at 10 metre intervals. Test square distribution and results at HLE Y PAD 27 are shown on Figure 40.

Plate 31. View northeast at gentle slope, northern portion of HLE Y PAD 27. Excavation in progress at TS398, TS397, TS396 (right) and TS401, TS400 (left).

Plate 32. View northeast at HLE Y PAD 27, western saddle landform. Excavated TS415 in foreground, recording in progress at TS414 in background.

Plate 33. View northeast at HLE Y PAD 27, small knoll on western side of ridgeline. Excavated TS419 in foreground, excavated TS418 indicated by arrow in background.

Plate 34. View southwest at HLE Y PAD 27 Transect 7. Small knoll on eastern side of ridgeline. Flagged TS422 in midground, excavation in progress at TS423 and TS424 in background. Arrow indicates the location of TS421 on the central saddle portion of PAD area.

Soils and disturbance

The nature of the deposit was generally consistent across the 29 test squares at HLE Y PAD 27, with slight variations resulting from historical land use disturbance and bioturbation. Low to moderate disturbance from historical land use activity was evident on the northern slope and western saddle at TS397, TS405, TS408, TS409 and TS412 with mixing of the upper A unit horizon. Bioturbation from grass roots and insect activity was evident throughout all test squares. TS413 and TS424 contained a mottled deposit with large patches of charcoal and charcoal staining, likely indicating the burning of a tree or tree roots at these locations.

Soils were of shallow to moderate depths. Soil depths ranged from 14cm at TS414 on the western saddle to 40cm at TS406 and TS406 at the northern slope portion of the test area. The remainder of test squares ranged from 15cm to 35cm depth. Soils generally consisted of a dark brown/brown sandy loam overlying a brown/light reddish brown sandy loam. Basal clays consisted of red clays, undulating at TS408, TS412, TS415, TS413, TS419 and TS422, likely resulting from tree root activity. The upper humic O horizon consisted of a brown silty loam with abundant grass roots. All squares contained quartz gravels. Charcoal was present as infrequent flecking throughout all test squares, indicating natural bushfires or use of fire in land clearing activities.

Figures 36-39 illustrate representative soil profiles at HLE Y PAD 27.

I. 0-2cm: Dark brown sandy loam, moderate compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 2-10cm: Dark brown sandy loam, moderate compaction. Gravels (<10mm, ~3%). Bioturbated, scattered charcoal flecks. Diffuse boundary to:
III. 10-23cm: Light reddish brown sandy loam, moderate compaction. Gravels increasing (<20mm, ~10%), charcoal flecks continuing. Diffuse boundary to:
IV. Base: Red clay, firm compaction. Slightly undulating.

Figure 36. TS404 west section and soil profile description

I. 0-2cm: Dark brown sandy loam, moderate compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 2-8cm: Brown sandy loam, moderate compaction. Gravels (<10mm, ~2%), scattered charcoal flecks. Diffuse boundary to:
III. 8-30cm: Brown sandy loam, moderate compaction. Gravels increasing (<15mm, ~10%), charcoal continuing. Diffuse boundary to:
IV. Base: Red clay, firm compaction. Sloping to southeast corner.

Figure 37. TS415 south section and soil profile description

I. 0-1cm: Dark brown sandy loam, moderate compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 1-10cm: Dark brown sandy loam, moderate compaction. Gravels (<10mm, ~2%), scattered charcoal flecks. Diffuse boundary to:
III. 10-30cm: Light reddish brown sandy loam, moderate compaction. Gravels increasing (<20mm, ~10%), charcoal continuing. Diffuse boundary to:
IV. Base: Red clay, firm compaction. Sloping to south.

Figure 38. TS419 east section and soil profile description

I. 0-2cm: Dark brown sandy loam, moderate compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 2-10cm: Dark brown sandy loam, moderate compaction. Gravels (<5mm, ~2%). Bioturbated, scattered charcoal flecks and fragments. Diffuse boundary to:
III. 10-35cm: Light reddish brown sandy loam, moderate compaction. Gravels increasing (<20mm, ~10%). Bioturbation and charcoal continuing. Diffuse boundary to:
IV. Base: Red clay, firm compaction. Undulating with tree root channels.

Figure 39. TS422 north section and soil profile description

Artefact distribution

A total of 98 artefacts were recovered from the test excavation undertaken at HLE Y PAD 27. Artefacts were recovered from 21 of 29 excavated test squares (72% of test squares). The spatial distribution of artefacts was characterised by a low-moderate mean artefact density (13.5 artefacts/m^2) across the tested area. The highest artefact density was encountered at TS419 (n=13), located on the western ridgeline knoll. A similar artefact density was encountered at TS415 (n=12) on the western saddle portion of the test area and at TS422 (n=11) on the eastern ridgeline knoll. Artefact densities in the remaining test units ranged between 0-9 artefacts per square (Table 17). The extrapolated high point was 52 artefacts/m^2 at TS419.

Test excavation results revealed that the highest density of artefacts was present along the ridgeline and associated saddle and knoll features, with the lowest artefact densities encountered on the northern slope portion of the test area. The majority of artefacts were recovered from depths between 0-10cm (n=53), followed by 10-20cm depth (n=40) and 20-30cm depth (n=5). The vertical distribution of artefacts was characterised by a predominance of artefacts within the uppermost 20cm of the deposit.

Table 17. Artefact distribution – HLE Y PAD 27

Square number	n	Square number	n	Square number	n
TS 396	0	TS 406	2	TS 416	1
TS 397	1	TS 407	0	TS 417	0
TS 398	2	TS 408	1	TS 418	6
TS 399	0	TS 409	9	TS 419	13
TS 400	2	TS 410	3	TS 420	0
TS 401	0	TS 411	7	TS 421	3
TS 402	1	TS 412	1	TS 422	11
TS 403	0	TS 413	0	TS 423	9
TS 404	7	TS 414	1	TS 424	3
TS 405	3	TS 415	12		

Lithic characteristics

Quartz was the primary raw material identified across the test area (n=44, 44.9%), followed by chert (n=23, 23.5%) (Table 18). Minor components of IMT, quartzite (each, n=9, 9.2%), silcrete (n=7, 7.1%), FGS and chalcedony (each, n=3, 3.1%), were also present. Artefacts were mostly small in size, most commonly between 5-10mm in maximum dimension (n=30, 30.6%), with a total of 90.6% of artefacts measuring less than 25mm. Smaller quantities of artefacts were present in the larger size categories of 25-30mm, 30-35mm (each, n=4, 4.1%) and 40-45mm (n=1, 1%). No artefacts were larger than 45mm. The largest artefact was an FGS medial flake fragment measuring 46.94mm in maximum dimension (ID 658).

Table 18. Raw Material Size Classes and Quantities – HLE Y PAD 27

Raw Material	Size Class (Millimetres)							Total	%
	5-10	10-15	15-20	20-25	25-30	30-35	40-45		
Quartz	18	16	5	4	1	0	0	**44**	***44.9***
Chert	6	6	7	2	1	1	0	**23**	***23.5***
IMT	1	2	3	0	1	2	0	**9**	***9.2***
Quartzite	1	1	4	2	1	0	0	**9**	***9.2***
Silcrete	2	2	1	1	0	1	0	**7**	***7.1***
FGS	0	0	1	1	0	0	1	**3**	***3.1***
Chalcedony	2	1	0	0	0	0	0	**3**	***3.1***
Total	**30**	**28**	**21**	**10**	**4**	**4**	**1**	**98**	***100***
%	***30.6***	***28.6***	***21.4***	***10.2***	***4.1***	***4.1***	***1.0***	***100***	

The assemblage consisted predominantly of complete flakes (n=36), comprising 36.7% of the total assemblage (Table 19). This was followed by medial flake fragments (n=24, 24.5%), distal flake fragments (n=16, 16.3%), proximal flake fragments (n=14, 14.3%), cores (n=4, 4.1%), angular fragments (n=3, 3.1%) with one core fragment also present (n=1, 1%). Cores consisted of one quartz bipolar core (ID 618), one quartz and one chert multidirectional core (ID 418 and 419) and one quartz unifacial core (ID 657). Three artefacts had edge damage macroscopically consistent with usewear. One retouched IMT artefact (ID 597) and one backed chert Bondi Point (ID 634, Plate 36) were present. A chert knapping event was identified at TS419, with seven artefacts of the same dark grey chert material including a multidirectional core (ID 644, ID 648-653, Plate 35).

Table 19. Lithic Types – HLE Y PAD 27

	Flake	Proximal Fragment	Medial Fragment	Distal Fragment	Angular Fragment	Core	Core Fragment	Total
Quartz	14	7	8	8	3	3	1	**44**
Chert	11	1	7	3	0	1	0	**23**
IMT	2	3	3	1	0	0	0	**9**
Quartzite	4	1	3	1	0	0	0	**9**
Silcrete	3	1	1	2	0	0	0	**7**
FGS	0	1	2	0	0	0	0	**3**
Chalcedony	2	0	0	1	0	0	0	**3**
Total	**36**	**14**	**24**	**16**	**3**	**4**	**1**	**98**
%	***36.7***	***14.3***	***24.5***	***16.3***	***3.1***	***4.1***	***1.0***	***100***

Platform types were predominantly plain (n=28), with lesser numbers of crushed and focal (each, n=6), scarred and ridged (each, n=3), faceted and cortical (each, n=2). Termination types were mostly feather (n=21) and axial (n=19) with hinge (n=6), plunging (n=4) and crushed (n=2) terminations also present. Flake shape for complete flakes mostly consisted of longer than wide forms (n=22), followed by wider than long (n=6), length equal to width (n=4) and elongate (n=4).

Cortex was present on chert, FGS, quartz, silcrete and quartzite, with 12 artefacts retaining 1-30% of cortex. Cortex types included cobble (n=6) and rough granular (n=5) with one chert artefact displaying a plain, flat, featureless cortex. This suggests that raw materials were sourced from both stream pebbles/cobbles and rocky outcrops or streams very close to their source. Cortex was present on 12.2% of the total assemblage. Quartz artefacts were a milky white type, and silcrete artefacts consisted of fine grained varieties only. One small flake of a unique, high quality pink chalcedony material was present at TS404 (ID 592).

Plate 35. Chert knapping event from TS419. Top Left: flake from Spit 1 (0-10cm depth) – ID 644. Lower left and right: multidirectional core, flakes and flake fragments from Spit 2 (10-20cm depth) – ID 648-653.

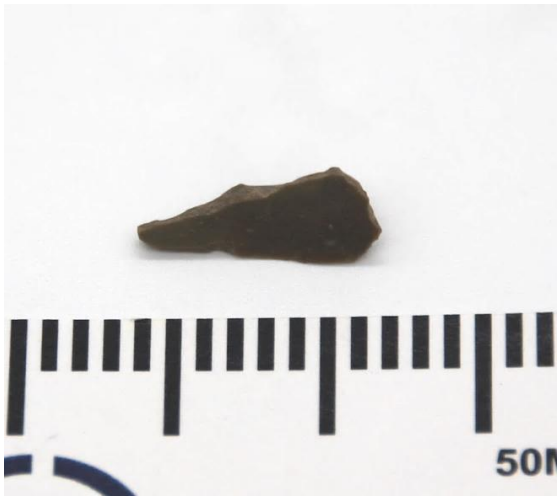


Plate 36. Chert Bondi Point from TS416 Spit 2 (10-20cm depth) – ID 634. Scale bars 1mm.

Surface Artefacts

One surface artefact was identified during the test excavation program at HLE Y PAD 27. The artefact was identified on the central saddle portion of the PAD area, four metres north of TS421 on a farm track exposure. The artefact was a sandstone grinding stone measuring 172mm x 170mm x 60mm with pitting and striations on one face and a linear grinding groove on one edge measuring 70mm x 10mm (Plate 37).

Plate 37. Grinding stone identified on surface at HLE Y PAD 27. Pitting and striations (left) and linear grinding groove (right).

Summary

The presence of subsurface and surface archaeological material within the test area led to the designation of five archaeological sites: HLE Y10, HLE Y11, HLE Y12, HLE Y13 and HLE Y14 (Figure 71), each associated with a specific microtopographic feature of the ridgeline overlooking the Murrumbidgee River. Together these form a small site complex of distinct but related areas of confirmed subsurface deposit. Potential for further intact deposit was assessed as moderate at HLE Y10 and HLE Y13, and low within the disturbance footprint at HLE Y11, HLE Y12 and HLE Y14. The better portions of the landforms associated with these sites extend outside the tested area and retain moderate potential.

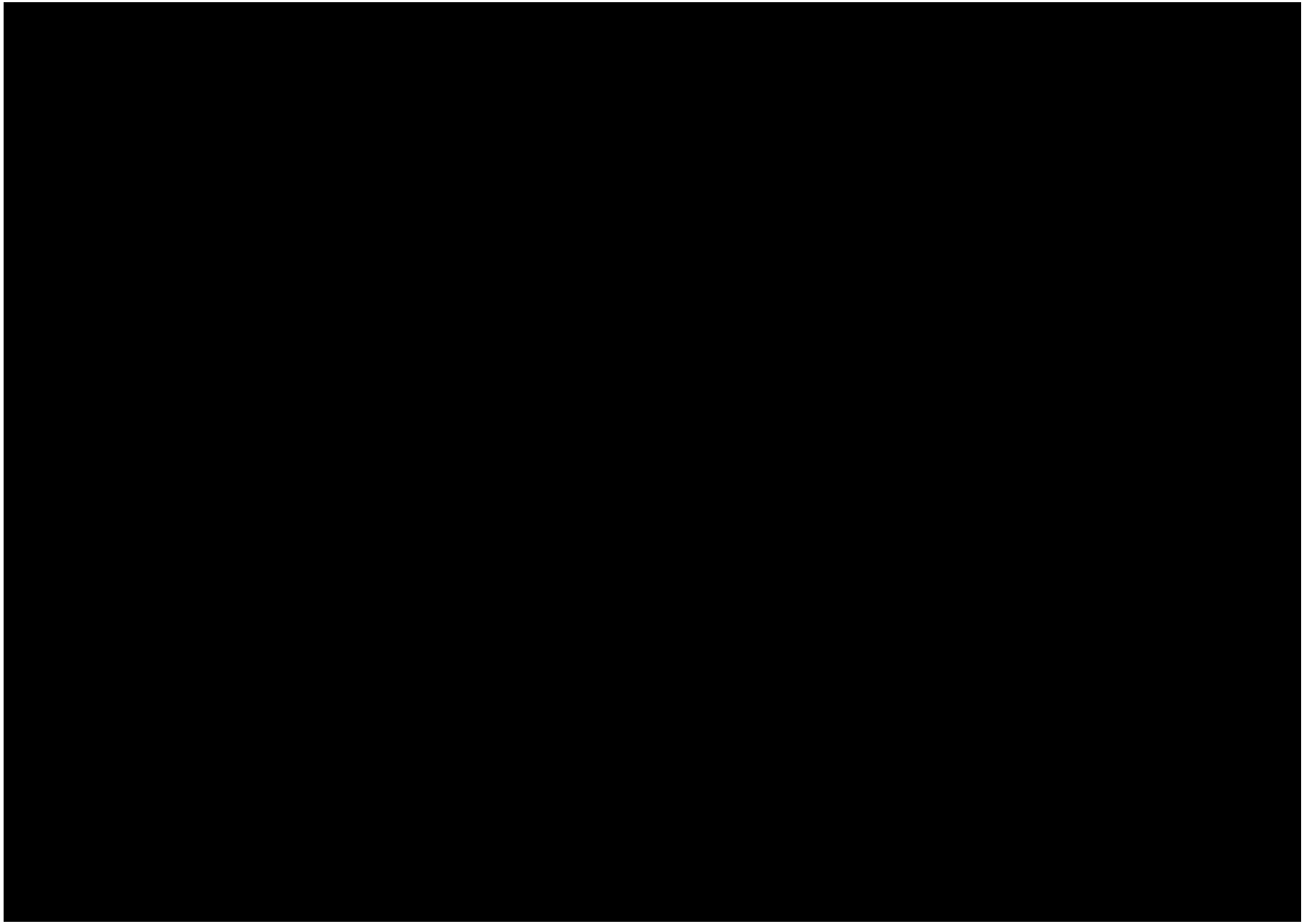


Figure 40. Test excavation results - HLE Y PAD 27 (property YG-034)

6.3.9 HLE Y PAD 29

HLE Y PAD 29 was located approximately 1.6 kilometres northeast of HLE Y PAD 27 on a moderate hillslope and defined, flat bench landform overlooking Oak Creek to the west and a tributary to the south. Test squares were placed on the northern side of a proposed transmission tower site and on the level bench to the north as an alternate location. Previous land use disturbance included use as a grazing pasture. The PAD is within YG-031, next to Childowla Road.

A total of nine test squares (50x50cm) were excavated at the test area, giving a total excavated sample of 2.25m^2. Squares were aligned along three east to west oriented transects. Transect 1 (TS435-TS437) and Transect 2 (TS438-440) were excavated on the slope at the northern end of the proposed tower site. Transect 3 (TS441-TS443) was placed 25 metres to the north on the flat bench landform. All test squares were spaced at 10 metre intervals. Test square distribution and results at HLE Y PAD 29 are shown on Figure 43.

Plate 38. View west along Transect 1 at HLE Y PAD 29, moderate hillslope. Excavation in progress at TS435 and TS436. Outcropping breccia visible in foreground.

Plate 39. View north at HLE Y PAD 29 upper bench landform. Excavated TS442 in midground.

Soils and disturbance

Soil profiles at HLE Y PAD 6 were generally consistent across the test area, with minimal disturbance from land use impacts. Bioturbation from grass roots and insect activity was evident throughout all test squares. TS441 contained a large patch of charcoal and burnt clay in the northern side of the square, likely indicating the burning of a tree root at this location.

Test squares displayed shallow to moderate deposit depths, with the shallowest depth of 10cm encountered at TS439 and the deepest deposit of 35cm encountered at TS435. The remainder of test square deposit depths ranged from 16-30cm. Soils consisted of a brown/dark brown sandy loam overlying a reddish brown sandy loam. Basal clays consisted of a reddish brown sandy clay. The upper humic O horizon consisted of a dark brown sandy loam with abundant grass roots. All squares contained large degrading bedrock gravels measuring up to 100mm, with bedrock encountered at TS439. Charcoal was present as flecking throughout all test squares, indicating natural bushfires or use of fire in land clearing activities. Figures 41-42 illustrate the soil profiles at HLE Y PAD 29.

I. 0-2cm: Dark brown sandy loam, moderate compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 2-11cm: Dark brown sandy loam, moderate compaction. Gravels (<10mm, ~3%). Scattered charcoal flecks. Diffuse boundary to:
III. 11-30cm: Reddish brown sandy loam, moderate compaction. Gravels increasing in size and abundance (<80mm, ~30%). Charcoal continuing. Clay content increasing with depth.
IV. Base: Reddish brown sandy clay, high compaction. Gravels continuing.

Figure 41. TS440 west section and soil profile description

I. 0-2cm: Brown sandy loam, loose compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 2-5cm: Brown sandy loam, moderate compaction. Gravels (<10mm, ~2%). Scattered charcoal flecks. Diffuse boundary to:
III. 5-30cm: Reddish brown sandy loam, moderate compaction. Gravels increasing in size and abundance (<50mm, ~10%). Charcoal continuing. Clay content increasing with depth.
IV. Base: Reddish brown sandy clay, high compaction. Gravels continuing.

Figure 42. TS442 south section and soil profile description

Artefact distribution

A total of 15 artefacts were recovered from the test excavation undertaken at HLE Y PAD 29. Artefacts were recovered from five of the nine excavated test squares (55.6% of test squares). Four test squares contained zero artefacts. The spatial distribution of artefacts was characterised by a moderate-low artefact density across the hillslope with a higher artefact density encountered on the upper bench landform at TS442 (n=10), with 66.7% of all artefacts recovered from this test square (Table 20). The extrapolated mean artefact density was generally low across the site area at 6.7 artefacts/m^2, with an extrapolated high point of 40 artefacts/m^2 at TS442. The majority of artefacts were recovered from depths between 10-20cm (n=13), with one artefact recovered from 0-10cm depth and 20-25cm depth (each, n=1).

Table 20. Artefact distribution – HLE Y PAD 29

Square number	n	Square number	n	Square number	n
TS 435	1	TS 438	0	TS 441	0
TS 436	1	TS 439	0	TS 442	10
TS 437	0	TS 440	2	TS 443	1

Lithic characteristics

Chert was the primary raw material excavated during testing of HLE Y PAD 29 (n=8, 53.3%) with IMT (n=4, 26.7%), quartz (n=2, 13.3%) and silcrete (n=1, 6.7%) also present. Artefacts were small in size, with 46.7% of artefacts measuring between 15-20mm in maximum dimension (Table 21). No artefacts were larger than 25mm.

Table 21. Raw Material Size Classes and Quantities – HLE Y PAD 29

Raw Material	Size Class (Millimetres)				Total	%
	5-10	10-15	15-20	20-25		
Chert	1	2	2	3	**8**	***53.3***
IMT	0	1	3	0	**4**	***26.7***
Quartz	0	1	1	0	**2**	***13.3***
Silcrete	0	0	1	0	**1**	***6.7***
Total	**1**	**4**	**7**	3	**15**	***100***
%	***6.7***	***26.7***	***46.7***	***20.0***	***100***	

The assemblage consisted predominantly of complete flakes (n=6, 40%), proximal flake fragments (n=4, 26.7%) and distal flake fragments (n=3, 20%) (Table 22). One medial flake fragment and split flake were also present (each, n=1, 6.7%). Artefacts of the same chert (ID 684-687) and IMT (ID 688-690) materials were encountered at TS442, likely indicating the occurrence of a knapping event at this location (Plate 40). No formal tools or modified artefacts were identified at HLE Y PAD 29.

Table 22. Lithic Types – HLE Y PAD 29

	Flake	Proximal Fragment	Medial Fragment	Distal Fragment	Split Flake	Total
Chert	2	2	1	3	0	**8**
IMT	3	1	0	0	0	**4**
Quartz	1	1	0	0	0	**2**
Silcrete	0	0	0	0	1	**1**
Total	**6**	**4**	**1**	**3**	**1**	**15**
%	***40.0***	***26.7***	***6.7***	***20.0***	***6.7***	

Platform types were predominantly plain (n=8), with crushed, ridged and scarred platforms also present (each, n=1). Termination types were mostly feather (n=8) with two hinge terminations also present (n=2). Rough granular cortex was present on two chert artefacts.

Plate 40. Chert and IMT artefacts from TS442 Spit 2 (10-20cm depth) – ID 684-693.

Summary

The presence of subsurface archaeological material within the test area led to the designation of archaeological site HLE Y18 (Figure 72). Potential for further subsurface deposit within the current disturbance footprint on the more sloping part of the landform was assessed as low. Potential for the norther, flatter benched part of the landform is moderate for low-moderate density deposit, as while soil profiles were shallow and rocky they were generally intact.

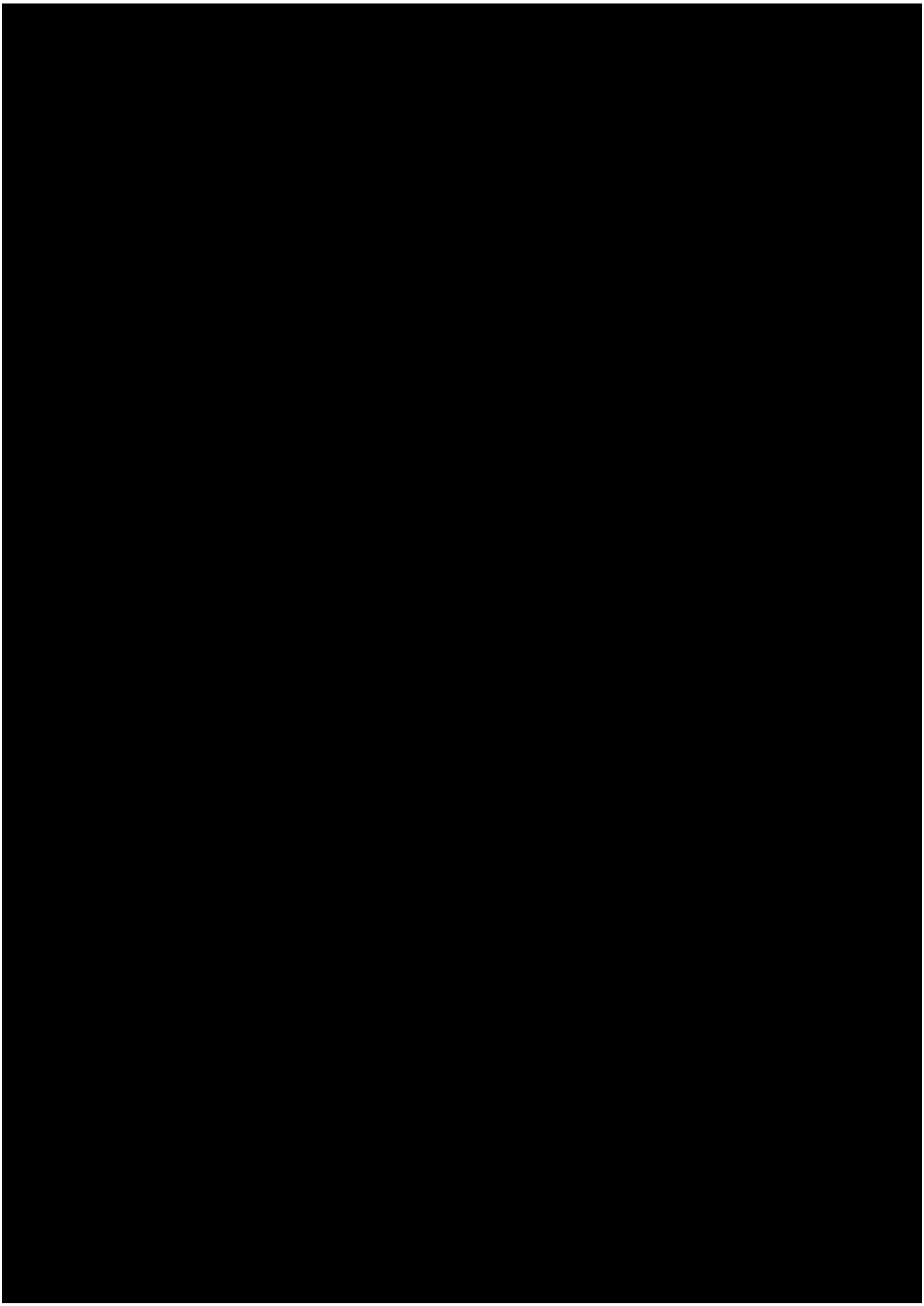


Figure 43. Test excavation results - HLE Y PAD 29 (property YG-031)

6.3.10 HLE Y PAD 5

HLE Y PAD 5 was located on a midslope landform descending from the crest of a spurline to the west, approximately 660 metres west of Cooks Creek, 100 metres south of a tributary to Cooks Creek (modified with online farm dams) and one kilometre southeast of Fairy Hole Creek. Previous land use disturbance included ploughing and use as a grazing pasture, construction of access tracks and fencelines. The PAD was located within property BY-151.

Test squares were placed through the centre of the PAD area on the eastern and western sides of an existing access track. A total of 12, 50cm x 50cm test squares were excavated across the test area, giving a total excavated sample of 3m^2. Squares were aligned along one northeast to southwest oriented transect (TS53-TS64) across the slope (Plate 41). Most test squares were spaced at 10 metre intervals with an interval of 20 metres between TS60 and TS61 to avoid the access track.

Test square distribution and results at HLE Y PAD 5 are shown on Figure 49.

Plate 41. View southwest across hillslope at HLE Y PAD 5. Test squares being aligned along transect. Tape indicates alignment of transect, flags indicate test square locations.

Plate 42. View east at HLE Y PAD 5, excavated TS 60 in foreground. Excavation in progress at TS61 and TS62 in background. Access track running north-south through test area in mid ground.

Soils and disturbance

Soil profiles at HLE Y PAD 5 were generally consistent across the 12 test squares with some variation related to the impacts of land use disturbance and bioturbation. Land use disturbance was evident throughout all test squares with mixing of the upper ~20cm of the A unit soil profiles, likely resulting from past ploughing activity. Bioturbation from grass roots and insect activity was also evident throughout all test squares. Visible surface disturbance included an access track running north to south through the test area and access roads to the south and east of the test area.

Test squares displayed moderate to deep deposit depths, with the shallowest depth of 20cm encountered at TS57 and the deepest deposit of 60cm encountered at TS60, located adjacent to the access track. The majority of test squares reached a maximum depth of 30cm. Soils consisted of a greyish brown sandy loam overlying a light reddish brown sandy clay loam. Basal clays consisted of red sandy clays. The upper humic O horizon consisted of a greyish brown sandy loam with abundant grass roots. All squares contained ironstone and quartz gravels and Fe/Mn inclusions indicating intermittent waterlogging of sediment. Charcoal was present as infrequent flecking throughout all test squares, indicating natural bushfires or use of fire in land clearing activities.

Figures 44-45 illustrate the soil profiles at HLE Y PAD 5.

Artefact distribution

No artefacts were recovered from the test program at HLE Y PAD 5.

Summary

No artefacts were recovered from the test program at this location. The area is not a PAD or archaeological site.

Figure 44. TS54 west section and soil profile description

I. 0-2cm: Dark greyish brown sandy loam, moderate compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 2-10cm: Greyish brown sandy loam, light mottling with light reddish brown, moderate compaction. Gravels and Fe/MN flecks/nodules (<5mm, ~2%). Diffuse boundary to:
III. 10-20cm: Light reddish brown sandy clay loam mottled with greyish brown, moderate compaction. Gravels and Fe/Mn increasing in size and abundance (<20mm, ~7%), scattered charcoal flecks, diffuse boundary to:
IV. 20-30cm: Light reddish brown sandy clay loam, moderate-high compaction. Gravels and charcoal flecks continuing.
V. Base: Red sandy clay, high compaction.

Figure 45. TS63 west section and soil profile description

I. 0-2cm: Dark greyish brown sandy loam, moderate compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 2-14cm: Greyish brown sandy loam mottled with light reddish brown, moderate compaction. Gravels and Fe/MN flecks/nodules (<5mm, ~2%). Diffuse boundary to:
III. 14-35cm: Light reddish brown sandy clay loam, moderate compaction. Gravels and Fe/Mn increasing in size and abundance (<20mm, ~7%), scattered charcoal flecks, diffuse boundary to:
IV. Base: Red sandy clay, high compaction.

6.3.11 HLE Y PAD 6

HLE Y PAD 6 was located to the northeast of HLE Y PAD 5 on a gentle southerly sloping spurline overlooking the dammed tributary of Cooks Creek. Test squares were placed a two potential access track alignment on the northern side of the PAD area and along a narrow track within the southern half of the PAD. Previous land use disturbance included ploughing and use as a grazing pasture, construction of online farm dams and fencelines. The PAD was located within property BY-150.

A total of 10 test squares (50x50cm) were excavated across the gentle slope landform, giving a total excavated sample of 2.5m^2. Squares were aligned along two east to west oriented transects. The first transect (TS39-TS43) was placed at the northern end of the PAD area and the second transect (TS44-TS46, TS51) was placed within the southern half of the PAD area. One additional test square (TS52) was placed 10 metres north of TS46. All test squares were spaced at 10 metre intervals.

Test square distribution and results at HLE Y PAD 6 are shown on Figure 49.

Plate 43. View east along transect 1 at HLE Y PAD 6. Excavated TS39 in foreground, excavated TS40 and excavation in progress at TS41 and TS42 in background. Slope descending to dammed tributary.

Plate 44. View south at HLE Y PAD 6. Slope descends to tributary of Cooks Creek in background. Excavated TS46 in foreground.

Soils and disturbance

Soil profiles at HLE Y PAD 6 varied due to the impacts of land use disturbance and bioturbation. Land use disturbance was evident throughout the test area with mixing of the upper ~15cm of the A unit soil profiles, likely resulting from past ploughing activity. A more intact deposit with less soil mixing was present within Transect 1 on the northern side of the test area. Bioturbation from grass roots and insect activity was evident throughout all test squares. Visible surface disturbance included a narrow track running east to west through Transect 2.

Test squares displayed moderate deposit depths, with the shallowest depth of 20cm encountered at TS43 and the deepest deposit of 30cm encountered at TS40, TS41, TS44, TS45 and TS52. The most intact natural deposit was encountered at TS40 (Figure 46). Soils consisted of a greyish brown sandy loam overlying a reddish yellow sandy loam. Basal clays consisted of red sandy clays. The upper humic O horizon consisted of a greyish brown sandy loam with abundant grass roots. All squares contained ironstone and quartz gravels and Fe/Mn inclusions indicating intermittent waterlogging of sediment. Charcoal was present as infrequent flecking throughout all test squares, indicating natural bushfires or use of fire in land clearing activities.

Figures 46-48 illustrate the soil profiles at HLE Y PAD 6.

Figure 46. TS40 south section and soil profile description

I. 0-2cm: Dark greyish brown sandy loam, loose compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 2-12cm: Greyish brown sandy loam, moderate compaction. Some mottling with light grey. Gravels (<10mm, ~5%). Scattered charcoal flecks. Diffuse boundary to:
III. 12-30cm: Reddish yellow sandy loam, moderate compaction. Gravels increasing in size and abundance (<50mm, ~10%). Fe/Mn flecks and nodules (<10mm, ~2%). Charcoal continuing. Clay content increasing with depth.
IV. Base: Reddish brown sandy clay, high compaction. Gravels continuing.

Figure 47. TS46 east section and soil profile description

I. 0-2cm: Dark greyish brown sandy loam, loose compaction. Humic with abundant grass roots. Cut running east-west through centre from track on surface. Diffuse boundary to:
II. 2-12cm: Mottled reddish yellow and greyish brown sandy loam, moderate compaction. Gravels (<20mm, ~7%). Scattered charcoal flecks. Diffuse boundary to:
III. 12-30cm: Reddish yellow sandy loam, moderate compaction. Gravels increasing in size and abundance (<30mm, ~10%). Fe/Mn flecks and nodules <20mm ~3%. Charcoal continuing. Clay content increasing with depth.
IV. Base: Reddish brown sandy clay, high compaction. Gravels continuing. Large artefact ID# 188 visible in situ in southeast corner.

Figure 48. TS51 south section and soil profile description

I. 0-1cm: Dark greyish brown sandy loam, loose compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 2-8cm: Mottled reddish yellow and greyish brown sandy loam, moderate compaction. Gravels (<20mm, ~5%). Scattered charcoal flecks. Diffuse boundary to:
III. 12-30cm: Reddish yellow sandy loam, moderate compaction. Gravels increasing in size and abundance (<40mm, ~10%). Fe/Mn flecks and nodules <20mm ~3%. Charcoal continuing. Clay content increasing with depth.
IV. Base: Reddish brown sandy clay, high compaction. Gravels continuing.

Artefact distribution

A total of 10 artefacts were recovered from the test excavation undertaken at HLE Y PAD 6. Artefacts were recovered from 4 of the 10 excavated test squares (40% of test squares). Six test squares contained zero artefacts. The spatial distribution of artefacts was characterised by a low artefact density across the tested area with the highest artefact density encountered at TS39 (n=4), located on Transect 1 on the northern side of the PAD area (Table 23). The extrapolated mean artefact density was generally low across the site area at 4 artefacts/m^2, with an extrapolated high point of 16 artefacts/m^2 at TS39.

Test excavation results revealed that artefacts were present at the northwestern extent of the PAD area at TS39 and at the eastern side of Transect 2 within the southern half of the test area. No other test squares contained artefacts. The majority of artefacts were recovered from depths between 10-20cm (n=5), with three artefacts recovered from 0-10cm depth (n=3) and two artefacts recovered from 20-30cm depth (n=2).

Table 23. Artefact distribution – HLE Y PAD 6

Square number	n	Square number	n
TS 39	4	TS 44	0
TS 40	0	TS 45	1
TS 41	0	TS 46	2
TS 42	0	TS 51	3
TS 43	0	TS 52	0

Lithic characteristics

Quartz was the primary raw material excavated during testing of HLE Y PAD 6 (n=8, 80%) with one artefact each of chert and IMT (each n=1, 10%) also present. The majority of artefacts were small in size with 45.5% of artefacts measuring less than 20mm in maximum dimension (Table 24). A very large flake blank IMT core was encountered at TS46 measuring 140mm in maximum dimension and weighing 729 grams (Plate 45).

Table 24. Raw Material Size Classes and Quantities – HLE Y PAD 6

Raw Material	Size Class (Millimetres)						Total	%
	5-10	10-15	15-20	20-25	25-30	140-145		
Quartz	3	2	2	0	1	**0**	**8**	***80***
Chert	0	0	0	1	0	**0**	**1**	***10***
IMT	0	0	0	0	0	**1**	**1**	***10***
Total	**3**	**2**	**2**	**1**	**1**	**1**	**10**	***100***
%	***30***	***20***	***20***	***10***	***10***	***10***	***100***	

The assemblage consisted predominantly of distal flake fragments (n=3, 30%), complete flakes and cores (each, n=2, 20%) (Table 25). One proximal flake fragment, medial flake fragment and angular fragment were also present (each, n=1, 10%). The IMT flake blank core consisted of a multidirectional flaking pattern on a very large flake body with flakes removed from the distal end and right and left lateral margins (Plate 45). No cortex was present on this large artefact, with three large partial scars on the dorsal. It was likely reduced at a rock outcrop source using hard hammer percussion and carried away as a blank for use as a core. No formal tools or modified artefacts were identified at HLE Y PAD 6.

Table 25. Lithic Types – HLE Y PAD 6

	Core	Flake	Proximal Fragment	Medial Fragment	Distal Fragment	Angular Fragment	Total
Quartz	1	2	0	1	3	1	**8**
Chert	0	0	1	0	0	0	**1**
IMT	1	0	0	0	0	0	**1**
Total	**2**	**2**	**1**	**1**	**3**	**1**	**10**
%	***20***	***20***	***10***	***10***	***30***	***10***	***100***

Only plain platform types (n=3) and feather termination types (n=5) were present. No artefacts retained cortex. Heat exposure was present on the chert artefact with discolouration and potlid scars indicating that the material was affected by heating. Quartz artefacts consisted of a milky white appearance.

Plate 45. Ventral (top) and dorsal (bottom) faces of a very large IMT flake utilised as a core from TS46 Spit 3 (20-30cm depth) – ID 188.

Summary

The presence of subsurface archaeological material within the test area led to the designation of archaeological site HLE Y27. The site comprises a dispersed, low density deposit. Potential for further subsurface deposit within the current disturbance footprint was assessed as low.

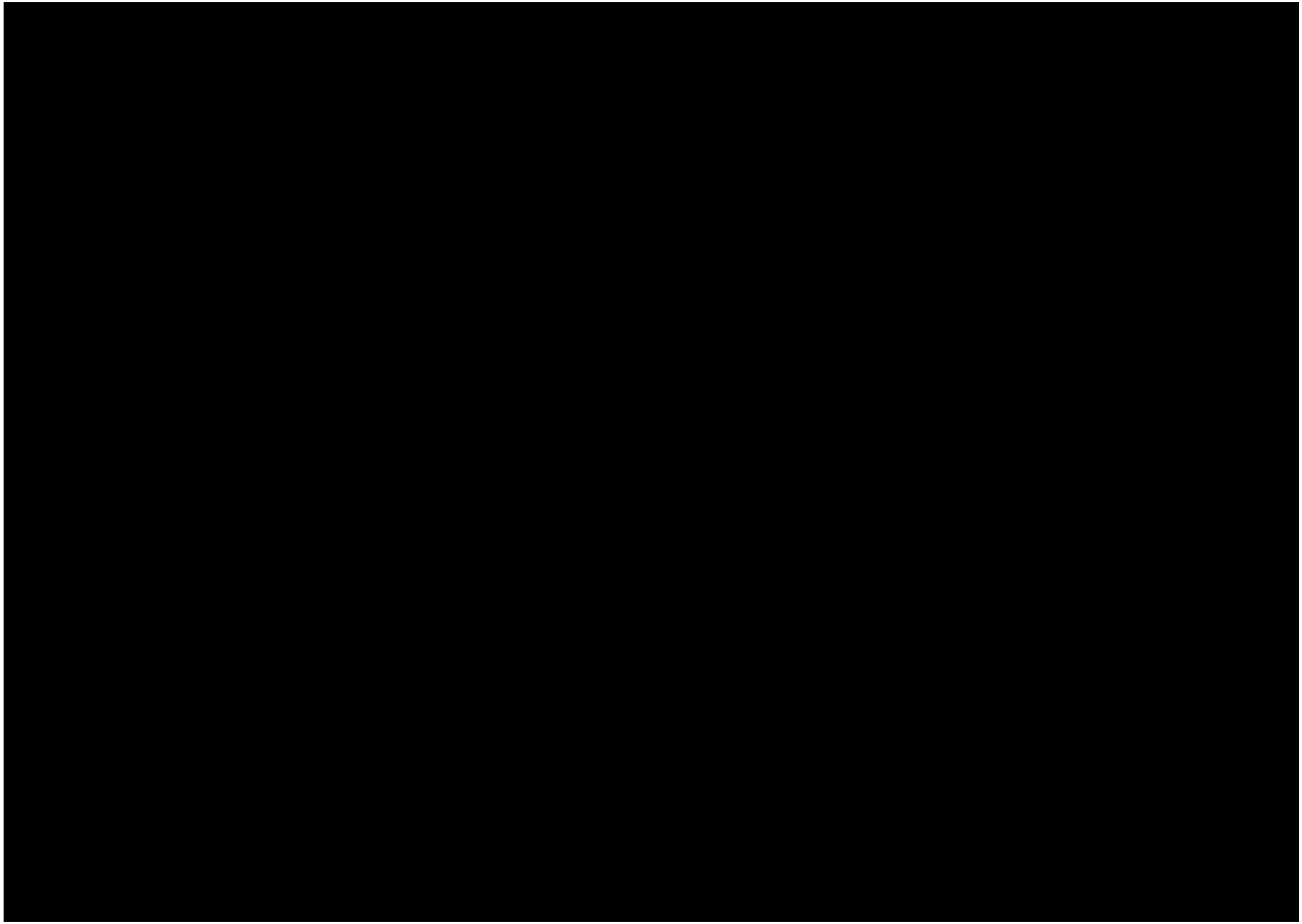


Figure 49. Test excavation results - HLE Y PAD 5 and HLE Y PAD 6 (properties BY-151 and BY-150)

6.3.12 HLE G PAD 14

HLE G PAD 14 was located approximately 200 metres west of Middle Creek on a gentle slope descending to the incised creekbank. The test area was located on the eastern side of Sapphire Road, within BY-107 and the current proposed disturbance footprint for access track AT-163. Land use disturbance included ploughing, use as a grazing pasture and construction of a transmission pole south of the PAD area.

A total of six test squares (50cm x 50cm) were excavated across the test area, giving a total excavated sample of 1.5m^2. Squares were aligned along one northeast to southwest oriented transect within the portion of the PAD area that extends within the study area (TS173-TS178). Test squares TS177 and TS178 were aligned slightly more to the south within the transect to align with the proposed disturbance footprint. All test squares were spaced at 10 metre intervals.

Test square distribution and results at HLE G PAD 14 are shown on Figure 57.

Plate 46. View north along slope descending to Middle Creek at HLE G PAD 14. Excavated TS175 in midground, excavation in progress at TS177 and TS178 in background. Linear plough lines visible on surface.

Plate 47. View east across slope at HLE G PAD 14. Excavated TS173 in midground, existing transmission pole on left. Linear plough lines visible on surface.

Soils and disturbance

Soil profiles at HLE G PAD 14 varied due to the impacts of land use disturbance and bioturbation. Land use disturbance was evident throughout all test squares with mixing of the upper ~20cm of the A unit soil profiles, likely resulting from ploughing activity. Bioturbation from grass roots and insect activity was evident throughout all test squares. Visible surface disturbance included linear plough lines throughout the test area.

Test squares displayed shallow to moderate deposit depths. Soil depths ranged from 15cm at TS174 to 34cm at TS175, with all remaining test squares reaching depths between 20-23cm. Generally, soils consisted of a greyish brown sandy loam overlying a reddish brown sandy clay loam. Basal clays consisted of reddish brown sandy clays. The upper humic O horizon consisted of a dark greyish brown sandy loam with abundant grass roots. All squares contained ironstone gravels. Charcoal was present as infrequent flecking throughout all test squares, indicating natural bushfires or use of fire in land clearing activities. Figures 50-51 illustrate representative soil profiles at HLE G PAD 14.

Figure 50. TS173 west section and soil profile description

I. 0-5cm: Dark greyish brown sandy loam, moderate compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 5-18cm: Dark greyish brown sandy loam mottled with reddish brown, moderate compaction. Gravels (<10mm, ~2%), scattered charcoal flecks. Diffuse boundary to:
III. 18-23cm: Reddish brown sandy clay loam, moderate compaction. Gravels continuing.
IV. Base: Dark reddish brown sandy clay, firm compaction.

Figure 51. TS175 north section and soil profile description

I. 0-3cm: Dark greyish brown sandy loam, moderate compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 3-10cm: Greyish brown sandy loam mottled with reddish brown, moderate compaction. Gravels (<10mm, ~2%), scattered charcoal flecks. Diffuse boundary to:
III. 10-34cm: Reddish brown sandy clay loam mottled with greyish brown, moderate compaction. Gravels and charcoal continuing. Clay content increasing with depth.
IV. Base: Dark reddish brown sandy clay, firm compaction.

Artefact distribution

A total of eight artefacts were recovered at HLE G PAD 14 from three of the six excavated test squares (TS173, TS175 and TS178) (Table 26). The extrapolated mean artefact density across the test area was low at 5.3 artefacts/m^2, with an extrapolated high point of 20 artefacts/m^2 at TS175.

Test excavation results revealed that the highest density of artefacts was present within the central part of the test area, with very low densities or zeroes on either side. The vertical distribution of artefacts was characterised by a predominance of artefacts between 10-20cm depth (n=5), followed by 20-30cm depth (n=2) and 0-10cm depth (n=1).

Table 26. Artefact distribution – HLE G PAD 14

Square number	n	Square number	n
TS 173	1	TS 176	0
TS 174	0	TS 177	0
TS 175	5	TS 178	2

Lithic characteristics

Artefacts recovered from HLE G PAD 14 consisted predominantly of chert and silcrete (each, n=3), with one artefact of quartz and FGS also present (each, n=1) (Table 27). Artefacts were small in size, with all artefacts measuring <20mm in maximum dimension.

The assemblage consisted of three complete flakes, two distal flake fragments, two proximal flake fragments and one chert multidirectional core (Plate 48). One distal flake fragment had edge damage macroscopically consistent with usewear. No retouched or formal artefact types were identified, and no artefacts retained cortex. Platform types consisted of plain (n=3), faceted and scarred (each, n=1). Termination types consisted of feather (n=3) and axial (n=2).

Heat exposure was present on the three of the silcrete artefacts with variation in colour, lustre and the presence of crenate fracture surfaces indicating that the material was affected by heating, whether deliberately or due to exposure to bushfires.

Table 27. Lithic Types – HLE G PAD 14

	Flake	Proximal Fragment	Distal Fragment	Core	Total
Chert	0	1	1	1	**3**
Silcrete	2	0	1	0	**3**
Quartz	1	0	0	0	**1**
FGS	0	1	0	0	**1**
Total	**3**	**2**	**2**	**1**	**8**
%	***37.5***	***25.0***	***25.0***	***12.5***	***100***

Plate 48. Chert multidirectional core from TS175 Spit 2 (10-20cm depth) – ID 275.

Summary

The presence of subsurface archaeological material within the test area led to the designation of archaeological site HLE G28 (Figure 80). The site is of low artefact density and potential for further intact subsurface deposit was assessed as low due to disturbance.

6.3.13 HLE G PAD 15

HLE G PAD 15 was located to the east of HLE G PAD 14 on the gentle slope and microtopographic elevated rises on the western side of Middle Creek within BY-107. Land use disturbance included ploughing, use as a grazing pasture and construction of a fenceline running northeast to southwest. Linear plough lines from recent ploughing activity were visible on the surface on the northern side of the fenceline at TS179-TS181. The microtopographic elevated rises were interspersed by drainage channels running to Middle Creek.

A total of nine test squares (50cm x 50cm) were excavated across the test area, giving a total excavated sample of 2.25m^2. Squares were aligned along four transects. Transect 1 (TS179-TS181) was aligned northeast to southwest on the lower slope above Middle Creek on the northern side of a fenceline. Two transects were located on the elevated rise on the southern side of the fenceline above Middle Creek, running northeast to southwest, including Transect 2 (TS182-TS183) and Transect 3 (TS186-TS187). Transect 4 (TS184-TS185) was located on the southwestern side of the test area on the lower slope running northeast to southwest. All test squares were placed at 10 metre intervals.

Test square distribution and results at HLE G PAD 15 are shown on Figure 57.

Plate 49. View northeast at HLE G PAD 15. Elevated rise extending to right above incised Middle Creek. Excavated TS183 in midground, excavated TS182 indicated by arrow in background, excavation in progress at TS186 on right.

Plate 50. View southwest at HLE G PAD 15. Excavated TS185 in foreground. Gentle slopes descending from the west towards Middle Creek, microtopographic elevated rises. Drainage channel in background at left.

Soils and disturbance

Soil profiles at HLE G PAD 15 varied due to the impacts of land use disturbance and bioturbation. Variable levels of land use disturbance were evident throughout the test area with low-moderate mixing of the upper ~20cm of the A unit soil profiles, likely resulting from ploughing activity. The most intact deposits were encountered on the small rise adjacent to Middle Creek on the southern side of the fenceline. Bioturbation from grass roots and insect activity was evident throughout all test squares. Visible surface disturbance included linear plough lines at TS179-TS181. A small animal burrow was present at TS179, and tree roots were located within the base at TS186.

Soils were of moderately deep deposit depths. Soil depths ranged from 40cm at TS184 and TS186 on the slope and lower portion of the rise to 60cm at TS182 and TS187 on the central portion of the elevated rise. All remaining test squares ranged between 50-57cm depth. Generally, soils consisted of a dark greyish brown sandy loam overlying a light yellowish brown sandy loam. Basal clays consisted of light yellowish brown sandy clays. The upper humic O horizon consisted of a dark greyish brown sandy loam with abundant grass roots. All squares contained ironstone gravels. Charcoal was present as flecking throughout all test squares, indicating natural bushfires or use of fire in land clearing activities. Charcoal staining was identified at TS184, TS179, TS180 and TS181 between depths of 6-22cm, indicating more intensive burning events at these locations.

Figures 52-54 illustrate representative soil profiles at HLE G PAD 15.

Figure 52. TS180 east section and soil profile description

I. 0-3cm: Dark greyish brown sandy loam, moderate compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 3-8cm: Dark greyish brown sandy loam, moderate compaction. Gravels (<10mm, ~2%), scattered charcoal flecks and charcoal staining between 6-8cm. Diffuse boundary to:
III. 8-50cm: Light yellowish brown sandy loam, moderate compaction. Gravels and charcoal continuing. Clay content increasing with depth.
IV. Base: Light yellowish brown sandy clay, high compaction.

Figure 53. TS182 south section and soil profile description

I. 0-2cm: Dark greyish brown sandy loam, moderate compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 2-12cm: Dark greyish brown sandy loam, moderate compaction. Gravels (<10mm, ~3%), scattered charcoal flecks. Diffuse boundary to:
III. 12-45cm: Light yellowish brown sandy clay loam, moderate compaction. Gravels and charcoal continuing. Clay content increasing with depth.
IV. Base: Light yellowish brown sandy clay, high compaction. Patches of charcoal in northwest corner and centre south.

Figure 54. TS184 west section and soil profile description

I. 0-3cm: Dark greyish brown sandy loam, moderate compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 3-18cm: Dark greyish brown sandy loam mottled with light yellowish brown, moderate compaction. Gravels (<10mm, ~2%), scattered charcoal flecks and charcoal staining between 10-18cm depth. Diffuse boundary to:
III. 18-40cm: Light yellowish brown sandy loam, some mottling with dark greyish brown. Moderate compaction. Gravels and scattered charcoal continuing. Clay content increasing with depth.
IV. Base: Light yellowish brown sandy clay, high compaction. Charcoal continuing.

Artefact distribution

A total of 44 artefacts were recovered from the test excavation undertaken at HLE G PAD 15. Artefacts were recovered from 8 of the 9 excavated test squares (88.9% of test squares). The spatial distribution of artefacts was characterised by a moderate mean artefact density (19.6 artefacts/m^2) across the tested area with the highest artefact density at TS182 (n=23), located on the most elevated portion of the rise, with the remaining test squares ranging between zero to 10 artefacts (Table 28). The extrapolated high point was 92 artefacts/m^2 at TS182.

Test excavation results revealed that the highest density of artefacts was present within the elevated rise adjacent to Middle Creek while lower artefact densities were encountered on the surrounding gentle slope. The vertical distribution of artefacts was characterised by a predominance of artefacts between 20-30cm depth (n=22), followed by 30-40cm depth (n=12), 0-10cm depth (n=4), 10-20cm depth (n=3) 40-50cm depth (n=2) and 50-55cm depth (n=1).

Table 28. Artefact distribution – HLE G PAD 15

Square number	n	Square number	n	Square number	n
TS 179	2	TS 182	23	TS 185	0
TS 180	2	TS 183	10	TS 186	1
TS 181	1	TS 184	4	TS 187	1

Lithic characteristics

Quartz was the primary raw material identified during the test excavation at HLE G PAD 15 (n=40, 90.9%) (Table 29). Minor components of silcrete (n=2, 4.5%), quartzite and FGS (each, n=1, 2.3%) were also present. Artefacts were mostly small in size, with maximum dimensions most commonly between 5-10mm (n=15, 34.1%), 10-15mm and 15-20mm (each, n=12, 27.3%), resulting in a total of 88.6% of artefacts measuring <20mm. This was followed by artefacts between 20-25mm (n=3, 6.8%), 30-35mm and 35-40mm (each, n=1, 2.3%). The largest artefact was a silcrete proximal flake fragment measuring 39mm in maximum dimension.

Table 29. Raw Material Size Classes and Quantities – HLE G PAD 15

Raw Material	Size Class (Millimetres)						Total	%
	5-10	10-15	15-20	20-25	30-35	35-40		
Quartz	15	12	10	2	1	0	**40**	**90.9**
Silcrete	0	0	1	0	0	1	**2**	**4.5**
Quartzite	0	0	0	1	0	0	**1**	**2.3**
FGS	0	0	1	0	0	0	**1**	**2.3**
Total	**15**	**12**	**12**	**3**	**1**	**1**	**44**	**100**
%	***34.1***	***27.3***	***27.3***	***6.8***	***2.3***	***2.3***	***100***	

The assemblage consisted predominantly of medial flake fragments (n=12) comprising 27.3% of the total assemblage (Table 30). This was followed by distal flake fragments (n=10, 22.7%) angular fragments (n=8, 18.2%), complete flakes (n=7, 15.9%), proximal flake fragments and bipolar flakes (each, n=3, 6.8%). One core was also identified (n=1, 2.3%). The core was a multidirectional quartz core with 3 negative flake scars. One retouched silcrete artefact was identified from spit 3 (20-30cm depth) at TS182.

Table 30. Lithic Types – HLE G PAD 15

	Flake	Proximal Fragment	Medial Fragment	Distal Fragment	Core	Bipolar Flake	Angular Fragment	Total
Quartz	7	2	11	8	1	3	8	**40**
Silcrete	0	1	0	1	0	0	0	**2**
Quartzite	0	0	1	0	0	0	0	**1**
FGS	0	0	0	1	0	0	0	**1**
Total	**7**	**3**	**12**	**10**	**1**	**3**	**8**	**44**
%	***15.9***	***6.8***	***27.3***	***22.7***	***2.3***	***6.8***	***18.2***	***100***

Platform types were predominantly plain (n=6) and crushed (n=5), with one scarred and one focal platform (each, n=1). Termination types were mostly feather (n=14), with crushed (n=4) and axial (n=2) also present. Flake shape for complete flakes mostly consisted of longer than wide forms (n= 5), followed by length equal to width and wider than long (each n=2) and elongate (n=1).

Cortex was present on the silcrete distal fragment, retaining 31-69% of rough granular cortex. Heat exposure was identified on one silcrete artefact with variation in colour and lustre indicating that the material was affected by heating, whether deliberately or due to exposure to bushfires. Quartz artefacts consisted of a milky white colouration (Plate 51).

Plate 51. Quartz artefacts from TS182 Spit 3 (20-30cm depth) – ID 286-302.

Summary

The presence of subsurface archaeological material within the test area led to the designation of archaeological site HLE G29 (Figure 80). The site comprises a moderate-low mean artefact density with localised higher density on the microtopographic rises bordering the creek corridor, variably affected by disturbance. Potential for further subsurface deposit is assessed as moderate.

6.3.14 HLE G PAD 16

HLE G PAD 16 was located to the east of HLE G PAD 15 on the eastern side of Middle Creek within BY-107. The test area was located on a gentle lower hillslope descending from the northeast towards Middle Creek. Land use disturbance included ploughing, use as a grazing pasture and construction of fencelines. Test squares were placed on the lower slope within the proposed access track alignment.

A total of six 50cm x 50cm test squares were excavated across the test area, giving a total excavated sample of 1.5m^2. Squares were aligned along one northeast to southwest oriented transect. Test squares TS192 and TS193 were aligned slightly more to the south within the transect to align with the proposed disturbance footprint. All test squares were spaced at 10 metre intervals.

Test square distribution and results at HLE G PAD 16 are shown on Figure 57

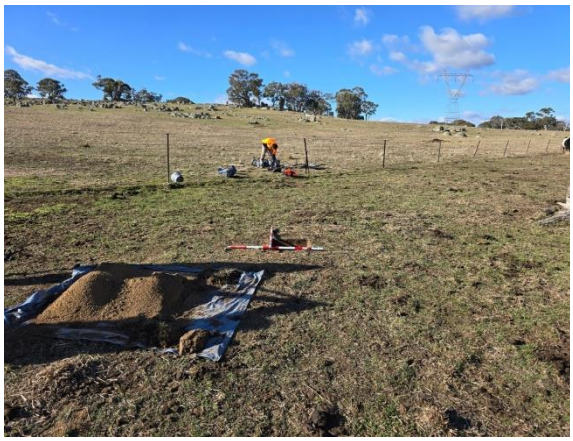


Plate 52. View northeast at HLE G PAD 16 lower slope. Excavated TS190 in foreground, excavation in progress at TS191 in background.

Plate 53. View southeast across lower slope at HLE G PAD 16, excavated TS68 in foreground. Drainage depression in background running to Middle Creek on right.

Soils and disturbance

Soil profiles at HLE G PAD 16 varied due to the impacts of land use disturbance and bioturbation. Land use disturbance was evident throughout all test squares with heavy mixing of the upper A unit soil profiles, likely resulting from intensive ploughing activity. An introduced sandy fill layer was present between 3-10cm depth at TS189. Bioturbation from grass roots and insect activity was evident throughout all test squares.

Test squares displayed moderate depths, with all test squares reaching a maximum deposit depth of 30cm. Generally, soils consisted of a greyish brown sandy loam overlying a light yellowish brown sandy loam. Basal clays consisted of light yellowish brown sandy clays. The upper humic O horizon consisted of a dark greyish brown sandy loam with abundant grass roots. All squares contained ironstone gravels. Charcoal was present as infrequent flecking throughout all test squares, indicating natural bushfires or use of fire in land clearing activities.

Figures 55-56 illustrate the soil profiles at HLE G PAD 16.

Artefact distribution

No artefacts were recovered from the test program at HLE G PAD 16.

Summary

No artefacts were recovered from the test program at this location. The area is not a PAD or archaeological site.

Figure 55. TS189 west section and soil profile description

I. 0-3cm: Dark greyish brown sandy loam, moderate compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 3-10cm: Reddish brown introduced sandy fill. Clear boundary to:
III. 10-22cm: Mottled light yellowish brown and greyish brown sandy loam, moderate compaction. Gravels (<10mm, ~2%), scattered charcoal flecks. Diffuse boundary to:
IV. 22-30cm: Light yellowish brown sandy loam, moderate compaction. Gravels and charcoal continuing. Clay content increasing with depth.
V. Base: Light yellowish brown sandy clay, high compaction.

Figure 56. TS193 west section and soil profile description

I. 0-5cm: Dark greyish brown sandy loam, moderate compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 5-18cm: Greyish brown sandy loam mottled with light yellowish brown, moderate compaction. Gravels (<10mm, ~1%), scattered charcoal flecks. Diffuse boundary to:
III. 18-30cm: Light yellowish brown sandy loam mottled with greyish brown, moderate compaction. Gravels continuing. Clay content increasing with depth.
IV. Base: Light yellowish brown sandy clay, high compaction.

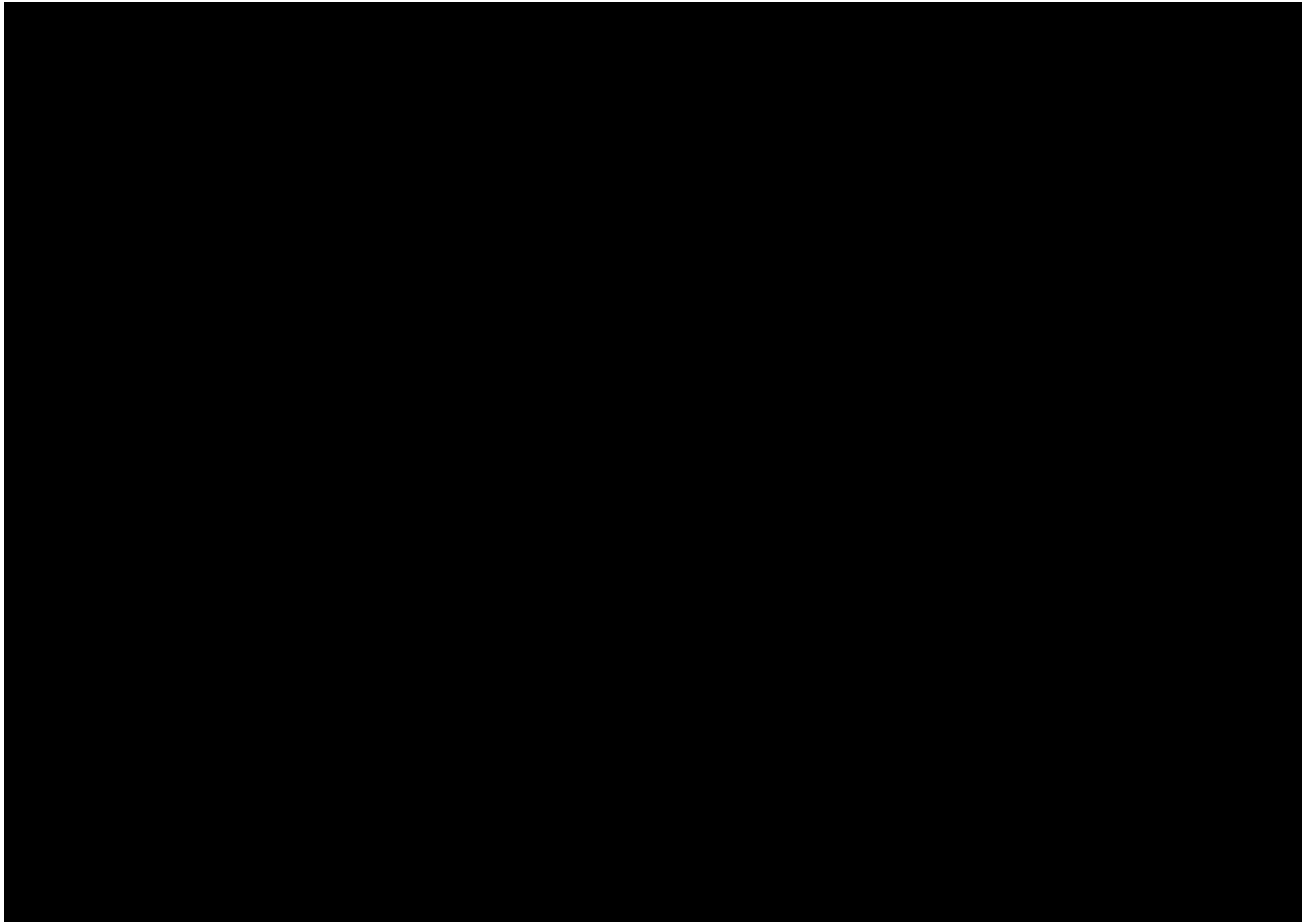


Figure 57. Test excavation results - HLE G PAD 14, HLE G PAD 15 and HLE G PAD 16 (AT-163 and property BY-107)

6.3.15 HLE G12

HLE G12 was located on a lower slope overlooking Sawpit Creek to the east approximately 1.5km northwest of the confluence between Sawpit Creek and Ryans Creek. Previous land use disturbance included ploughing and use as a grazing pasture, construction of a cut drainage channel and fencelines. The site area was located underneath the existing transmission easement which runs across Sawpit Creek, within property BY-074.

A total of 15 test squares (50cm x 50cm) were excavated across the test area, giving a total excavated sample of 3.75m^2. Squares were aligned along five transects within the site extent, including the proposed tower site (Transect 1 to Transect 4) and the access track (Transect 5). Transect 1 (TS158-TS160) and Transect 3 (TS163 and TS164) were located at the northern end of the test area running northeast to southwest on the northern and southern site of a cut drainage channel. Transect 4 (TS165-TS168) was aligned northwest to southeast to the south of Transect 1 on the western side of the fenceline. Transect 2 (TS161-TS162) was placed at the north-eastern extent of the tested area running northeast to southwest on the lower portion of the slope towards Sawpit Creek. Transect 5 (TS169-TS172) was located 50 metres southwest of Transect 4 within a proposed access track running northeast to southwest (outside the unsurveyed area). All test squares were spaced at 10 metre intervals.

Test square distribution and results at HLE G12 are shown on Figure 61.

Plate 54. View east at HLE G12 (tower site). Slope descending to Sawpit Creek in background. Excavated TS159 in midground, excavated TS160 and TS161 and excavation in progress at TS162 in background.

Plate 55. View west at HLE G12 (access track area). Excavated TS172 in midground. Gentle slopes descending from the west.

Soils and disturbance

Soil profiles at HLE G12 varied due to the impacts of agricultural land use disturbance and bioturbation. Disturbance was evident sporadically throughout the test area with several test squares containing a mixed upper A unit soil profile, likely resulting from ploughing activity. The most intact deposits were encountered variably throughout the test area at TS158, TS159, TS166, TS167, TS171 and TS172. Bioturbation from insect activity, grass roots and tree roots was evident throughout the test area.

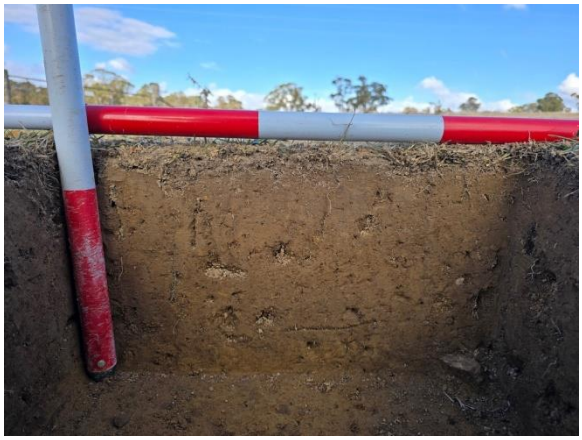
Soils were of shallow to moderate depths, ranging from 15cm at TS170 at the southern end of the test area to 30cm at TS158 at the northern end of the test area. All remaining test squares ranged between 17-29cm depth. Soils consisted of a brown silty clay loam with small ironstone and quartz gravels overlying a reddish brown silty clay with gravels continuing. Basal clays consisted of red clays. The upper humic O horizon was generally shallow, consisting of a brown silty loam with abundant grass roots. TS161 and TS162 were located on the lowest portion of the slope within the test area towards Sawpit Creek and contained a greater abundance of quartz gravels that were larger in size (up to 100mm at TS162) and poorly sorted, likely resulting from colluvial accumulation at the base of the slope.

Charcoal was present as infrequent flecking throughout all test squares, indicating natural bushfires or use of fire in land clearing activities. A larger amount of charcoal was present at TS169 in association with a deep tree root channel, indicating the burning of a tree or tree root at this location.

Figures 58-60 illustrate representative soil profiles at HLE G12.

I. 0-5cm: Brown silty loam, moderate compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 5-22cm: Brown silty clay loam, moderate compaction. Gravels (<10mm, ~1%). Scattered charcoal flecks. Diffuse boundary to:
III. 22-28cm: Reddish brown silty clay, high compaction. Gravels continuing.
IV. Base: Red clay, firm compaction.

Figure 58. TS159 west section and soil profile description



I. 0-2cm: Brown silty loam, loose compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 2-24cm: Brown silty clay loam, some mottling with reddish brown silty clay. Moderate compaction. Gravels (<60mm, ~7%). Scattered charcoal flecks. Diffuse boundary to:
III. 24-28cm: Reddish brown silty clay, high compaction. Gravels increasing in abundance (<10%).
IV. Base: Red clay, firm compaction.

Figure 59. TS161 south section and soil profile description

I. 0-1cm: Brown silty loam, loose compaction. Humic with abundant grass roots. Diffuse boundary to:
II. 1-18cm: Brown silty clay loam, moderate compaction. Gravels (<10mm, ~2%). Scattered charcoal flecks. Diffuse boundary to:
III. 18-25cm: Reddish brown silty clay, high compaction. Gravels continuing.
IV. Base: Red clay, firm compaction.

Figure 60. TS172 east section and soil profile description

Artefact distribution

A total of 79 artefacts were recovered from the test excavation undertaken at HLE G12. Artefacts were recovered from all of the 15 excavated test squares (100% of test squares). The spatial distribution of artefacts was characterised by a moderate mean artefact density (21.1 artefacts/m^2) across the tested area with the highest artefact density at TS161 (n=12) located on the lower portion of the slope towards Sawpit Creek with a similar artefact density encountered at TS172 (n=11) at the southwestern extent of the test area within the access track portion (outside unsurveyed area) (Table 31). The extrapolated high point was 48 artefacts/m^2 at TS161.

Test excavation results revealed that the highest density of artefacts was present within the northern side of the test area on the portion of the hillslope closest to Sawpit Creek, within the unsurveyed area. The vertical distribution of artefacts was characterised by a predominance of artefacts within the uppermost 10cm of the deposit, with the majority of artefacts recovered from 0-10cm depth (n=48), followed by 10-20cm depth (n=24) and 20-30cm depth (n=7).

Table 31. Artefact distribution – HLE G12

Square number	n	Square number	n	Square number	n
TS 158	6	TS 163	3	TS 168	6
TS 159	8	TS 164	3	TS 169	8
TS 160	4	TS 165	5	TS 170	2
TS 161	12	TS 166	2	TS 171	3
TS 162	5	TS 167	1	TS 172	11

Lithic characteristics

Quartz was the primary raw material identified during the test excavation at HLE G12 (n=61, 77.2%), followed by silcrete (n=12, 15.2%) and chert (n=6, 7.6%) (Table 32). Artefacts were mostly small in size, with maximum dimensions most commonly between 10-15mm (n=21, 26.6%), 15-20mm (n=20, 25.3%) and 5-10mm (n=18, 22.8%), resulting in a total of 74.7% of artefacts measuring <20mm. This was followed by artefacts between 20-25mm (n=9, 11.4%), 30-35mm (n=5, 6.3%) and 35-40mm (n=2, 2.5%). The largest artefacts (35-40mm) consisted of two quartz cores.

Table 32. Raw Material Size Classes and Quantities – HLE G12

Raw Material	Size Class (Millimetres)							Total	%
	5-10	10-15	15-20	20-25	25-30	30-35	35-40		
Quartz	14	18	16	5	3	3	2	**61**	***77.2***
Silcrete	3	3	3	1	1	1	0	**12**	***15.2***
Chert	1	0	1	3	0	1	0	**6**	***7.6***
Total	**18**	**21**	**20**	**9**	**4**	**5**	**2**	**79**	***100***
%	***22.8***	***26.6***	***25.3***	***11.4***	***5.1***	***6.3***	***2.5***	***100***	

The assemblage consisted predominantly of medial flake fragments (n=23), comprising 29.1% of the total assemblage (Table 33). This was followed by complete flakes (n=16, 20.3%), distal flake fragments (n=14, 17.7%), proximal flake fragments (n=12, 15.2%) and angular fragments (n=8, 10.1%). One bipolar flake was identified (n=1, 1.3%). Five complete cores were present (n=5, 6.3%), including four quartz cores and one chert core consisting of multidirectional, unifacial and unifacial rotated flaking patterns. Three artefacts had edge damage macroscopically consistent with usewear. One retouched silcrete artefact was identified from spit 1 (0-10cm depth) at TS165 and one retouched chert artefact was identified from spit 2 (10-20cm depth) at TS169.

Table 33. Lithic Types – HLE G12

	Flake	Proximal Fragment	Medial Fragment	Distal Fragment	Bipolar Flake	Core	Angular Fragment	Total
Quartz	13	9	18	9	1	4	7	**61**
Silcrete	3	2	3	3	0	0	1	**12**
Chert	0	1	2	2	0	1	0	**6**
Total	**16**	**12**	**23**	**14**	**1**	**5**	**8**	**79**
%	***20.3***	***15.2***	***29.1***	***17.7***	***1.3***	***6.3***	***10.1***	***100***

Platform types were predominantly plain (n=16), with lesser numbers of crushed (n=5), faceted (n=3), focal and scarred (each, n=2) and ridged (n=1). Termination types were mostly feather (n=16), with axial (n=2) and crushed (n=3) also present. Flake shape for complete flakes mostly consisted of longer than wide forms (n= 9), followed by wider than long (n=5), elongate (n=2) and length equal to width (n=1).

Cortex was present on quartz and chert artefacts, with a total of eight artefacts retaining cortex. Five artefacts retained 1-30% cortex and three artefacts retained 31-69% cortex. Cortex type was predominantly rough and granular with one flat cortex type present on a single chert artefact. Cortex was present on 10.1% of the assemblage.

Heat exposure was evident with variation in colour, lustre and the presence of crenate fracture surfaces on some select artefacts indicating that the material was affected by heating, whether deliberately or due to exposure to bushfires. Heat exposure was identified predominantly on silcrete artefacts (n=7, 58.3% of total silcrete artefacts) with one quartz artefact also impacted by heating. Quartz artefacts were predominantly a milky white with some partially transparent white quartz also identified. Silcrete artefacts included regular and fine grained varieties.

Plate 56. Chert, silcrete and quartz artefacts recovered from TS161 Spit 2 (10-20cm depth) – ID 211-217.

Plate 57. Quartz unifacial rotated core from TS159 Spit 1 (0-10cm depth) – ID 200.

Surface artefacts

Five additional surface artefacts were identified at HLE G12 during the test excavation program, all within the unsurveyed area. Four artefacts were located on an exposure on the southwestern side of the drainage gully on the northern side of the test area (Plate 77) and one artefact was located 10 metres west of TS165 on an area disturbed by pig activity. Artefacts consisted of silcrete and quartz complete flakes (Plate 78) and one possible hammer stone.

Plate 58. View west at HLE G12 drainage gully exposure containing surface artefacts.

Plate 59. Sample of silcrete and quartz surface artefacts identified at HLE G12.

Summary

The test program confirmed that existing surface archaeological site HLE G12 retained subsurface archaeological deposit of moderate density, and additional surface material. All test squares excavated at the site contained archaeological material, and the potential for further deposit is assessed as moderate.

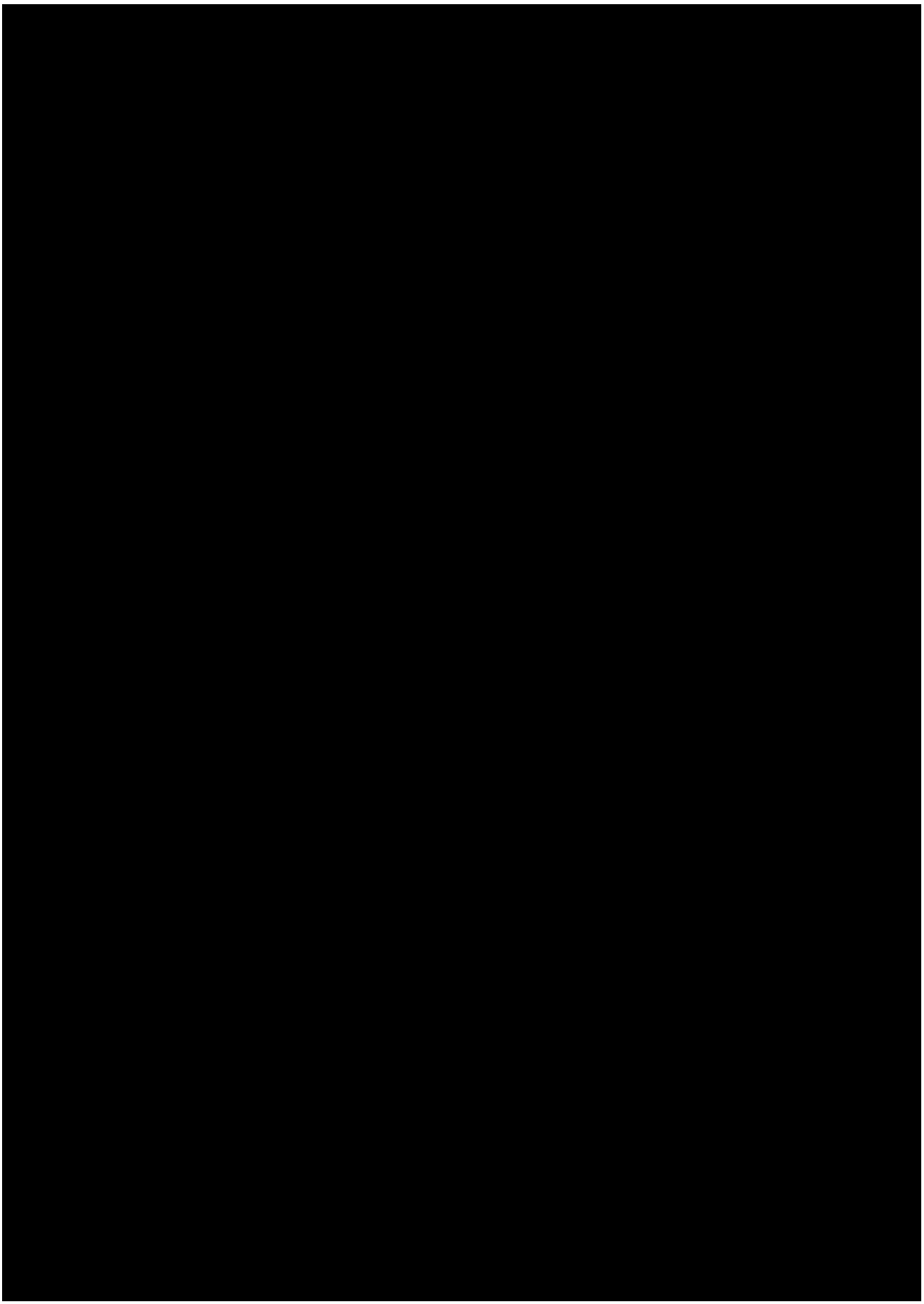


Figure 61. Test excavation results - HLE G12 (property BY-074)

6.4 Discussion

Test excavation confirmed the presence of subsurface archaeological deposit at ten of the 15 tested locations. No subsurface archaeological deposit was identified at HLE T PAD 8, HLE T PAD 42, HLE T PAD 21, HLE Y PAD 5 and HLE G PAD 16. Given the presence of Aboriginal objects at nine of the identified PAD sites, these have been designated as archaeological sites HLE T16 and HLE T17 (previously HLE T PAD 39), HLE T18 (includes AHIMS 56-3-0336; previously HLE T PAD 40), HLE T4 (previously HLE T PAD 41), HLE Y10, HLE Y11, HLE Y12, HLE Y13 and HLE Y14 (previously HLE Y PAD 27), HLE Y18 (previously HLE Y PAD 29), HLE T42 and HLE T43 (previously HLE T PAD 24), HLE Y27 (previously HLE Y PAD 6), HLE G28 (previously HLE G PAD 14), and HLE G29 (previously HLE G PAD 15). Testing also confirmed the presence of subsurface archaeological deposit at previously recorded artefact scatter site HLE G12.

The nature and extent of the identified archaeological deposit varied between the tested sites. Test excavation across the unsurveyed areas resulted in the sampling of a variety of landforms spanning an area approximately 150 kilometres long, along the project alignment. Landforms included hillslopes, saddles, spurs, ridgelines, benches, knolls and alluvial flats associated with the Murrumbidgee River, Tumut River, Oak Creek, Gocup Creek, Sandy Creek, Killimicat Creek, Cooks Creek, Sawpit Creek, Middle Creek, and various tributaries.

Subsurface archaeological deposit was identified across all landform types. Higher concentrations of archaeological deposit were identified on the spur bench overlooking the Tumut River at HLE T18 (240 artefacts), the lower hillslope overlooking a bend in Killimicat Creek at HLE T42 (180 artefacts), the ridgeline and saddle complex overlooking the Murrumbidgee River at HLE Y10-HLE Y14 (combined sites total, 98 artefacts), the lower slope overlooking Sawpit Creek at HLE G12 (79 artefacts) and the gentle slope and microtopographic rises on the western side of Middle Creek at HLE G29 (44 artefacts). Lower artefact densities were encountered at HLE T16 and HLE T17 (combined sites total, 20 artefacts), HLE Y18 (15 artefacts), HLE Y27 (10 artefacts), HLE G28 (8 artefacts), and HLE T4 (1 artefact). No artefacts were recovered from HLE T PAD 8, HLE T PAD 42, HLE T PAD 21, HLE Y PAD 5, and HLE G PAD 16. The absence of cultural material within these tested areas is likely due to a combination of previous land use disturbance and/or the nature of the landforms where they intersect the current proposed disturbance footprint and subsequent test area. In general, results supported the existing understanding of the archaeological landscape within the region, namely that more intensive, focused and/or repeated Aboriginal occupation took place on landforms in close proximity to water sources, particularly on elevated and gentle gradient landforms such as spurs, ridgelines, saddles and hillslopes.

A total of 695 artefacts were recovered during the test excavation program. The highest density of artefacts was encountered at HLE T18 on the spur bench overlooking the Tumut River, with 240 artefacts recovered and a mean artefact density of 96 artefacts/m^2. The peak artefact density at this site was 98 artefacts at TS581. Other relatively high peak densities were encountered at HLE T42 (26 artefacts at TS150), HLE G29 (23 artefacts at TS182) and HLE Y10 (13 artefacts at TS419). In all cases, mean artefact density was significantly lower, however the presence of discrete higher density locales indicates that the test program successfully intercepted concentrations of cultural activity which have retained spatial integrity. Comparable peak densities were encountered during previous testing for the HumeLink ACHAR and Revised ACHAR (NOHC 2023a and 2024a) at HL-PAD-10 (24 artefacts at test pit 2, 32 artefacts at test pit 4), WAS02-1 (23 artefacts at test pit 1), ULAS02 (23 artefacts at test pit 5) and YAS01 (15 artefacts at test pit 5). These comparable sites were assessed in the EIS/AR as displaying at least moderate potential to yield significant cultural information through further excavation (i.e. good research potential). The same determination has been applied to comparable sites from the current program. These sites represent higher activity areas within the region where archaeological deposit of greater density has been preserved with relatively good spatial integrity. The increasing body of archaeological knowledge for the region indicates these sites are not necessarily rare, but may be spatially constrained due to both cultural and environmental factors, and the extent of previous investigations. Additional work at the sites as mitigation for any unavoidable impacts would offer an opportunity to add further to our growing understanding of Aboriginal landscape use in the region.

Effects from agricultural land use disturbance was evident throughout most test areas. Land use disturbance within soil deposits ranged from low to high, generally resulting from the effects of land clearing/pasture improvement and soil mixing with moderate to high levels of disturbance evident at HLE T16, HLE T17, HLE Y10, HLE Y14, HLE T42, HLE T43, HLE Y27, HLE G12, HLE G28 and HLE G29. Tested PAD areas that did not contain cultural material were also generally subject to higher levels of land use disturbance. Soils displaying relatively good integrity were encountered at HLE T18, HLE T4, HLE Y11, HLE Y12, HLE Y13, HLE Y18 and HLE T PAD 8 with the majority of excavated test squares retaining natural and relatively intact soils at these locations. Despite the high levels of disturbance from ploughing activity identified at HLE T42, these test squares were found to retain a moderate-high density archaeological deposit with some pockets of lower disturbance, with higher disturbance levels and lower artefact densities encountered within the southeastern portion of the PAD area at site HLE T43.

Across all test areas, soils generally consisted of a dark brown/greyish brown humic topsoil overlying a brown/greyish brown silty or sandy loam overlying a reddish brown/yellowish red silty/sandy loam/clay loam with red/reddish brown basal clays.

Differences in gravels and inclusions were identified between the test areas based on landforms and underlying geology, including variable inclusions of quartz and ironstone, with shale and siltstone associated with the Tumut River area and granite associated with the ridgeline at HLE T4. Bedrock was encountered in several test squares at HLE T16, HLE T17, HLE T18 and HLE Y18, indicating the high rates of erosion occurring on these landforms. The highest level of erosional activity was identified at HLE T16 and HLE T17 on the hillslope and saddle above the Tumut River, comprising generally shallow deposits with an abundance of bedrock fragments. The impacts of flood effects were also evident on the lower alluvial flat landform at HLE T PAD 8 with fine silts and pebble inclusions identified. Bioturbation resulting from insect and animal activity, grass roots and tree roots was frequent throughout soil profiles at all tested site areas.

The archaeological test excavation recovered a wide variety of artefact material types with some variation between the tested areas, reflecting the varying raw material sources available throughout the broad study area. Material types present included quartz, IMT, chert, silcrete, FGS, quartzite, igneous, chalcedony and MGS. Overall, quartz was the most commonly encountered material at most test areas, while chert was the most abundant material type at HLE Y18 on the bench and slope above Oak Creek and chert and silcrete the most abundant material types at HLE G28 on the slope above Middle Creek. Overall, quartz comprised 49% of the total material encountered during the test excavation program, predominantly consisting of a milky white material with some transparent/semi-transparent varieties also encountered. Igneous material was only present at sites located between Killimicat Creek and the Tumut River at HLE T42, HLE T17 and HLE T18, possibly indicating a restricted geological occurrence or cultural distribution of this material type within the assessment area. Chalcedony was only encountered at the HLE T42 Killimicat Creek site and at the HLE Y10 and HLE Y14 sites above the Murrumbidgee River. The dominant use of quartz as the raw material for artefact production was consistent with regional trends and reflects the underlying geology of the region. The high variety of material types encountered throughout the study area highlights the differences in material availability throughout the region and can offer insights into material availability and procurement.

Reduction types encountered throughout the test excavation program were characterised by a predominance of complete flakes, comprising 30% of the total assemblage. This was followed by medial flake fragments, distal flake fragments and proximal flake fragments, with angular fragments, cores, split flakes, bipolar flakes, and core fragments also present. The high percentage of complete flakes indicates a relatively high level of assemblage intactness across the tested areas. Cores were primarily reduced in a multidirectional or unifacial/unifacial rotated flaking pattern with bipolar and asymmetric alternating reduction types also present. Bipolar reduction was identified only on quartz artefacts, indicating some variation in reduction style based on material type. A total of 19 retouched and backed artefacts were identified during the test excavation from sites HLE T42, HLE G12, HLE G29, HLE T17, HLE T18 and HLE Y14, with diagnostic tool types including one convex scraper, one thumbnail scraper, one geometric microlith, one backed blade and four Bondi points. A very high proportion of all retouched and backed artefacts were recovered from HLE T18, which contained 47% of all retouched/backed artefacts identified by the program. Potential knapping events were encountered at HLE Y11, HLE Y18 and HLE T18, suggesting that these landforms contain sufficient integrity to conserve the spatial aspect of archaeological context.

Artefacts were generally recovered from shallow depths with a total of 83% of artefacts recovered from the upper 20cm of the profile. Artefacts recovered from depths below 30cm were primarily encountered at HLE G29 adjacent to Middle Creek, with only one other artefact recovered below this depth at HLE T42. Artefact size was characterised by a predominance of small artefacts throughout all tested areas, with 76% of all artefacts measuring less than 20mm in maximum dimension. Generally, no artefacts were larger than 45mm. Exceptions include a quartz multidirectional core measuring 52.63mm and a silcrete complete flake measuring 64.60mm. A prominent outlier in the range of size classes encountered was a very large IMT flake blank used as a core measuring 140.14mm in maximum dimension from site HLE Y27 above Cooks Creek. The predominance of small artefacts across the tested areas generally indicates that the elevated landforms containing moderate-high density sites have been subject to minimal flood impacts. Size class variability based on material type was identified at HLE T18, with 74.4% of all quartz artefacts measuring less than 15mm in maximum dimension and 65.2% of all IMT artefacts measuring greater than 15mm in maximum dimension, potentially indicating the selection of raw material type based on intended use or suitability of certain material types for producing larger artefacts.

Overall, test excavation revealed a range of Aboriginal land uses on the various landforms associated with several prominent waterways including the Murrumbidgee River, Tumut River, Oak Creek, Gocup Creek, Sandy Creek, Killimicat Creek, Cooks Creek, Sawpit Creek, Middle Creek, and various tributaries. Testing resulted in the confirmation of 15 Aboriginal archaeological sites within the assessed unsurveyed areas. The dominant use of quartz as the raw material for artefact production was consistent with regional trends. The presence of IMT, chert, silcrete, FGS, quartzite, igneous, chalcedony and MGS raw materials also correlated with local assemblages. Results of the archaeological testing program supported the site prediction model where more complex sites would be located on elevated landforms adjacent to prominent water sources where there have been minimal impacts from land use disturbance, while landforms located further away from water sources are more likely to have been utilised as transitional corridors. Several landforms also appeared to have been more negatively affected by land use disturbance, erosional activity and flood effects. These sites contained lower artefact densities and are considered unlikely to provide further archaeological information on Aboriginal landscape use across the region.

7 Aboriginal Community Consultation

7.1 Stakeholder identification and existing consultation

The aim of consultation is to integrate cultural and archaeological knowledge and ensure registered stakeholders have information to make decisions on Aboriginal cultural heritage. Consultation for the HumeLink project commenced in early 2021 and has been ongoing through the various stages of the EIS and AR assessments for the project, including preparation of the ACHAR and Revised ACHAR.

For the preparation of this Addendum ACHAR, consultation with Aboriginal people has continued in accordance with the Heritage NSW *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* and the requirements of Clause 60 of the *National Parks and Wildlife Regulation 2019*. Overall, the formal consultation process for the HumeLink project has included:

- Notification of Aboriginal persons, including register of native title determinations search and government agency notification letters;
- advertising for registered stakeholders in local print media;
- notification of closing date for registration;
- record of registration of interest;
- provision of Project-specific information;
- provision of assessment methodology for review;
- invitation to advise on Aboriginal cultural value of the study area;
- participation in fieldwork activities and additional field visits to the Project area;
- provision of ACHAR and Revised ACHAR (from EIS and AR) for review;
- consultation and involvement in developing the HumeLink East HMP; and
- ongoing consultation with the local Aboriginal community.

The HumeLink ACHAR and Revised ACHAR provide comprehensive detail of the consultation process undertaken to date, which included Aboriginal community consultation with 40 Registered Aboriginal Parties (RAPs) and was undertaken in accordance with the project SEARs. Consultation undertaken by NOHC took place over four Stages.

Stage 1 – notification of the proposal and registration of interest. This included notifying Aboriginal parties of the project, including public notices in newspapers as well as direct correspondence with a list of potential stakeholders, and inviting them to register their interest in being involved in consultation and part of the development of the project. Stage 1 was carried out in April 2021.

Stage 2 – presentation of information about the proposed project. Information about the scope of the project and the cultural heritage assessment methodology, including the predictive model developed for the project, was presented to the RAPs. This was provided through written correspondence and was discussed with stakeholders during a visit to the project footprint. No written feedback on the predictive model was received.

Stage 3 – gathering information about cultural significance. The Aboriginal organisations represented in the field during the various field surveys between November 2021 and December 2022 were the Wagga Wagga, Tumut/Brungle, Pejar, and Onerwal LALCs. At least two field representatives were present on each field team operating within their relevant LALC area.

Stage 4 – review of draft cultural heritage assessment report, including the proposed mitigation and management measures for potential Aboriginal heritage impacts. A draft copy of the ACHAR was provided to RAPs for comment on 9 March 2023.

Following exhibition of the EIS and the submissions process, a revised ACHAR was prepared to inform the AR. The revised ACHAR was consulted on with RAPs, who were provided a draft copy for comment and review on 7 February 2024 in accordance with Stage 4 of the process described above.

The draft Addendum CHAR has been provided to all registered stakeholders for a review and comment period (28 day review period provided in accordance with *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*).

7.2 Registered Aboriginal Parties

Investigations for the HumeLink project have included consultation with Aboriginal community individuals and groups as listed in Table 34, as identified in Table 5-1 of the HumeLink Revised ACHAR.

Table 34. HumeLink Registered Aboriginal Parties

Representative / Contact	Group / Individual
Alona Apps	Individual
Arnold Williams	Ngunnawal Elders Corporation
Braiden Ede	Individual
Cherie Carroll Turrise	Gunjeewong Cultural Heritage Aboriginal Corporation
Clive Freeman	Individual
Dean Bell	Yurwang Gundana Cultural Heritage Services
Dean Delponte	Ngunawal Heritage Aboriginal Corporation
Darleen Johnson	Murrabidgee Mullangari
Enid Clarke (Elder)	Individual
Glen Freeman	Gulgunya Ngunawal Heritage Aboriginal Consultancy (GNHAC)
Jahnayah Freeman	Individual
James Ingram	Bidya Marra Consultancy
Jesse Johnson	Muragadi Heritage Indigenous Corporation
Jirrah Freeman	Individual
Keith Freeman (Elder)	Individual
Kevin Atkinson	Bangerang Aboriginal Corporation
Krystal Ingram	Individual
Lawrence Marlowe	Individual
Lily Carroll	Didge Ngunawal clan
Mark Saddler	Bundyi Aboriginal Cultural Knowledge
Marnie Freeman	Individual
Martin Riley (Elder)	Individual
Matthew Marlowe	Individual
Norma Freeman (Elder)	Individual
Priscilla Marlowe	Individual
Rob Clegg and Peter Clegg	Individual
Robert Monaghan	Ngurambang
Robert Young	Konanggo Aboriginal Cultural Heritage Services
Rodney Penrith	Individual
Rolly Williams	Individual
Shirley Marlowe	Individual
Steve Johnson (Director)	Corroboree Aboriginal Corporation
Tammy Muscat	PD Ngunawal Consultancy
The Secretary	Wagga Wagga Local Aboriginal Land Council
The Secretary	Brungle Tumut Local Aboriginal Land Council
The Secretary	Wagonga Local Aboriginal Land Council
The Secretary	Onerwal Local Aboriginal Land Council
The Secretary	Pejar Local Aboriginal Land Council
Tyronne Bell	Thunderstone Cultural & Land Management Services Aboriginal Corporation
Wally Bell	Buru Ngunawal Aboriginal Corporation
Yalmambirra	Individual

7.3 Consultation for HumeLink East HMP

The HumeLink East HMP was prepared in consultation with the project RAPs relevant to HumeLink East (a total of 34 RAPs). A copy of the draft HMP was provided to all RAPs for a review and comment period in June 2024 (follow up phone calls in July 2024) and updated heritage methodologies in November 2024. RAPs were invited to provide feedback on the proposed management and mitigation measures contained within the draft HMP, the process for continued Aboriginal community consultation, and the strategies for long-term management of salvaged Aboriginal objects. RAPs were provided with a 28 day review period. Stakeholder comments were positive and supportive of the HMP and proposed management and mitigation strategies, and did not result in any changes to the draft.

7.4 Consultation regarding the land and proposed activity

In accordance with the Approved HumeLink Project's mitigation measures and the recommendations of the HumeLink East HMP, the Aboriginal community consultation process will continue until the completion of construction. Ongoing consultation and engagement is being undertaken in accordance with the CoA, HMP, and the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* and provides an opportunity to continue to minimise impacts relating to Aboriginal cultural heritage. The aims of ongoing consultation are to:

- Inform on, and provide an opportunity for feedback regarding, matters relating to the mitigation and management of Aboriginal cultural heritage values across the project footprint
- Provide a forum for organising future RAP participation in ongoing assessment, mitigation and management activities
- Provide opportunities to comment on policy and documentation in regard to the mitigation and management of Aboriginal cultural values, including the HumeLink East HMP
- Provide an opportunity for RAPs to participate in field actions involving the mitigation and management of Aboriginal cultural values

7.5 Review of draft Addendum ACHAR

AGJV provided the draft Addendum ACHAR to all stakeholders for a 28 day review and comment period on 12 September 2025 (closure of comment period on 10 October 2025). Stakeholders were provided with the approval context of the document (under CoA B31) and invited to provide comments on the findings of the additional survey/test activities and the recommendations for management of the sites.

Comments received from stakeholders during this period are summarised below.

7.6 Stakeholder responses to draft Addendum ACHAR

Two stakeholders responded to the draft Addendum ACHAR. Didge Ngunawal Clan (email dated 12.09.2025) expressed their interest in attending the remaining field surveys. Yurwang Gundana Cultural Heritage Services (email dated 16.09.2025) inadvertently provided comments in response to a similarly named project. AGJV responded clarifying that comments were being sought on the HumeLink East Addendum ACHAR, and that any review comments would be welcome. No further comments or responses were received from stakeholders.

7.7 Aboriginal cultural values

More broadly, it has been identified during the consultation process for the wider HumeLink project that the region has high cultural heritage value to the local Aboriginal community. Some of the Aboriginal cultural heritage values expressed by stakeholders include:

- strong association with the land and the local and regional area
- responsibility to look after the land, including the heritage sites, plants and animals, creeks and the land itself
- scarred/modified trees
- artefact sites and landscape features
- creek lines, their tributaries and their floodplains
- indigenous plants and animals

Consideration of social/cultural values expressed along the wider HumeLink corridor was included in the project ACHAR and Revised ACHAR, as adapted below. None of the identified areas of cultural value are in proximity to the Addendum ACHAR study area. No additional or specific cultural values identified for the current study area were identified during stakeholder review of the draft Addendum ACHAR.

7.7.1 Cultural values identified for wider HumeLink project

Aboriginal people alone can determine the Aboriginal cultural significance of a place. All archaeological objects and sites have cultural value for present-day Aboriginal people, as they were created by ancestral Aboriginal people and provide tangible evidence of past occupation of the landscape. It was noted in the HumeLink Revised ACHAR that some objects and places might have cultural value that were not communicated to NOHC. This could be the case for objects or places that are associated with information that is culturally restricted.

Sites of cultural significance

- One potentially culturally significant location, Derringullen Creek Women's Site, has been identified in the amended project footprint. This area has been identified by a RAP as an important traditional women's site. This site is approximately 8.7 kilometres south west of BY-156, which is the closest property assessed as part of the Addendum ACHAR.
- Nine unmodified trees were identified by RAPs during field surveys which were considered to display cultural importance. These trees are not Aboriginal objects as defined by the NPW Act. None of these are located within the current study area.
- Aboriginal stakeholders identified the possibility of burial grounds in the broader HumeLink project footprint. However, specific locations of these sites were not shared as Aboriginal stakeholders wished to maintain the privacy of sites.
- Aboriginal stakeholders noted women's sites have been identified through previous project work near Canberra and Yass River.
- Aboriginal stakeholders identified the pathway between Mudjarn (a sacred men's site) and Minjary (a place of resources), as an extremely culturally sensitive area. Both places are situated between the town of Tumut, and Brungle mission.
- Brungle and Yass missions were also identified as having cultural value, these places are not being impacted by the project.

8 Summary and Analysis of Background Information

Analysis of the background information presented in preceding Sections 2 to 7 allows an assessment of the Aboriginal cultural heritage values within the study area to be made. Combining data from historical/ethnographic sources, Aboriginal community consultation, landscape evaluation and archaeological context provides an insight into how the landscape around the study area was used and what sort of events took place in the past. This section draws together a variety of information to bring further understanding to the cultural landscape of the study area.

Aboriginal occupation is well-recorded in the wider region. Language group mapping places the HumeLink East corridor across Wiradjuri, Ngun(n)awal, Ngarigo and Gandangara (Gundungurra) country. Interaction between groups was common as people frequently travelled across country for economic, social and ceremonial reasons. Following European arrival and the spread of white settlement across their traditional lands, Aboriginal people living in the area would have been affected by the spread of disease and loss of their traditional lands to farms and pasture. Groups living around Yass and Goulburn shifted between autonomous and dependent economies depending on seasonal and annual variation in available resources, with a greater dependence on European economy as traditional subsistence patterns were disrupted. The region remains important to local Aboriginal people, who have maintained their ties to the area through the sharing of knowledge and lore down generations. Registered stakeholders for the HumeLink project have affirmed their ongoing connection to Country through historic, cultural and familial links to the area as part of a meaningful cultural landscape.

The Addendum ACHAR study area contains a number of resources which would have been important to local Aboriginal groups. Varied environmental settings including major rivers, creeks, narrow alluvial plains and terraces, rolling foothills and elevated ridgelines were all accessible and useful for Aboriginal land use activities. A wide variety of plant and animal resources would have been available to Aboriginal people to collect and use as they moved around the various parts of the landscape. Raw materials suitable for stone toolmaking would also have been readily available along the creek systems, having been transported in gravel and cobble form down from the eroding ranges. Outcropping bedrock on crests and slopes would also have provided ready access to a range of lithics from the complex underlying geologies of the region.

The archaeological evidence of Aboriginal landscape use in the region generally comprises stone artefacts and culturally modified trees. Archaeological sites have been identified in a variety of landscape contexts, including disturbed areas, indicating that archaeological materials can remain distributed across the landscape. The chief factors affecting the preservation of archaeological deposit in the study area are erosion and land use disturbance. While Aboriginal objects may exist in any location within the landscape, stable areas of lower disturbance retain the archaeological context that gives these objects meaning. Higher density artefact sites are generally found in lower-gradient landforms associated with watercourses, reflecting Aboriginal people's more frequent and/or intensive use of these locations and their resources. Identified artefact sites on slopes may be sparse and of low density, either a consequence of erosion and soil movement or reflecting a different type of Aboriginal landscape use of these landforms (travel corridors). Elevated locations on hilltops and ridge crests further from major watercourses tend to display a different archaeological signature, chiefly a sparser artefact distribution and less evidence for 'everyday' or utilitarian activities, suggesting that these areas were often used differently. The retention of archaeological deposit on the more elevated landforms is strongly influenced by land use disturbance and higher rates of erosion and colluvial movement on the steeper slopes. Previous studies typify site distribution in the area with a model of low-density background scatter with occasional larger sites or localised deposits representing individual episodes of activity. The archaeology of the study area fits this characterisation.

Aboriginal objects have been identified within the Addendum ACHAR study area at 29 archaeological sites, shown on Figures 63-85. These are predominantly stone artefact sites (n=27) along with two modified trees. A further 21 PADs have also been described across various landform contexts. The identified sites include higher density deposits indicating Aboriginal people's more frequent and/or focused use of certain areas, as well as dispersed moderate to low density deposits and isolated objects across the landscape resulting from less lithic-intensive activities, and the background scatter of Aboriginal objects resulting from discard events as Aboriginal people moved across Country. Surface artefacts tended to be identified in areas of high disturbance and low integrity, but surrounding landforms were usually found to contain associated subsurface deposit.

Archaeologically, open artefact scatters or subsurface archaeological deposits with stratigraphic integrity provide the most archaeological research potential. The soil landscapes present at the sites and PADs are generally favourable for the preservation of in situ archaeological material; however, test excavation confirmed that erosional processes in addition to modern landuse practices, can have a detrimental effect on the preservation of archaeological sites. In the case of the current Addendum ACHAR study area, test excavation has demonstrated that stability of subsurface deposits is variable. Higher value deposits are associated with intact landforms which have been subject to a lower level of disturbance and retain significant archaeological deposit.

Identified sites and PADs for the Addendum ACHAR are shown in Figures 62-85 and detailed in Table 35.

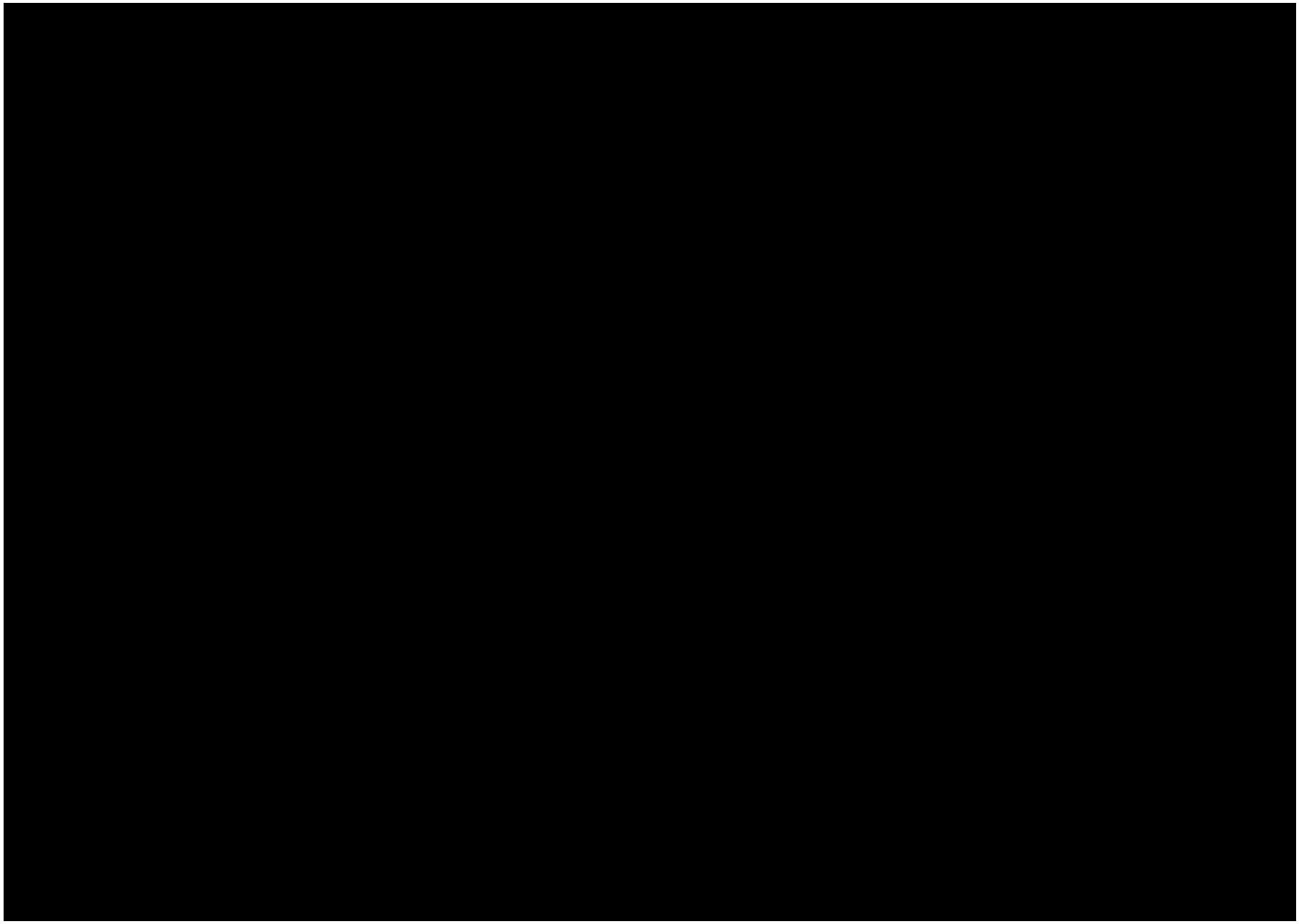


Figure 62. Identified Aboriginal heritage features: Addendum ACHAR

Table 35. Summary of identified Aboriginal heritage features

Final Site/PAD Name	Former PAD	Site Feature	Description	Location & Figure reference
HLE T4	HLE T PAD 41	Artefact	Isolated subsurface artefact on gentle slopes near a natural spring, identified during testing of HLE T PAD 41	AT-441 (MA-059-02) Figure 63
HLE T PAD 22		PAD	PAD identified during survey on a slight rise above a dry palaeochannel south of Gocup Creek	MA-059-08 Figure 64
HLE T PAD 38		PAD	PAD identified during survey on an elevated low rise immediately next to and surrounded by a bend in Gocup Creek. Not currently impacted.	MA-059-08 / MA-059-09 Figure 64
HLE T PAD 8		PAD	Remaining western portion of PAD identified during survey on slightly more elevated ground. Currently not impacted.	MA-059-09 Figure 64
HLE T16	HLE T PAD 39	Artefact	Low density subsurface artefact deposit identified during testing of HLE T PAD 39 at base of slope near Tumut River floodplain. Disturbed by flooding.	MA-059-10 Figure 65
HLE T17	HLE T PAD 39	Artefact	Surface and subsurface artefact site identified during testing of HLE T PAD 39 on raised bench overlooking Tumut River. Disturbed from existing vehicle track.	AT-428 (MA-059-10) Figure 65
HLE T18 (includes AHIMS 56-3-0336)	HLE T PAD 40	Artefact; PAD	Large surface and subsurface artefact deposit of moderate to high localised density on gentle landforms surrounding Tumut River tributary, above primary floodplain, identified during testing of HLE T PAD 40. Surface artefact previously recorded on AHIMS.	MA-059-10, AT-426 Figure 66
HLE T TRE 1		Potential Modified Tree	Potential modified tree (directional/ring tree) identified during survey, located on rocky, exposed ridge crest. Currently not impacted.	AT-423 (MA-059-13) Figure 67
HLE T PAD 23		PAD	PAD identified during survey on defined, elevated crest/knoll landform above Brungle Road, adjacent to Mudjarn Nature Reserve. Currently not impacted.	MA-059-13A, unnamed track area Figure 67
HLE T42	HLE T PAD 24	Artefact; PAD	Moderate to high density subsurface artefact site identified during testing of HLE T PAD 24 across a flat to gently sloping elevated landform above a bend in Killimicat Creek	MA-077 Figure 68
HLE T26		Artefact; PAD	Surface artefact site on Brungle Creek identified during survey, associated site landform/PAD extends across gentle rise and lower slope adjacent to creekbanks.	MA-088 Figure 69
HLE T27		Artefact	Low density artefact site in disturbed area of vehicle track/earthmoving near Adjungbilly Creek, identified during survey.	MA-094 Figure 70
HLE T28		Artefact; PAD	Low density artefact site identified during survey in disturbed, redeposited fill along vehicle track near Adjungbilly Creek. Site extent includes PAD on prominent spur extending northwest along creek (outside project boundary). Low potential/ integrity within project boundary.	MA-094 Figure 70
HLE Y PAD 11		PAD	PAD identified during survey extending across a saddle landform within a small pass near the Murrumbidgee River.	YG-034 Figure 71
HLE Y10	HLE Y PAD 27	Artefact	Subsurface moderate density artefact site identified during testing of HLE Y PAD 27 located within a saddle landform on a ridgeline overlooking a prominent bend in the Murrumbidgee River. Partially disturbed by machinery. Site extent represents remnant deposit.	YG-034 Figure 71
HLE Y11	HLE Y PAD 27	Artefact	Small remnant area of low density subsurface artefact deposit identified during testing of HLE Y PAD 27 on small knoll within a ridgeline overlooking a prominent bend in the Murrumbidgee River.	YG-034 Figure 71

Final Site/PAD Name	Former PAD	Site Feature	Description	Location & Figure reference
HLE Y12	HLE Y PAD 27	Artefact	Low density surface and subsurface artefact deposit identified during testing of HLE Y PAD 27 on small saddle within a ridgeline overlooking a prominent bend in the Murrumbidgee River.	YG-034 Figure 71
HLE Y13	HLE Y PAD 27	Artefact	Subsurface moderate density artefact site identified during testing of HLE Y PAD 27 on a knoll within a ridgeline overlooking a prominent bend in the Murrumbidgee River.	YG-034 Figure 71
HLE Y14	HLE Y PAD 27	Artefact	Low density subsurface artefact site identified during testing of HLE Y PAD 27 on gentle slopes off a minor spur, part of a ridgeline overlooking a prominent bend in the Murrumbidgee River.	YG-034 Figure 71
HLE Y PAD 13		PAD	PAD identified during survey on narrow area of lower slope and flat adjacent to Oak Creek	YG-031 Figure 72
HLE Y16		Artefact; PAD	Moderate density surface site and associated PAD landform identified during survey across a bench in a lower hillslope above a former (now dammed) tributary to Oak Creek	YG-031 Figure 72
HLE Y17		Artefact; PAD	Low density surface site and associated PAD landform identified during survey on defined hill crest overlooking Oak Creek	YG-031 Figure 72
HLE Y18	HLE Y PAD 29	Artefact	Low-moderate density subsurface artefact site identified during testing of HLE Y PAD 29 on elevated bench above a tributary confluence with Oak Creek. Relatively rocky, shallow deposit but intact.	YG-031 Figure 72
HLE Y21		Artefact	Small, low density surface scatter identified during survey in disturbed context around a farm gate and vehicle track on a broad crest landform	AT-290 (YG-024) Figure 73
HLE Y29		Artefact; PAD	Low density surface site and associated moderate potential landform identified during survey across gentle slopes bordering a modified tributary of Burnt Hut Creek	AT-287 (YG-020) Figure 74
HLE Y30		Artefact; PAD	Low density surface site and associated moderate potential landform identified during survey located across gentle midslope overlooking swampy area along a drainage tributary	AT-286 (YG-020) Figure 74
HLE Y PAD 23		PAD	PAD identified during survey incorporating a small rise and low slope bordered by drainage confluences to Woolgarlo Creek	AT-284 (YG-020) Figure 75
HLE Y PAD 24		PAD	PAD identified during survey across an elevated flat south of a tributary of Woolgarlo Creek. PAD incorporates the landform associated with previously recorded site BH-OS-1 (AHIMS 51-4-0048, located outside the project boundary and not impacted)	AT-284 (YG-020) Figure 75
HLE Y PAD 30		PAD	PAD identified during survey on a level section of elevated ridge crest overlooking Derringullen Creek and Fairy Hole Creek	BY-156 Figure 76
HLE Y PAD 31		PAD	PAD identified during survey across a slight hollow on the northern flanks of a broad crest overlooking the confluence of a tributary and Fairy Hole Creek	BY-156 Figure 76
HLE Y PAD 32		PAD	PAD identified during survey across a defined, prominent rise of variant geology adjacent to Fairy Hole Creek. Currently not impacted.	BY-156 Figure 76
HLE Y32		Artefact; PAD	Low density surface site and associated moderate potential landform identified during survey on a slight rise on mid hillslopes above a first order tributary of Fairy Hole Creek	BY-156 Figure 76
HLE Y27	HLE Y PAD 6	Artefact	Low density subsurface site identified during testing of HLE Y PAD 6 within spurline slopes above a drainage line running to Cooks Creek.	BY-150 Figure 77

Final Site/PAD Name	Former PAD	Site Feature	Description	Location & Figure reference
HLE Y PAD 25		PAD	PAD identified during survey located across a small ridgeline crest and gentle sections of adjacent upper slopes surrounding a first order drainage line	BY-128-01 Figure 78
HLE Y PAD 28		PAD	PAD identified during survey located within a wooded ridgeline overlooking Felled Timber Creek. Currently not impacted.	BY-128-01 Figure 78
HLE G PAD 8		PAD	PAD identified during survey located on broad, gentle lower slopes rising to an elevated low crest overlooking the confluence of Merrill Creek with the Lachlan River	AT-174 (BY-113) Figure 79
HLE G PAD 13		PAD	PAD identified during survey located on a hillslope off a crest overlooking Middle Creek to the east and a dammed, smaller drainage line to the west	BY-108 Figure 80
HLE G28	HLE G PAD 14	Artefact	Low density subsurface artefact site identified during testing of HLE G PAD 14 on gentle slope above Meadow Creek	BY-107, AT-163 Figure 80
HLE G29	HLE G PAD 15	Artefact; PAD	Moderate to localised high density subsurface deposit identified during testing of HLE G PAD 15 on gentle slope and microtopographic elevated rises on the western side of Middle Creek	BY-107, AT-163 Figure 80
HLE G PAD 18		PAD	PAD identified during survey located across a narrow area of gentle lower slope and flats bordering Merrill Creek	BY-097 Figure 81
HLE G PAD 19		PAD	PAD identified during survey recorded across a small area of crest and upper slope off a broad spurline, bordered by two tributaries of Merrill Creek	BY-101 / BY-097 Figure 81
HLE G PAD 21		PAD	PAD identified during survey located across the gently sloping crest of a rise overlooking a drainage line running south east to Humes Creek	BY-101 Figure 82
HLE G12		Artefact; PAD	Surface and moderate density subsurface artefact site on lower slope bordering Sawpit Creek, identified during survey and confirmed during testing.	BY-074 Figure 83
HLE G31		Artefact	Isolated find identified during survey in disturbed context adjacent to Range Road	BY-072 Figure 83
HLE G30		Artefact	Isolated find identified during survey in disturbed context on a ridgeline overlooking Sawpit Creek. Currently not impacted.	BY-072 Figure 83
HLE G PAD 2		PAD	PAD identified during survey located across gentle lower slope on either side of a drainage tributary east of Bannaby Creek	BY-006 Figure 84
HLE G PAD 34		PAD	PAD identified during survey on gentle gradient elevated lower slopes off a small, eroded crest landform between Bannaby Creek and a small drainage line	BY-006 Figure 84
HLE G PAD 1		PAD	PAD identified during survey recorded along the spine of a ridge crest, extending south across a saddle and towards another crest and upper slopes above a tributary drainage line	BY-003 Figure 85
Bannaby 1		Artefact	Surface artefact site with variable density subsurface deposit, previously recorded on AHIMS and partially salvaged for existing transmission.	BY-003 Figure 85
HL-65		Modified Tree	Modified tree adjacent to a drainage line identified during NOHC survey. Currently not impacted.	BY-003 Figure 85

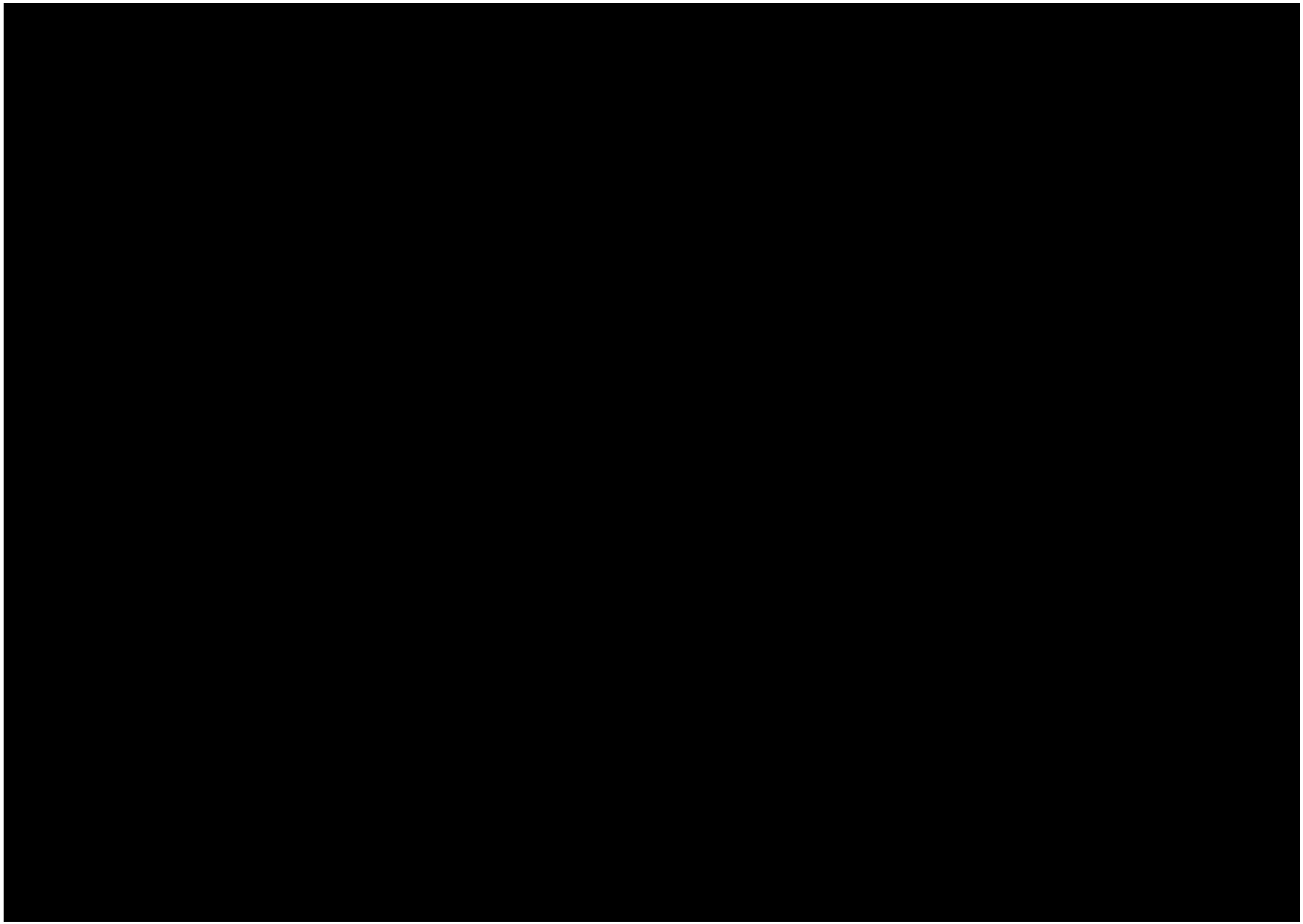


Figure 63. HLE T4

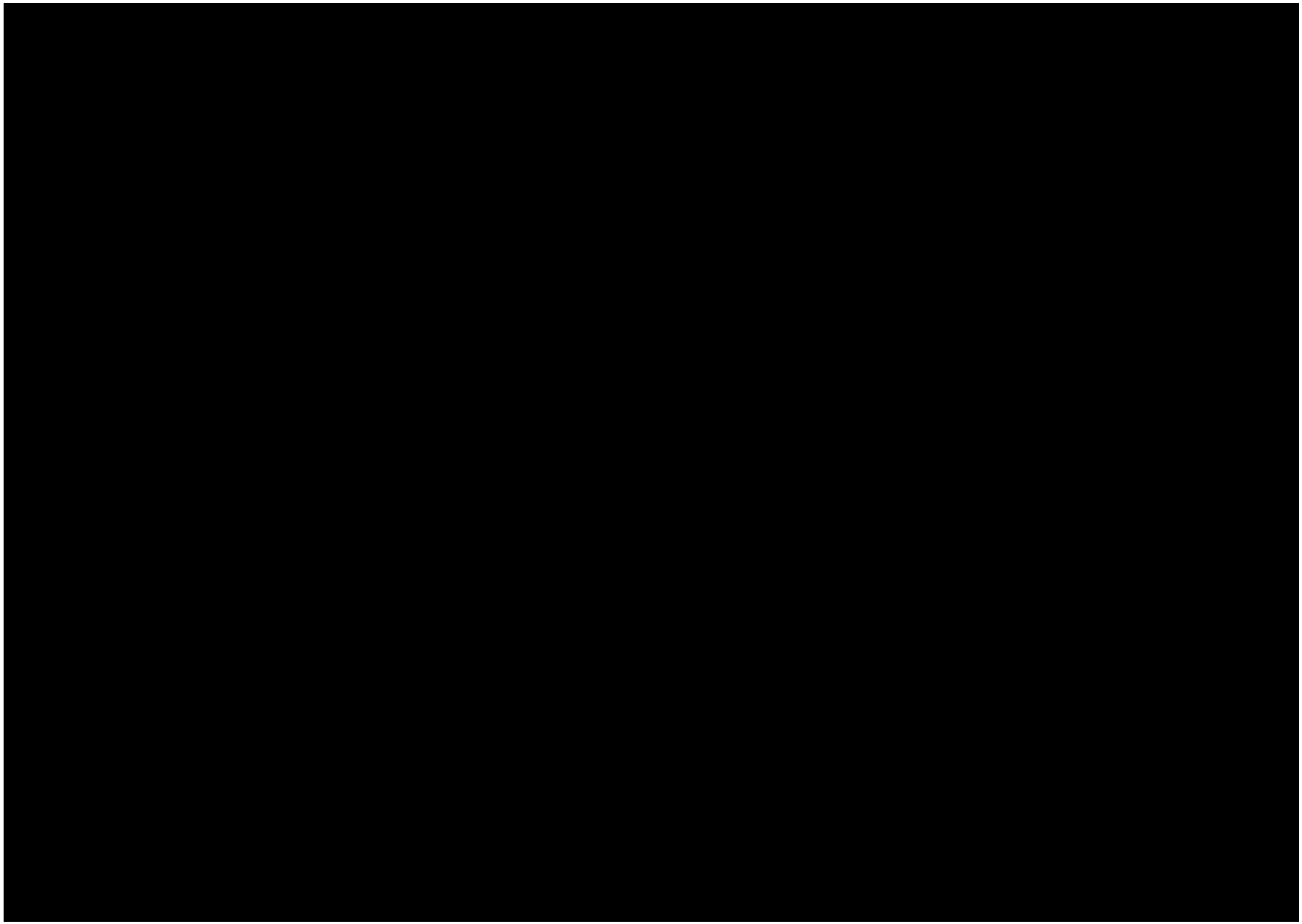


Figure 64. HLE T PAD 22, HLE T PAD 38 and HLE T PAD 8

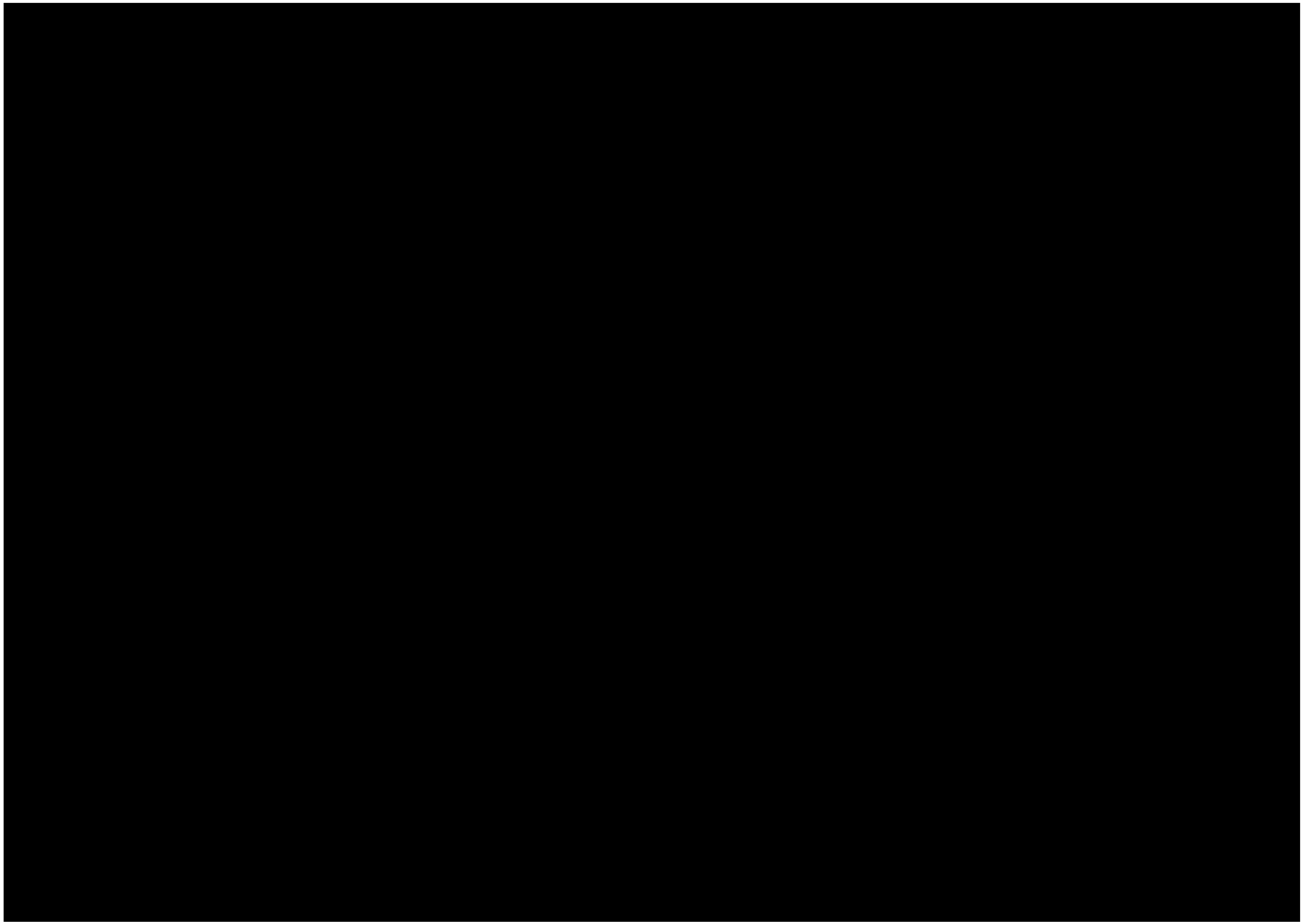


Figure 65. HLE T16 and HLE T17

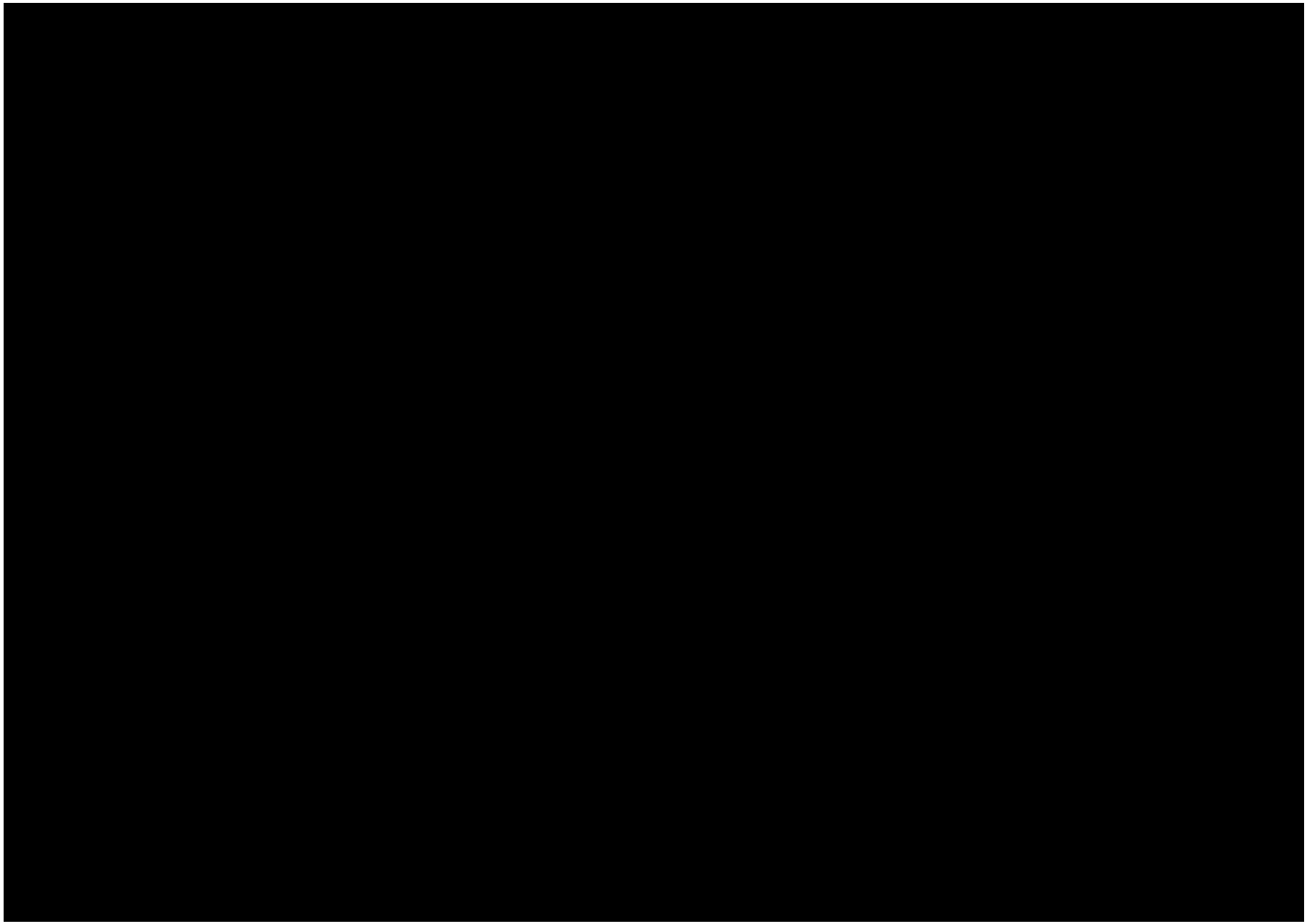


Figure 66. HLE T18 (includes AHIMS 56-3-0336)

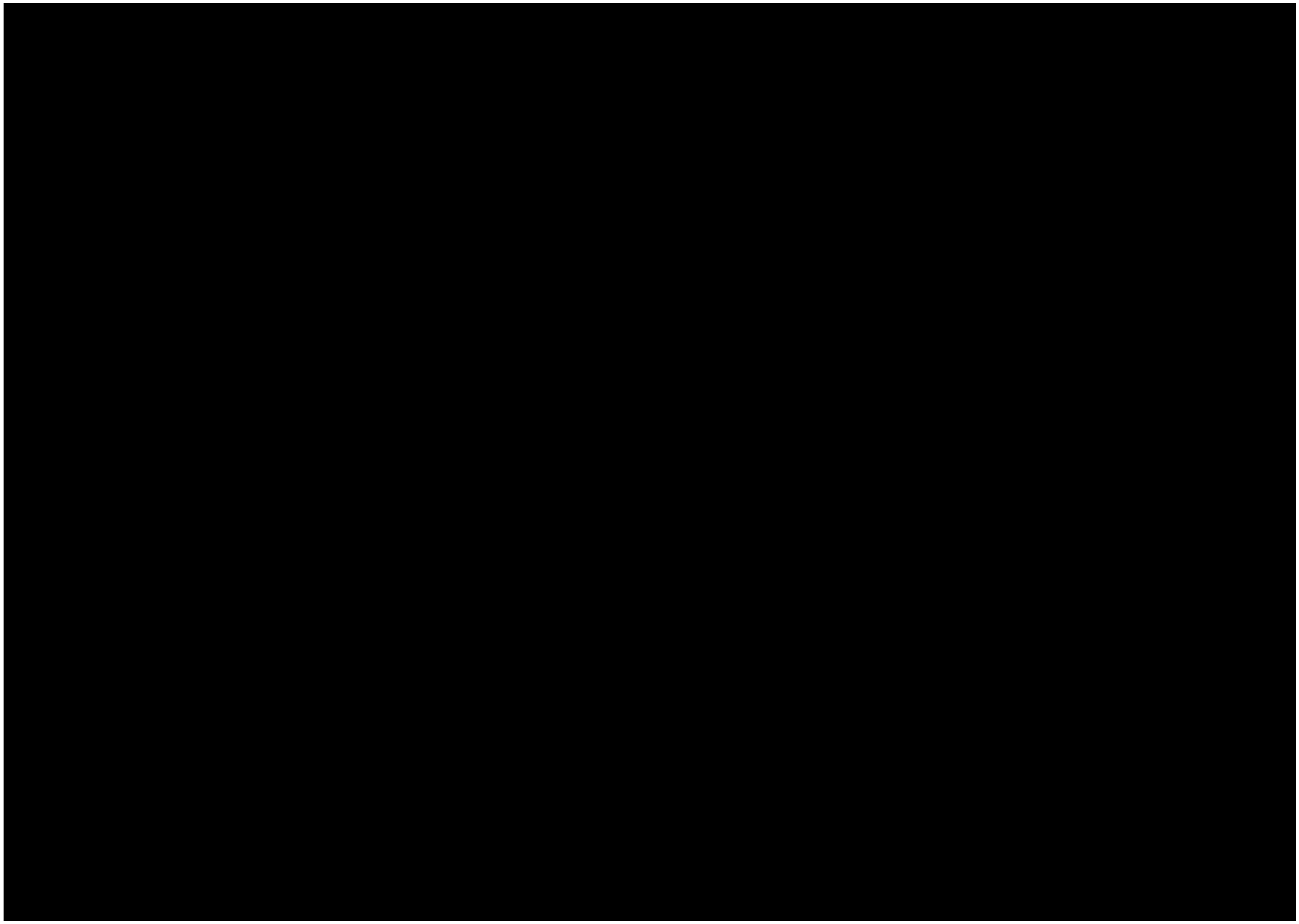


Figure 67. HLE T TRE 1 and HLE T PAD 23

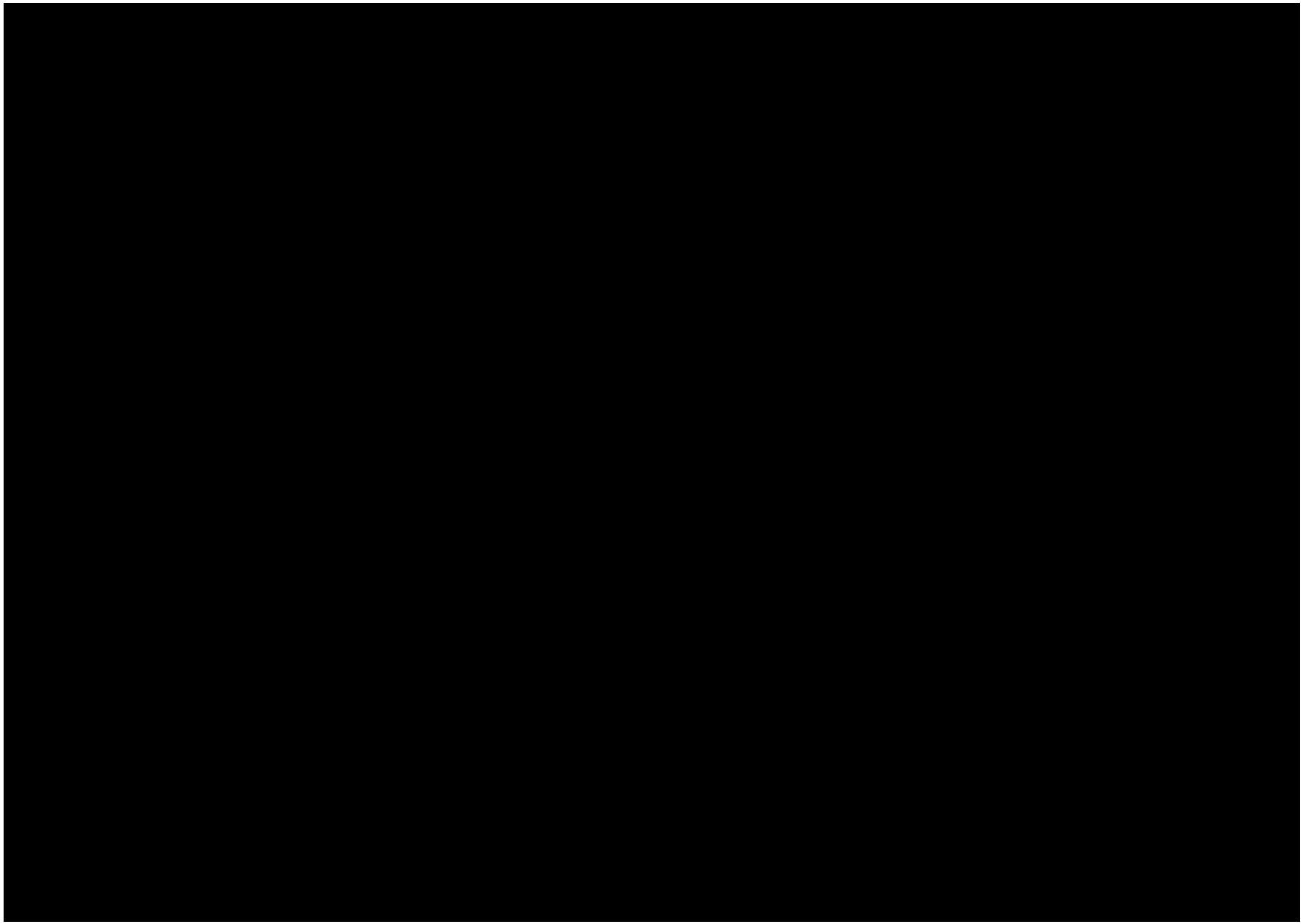


Figure 68. HLE T42

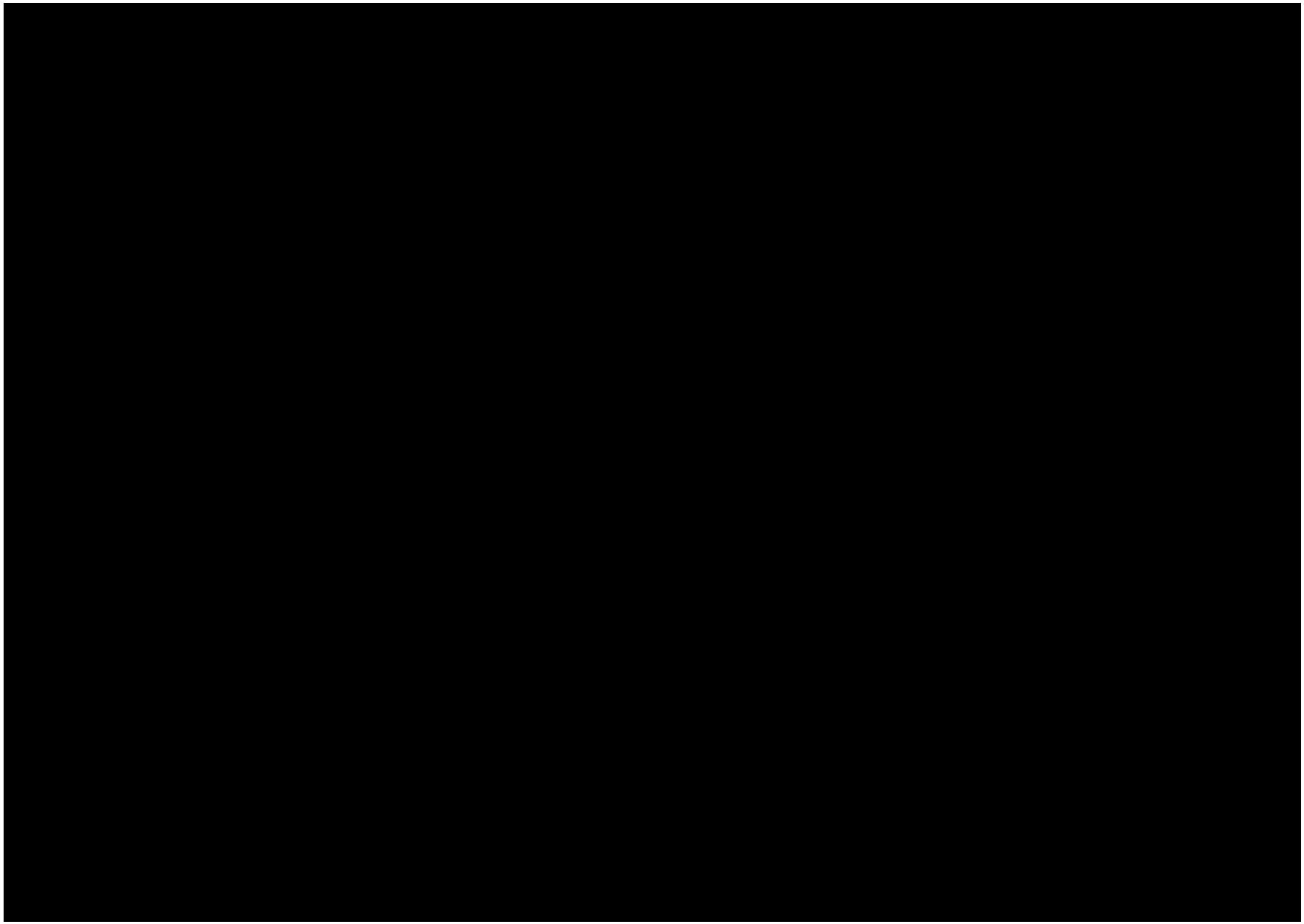


Figure 69. HLE T26

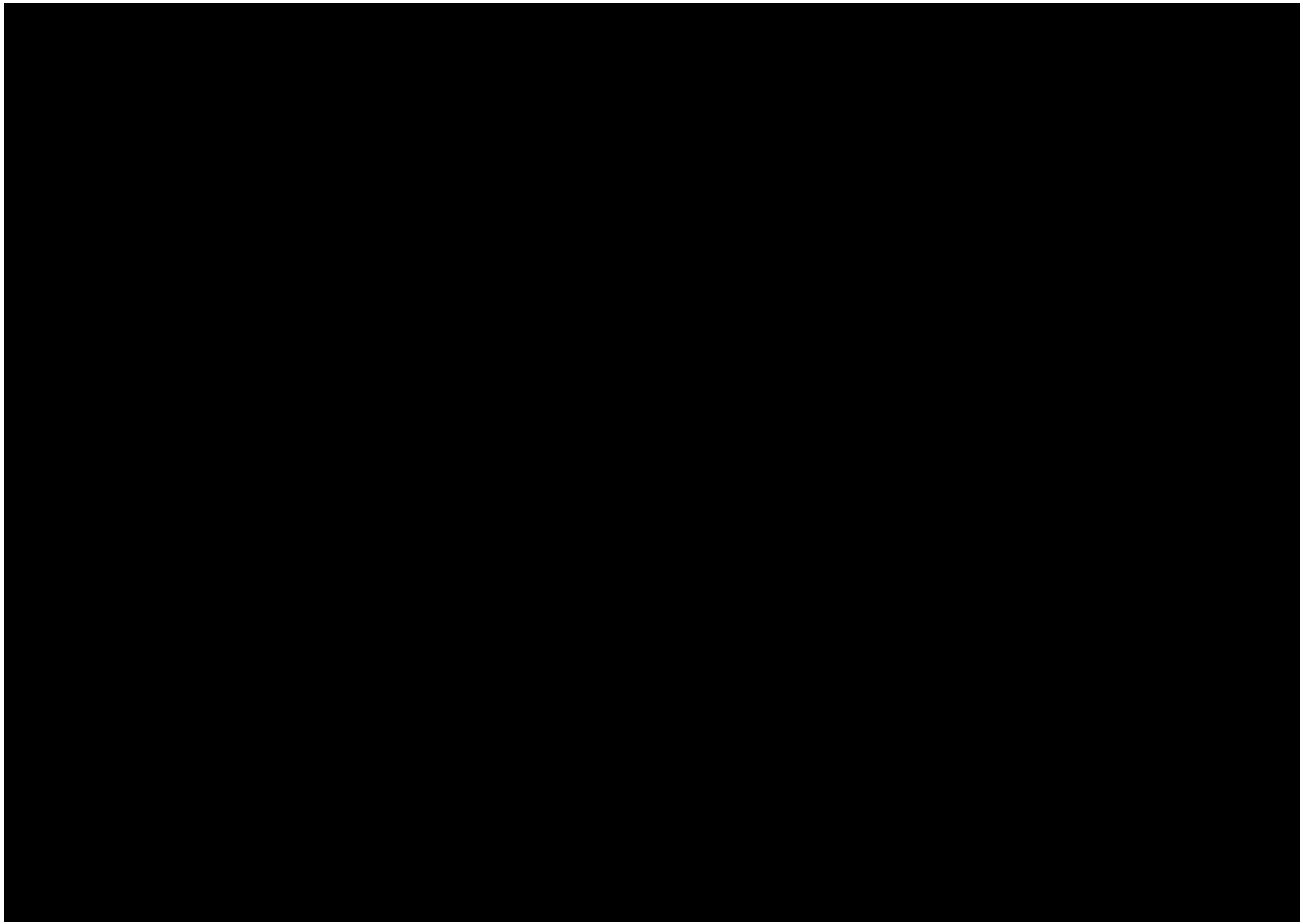


Figure 70. HLE T27 and HLE T28

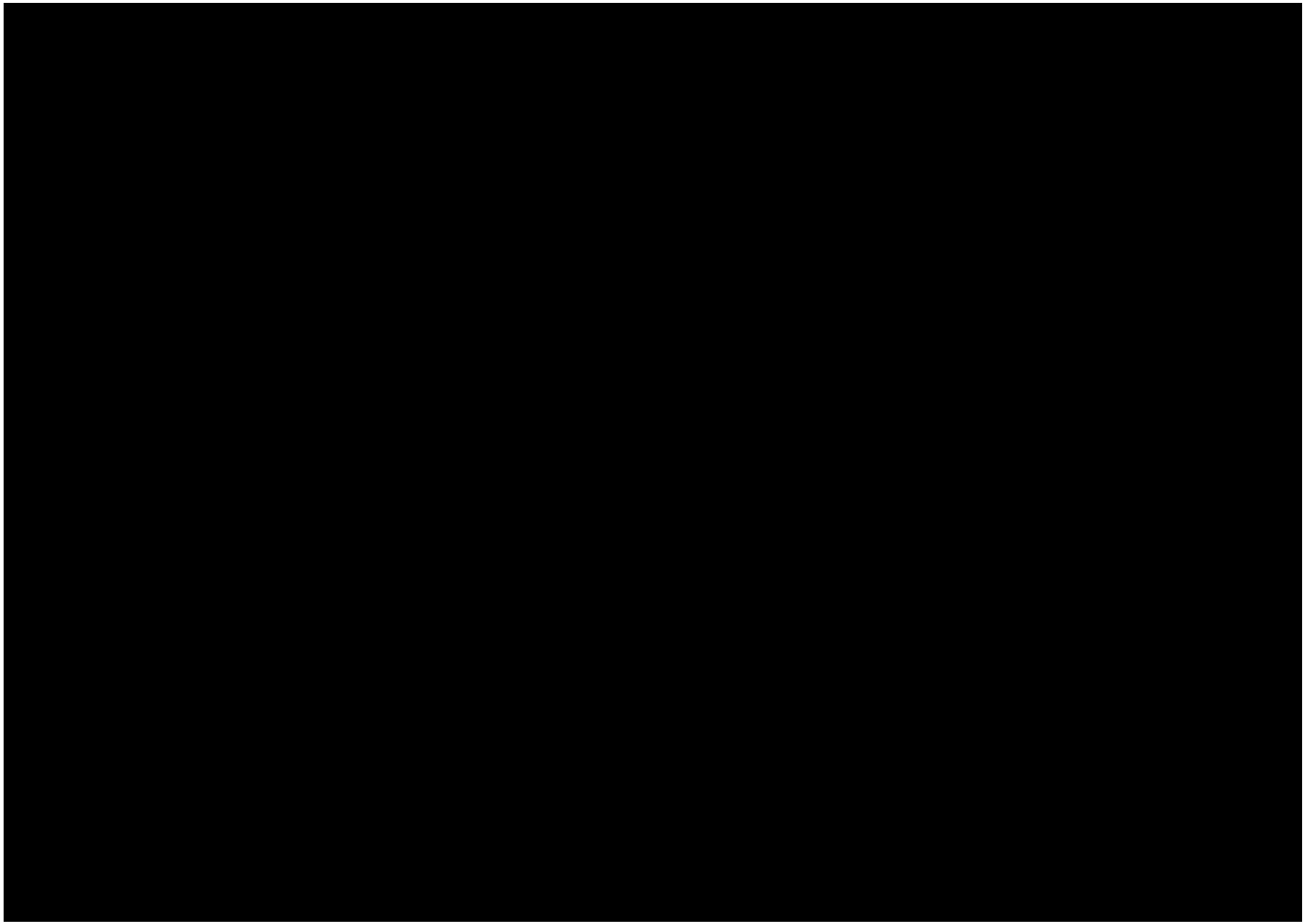


Figure 71. HLE Y PAD 11, HLE Y10, HLE Y11, HLE Y12, HLE Y13 and HLE Y14

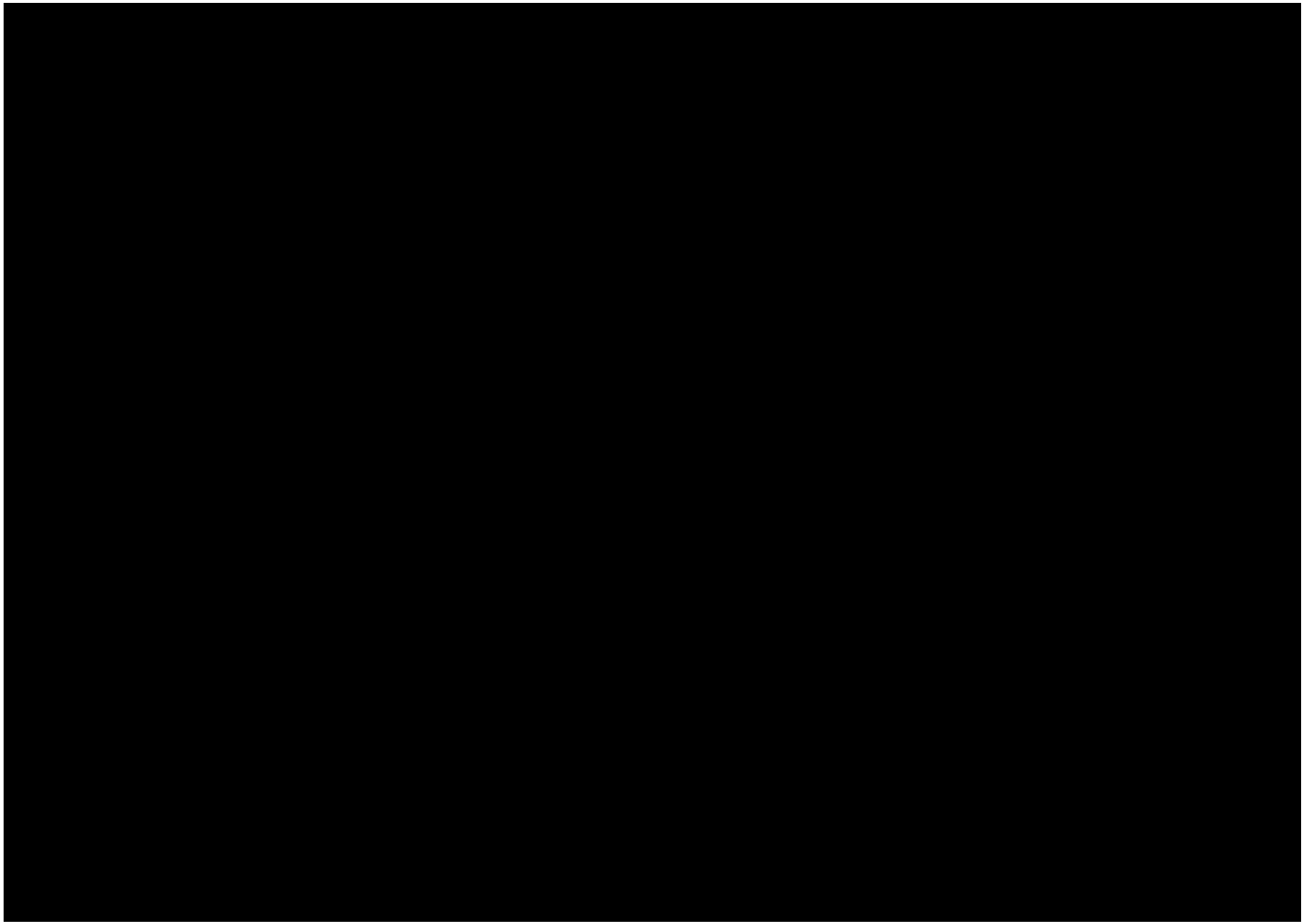


Figure 72. HLE Y16, HLE Y17, HLE Y PAD 13 and HLE Y18

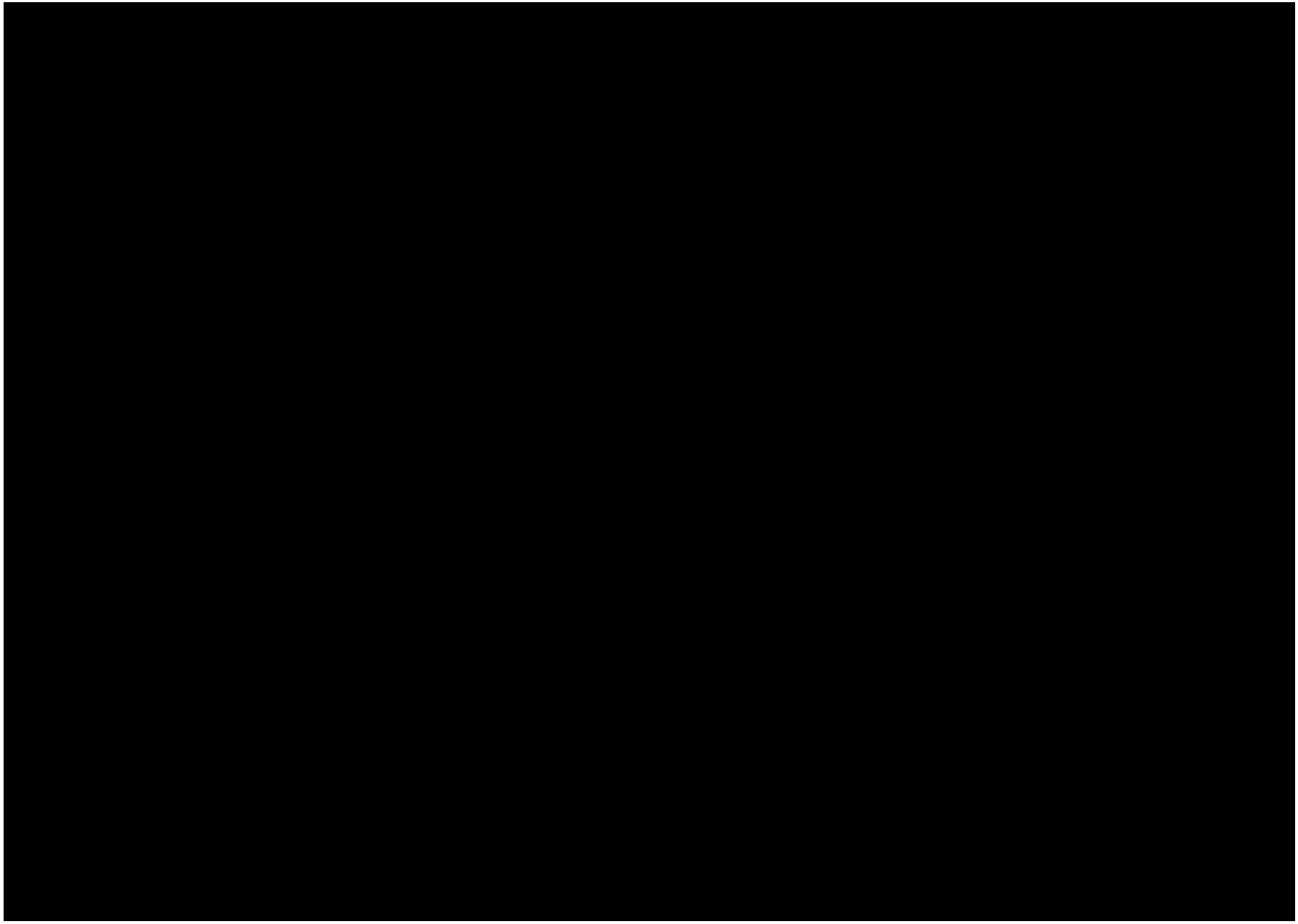


Figure 73. HLE Y21

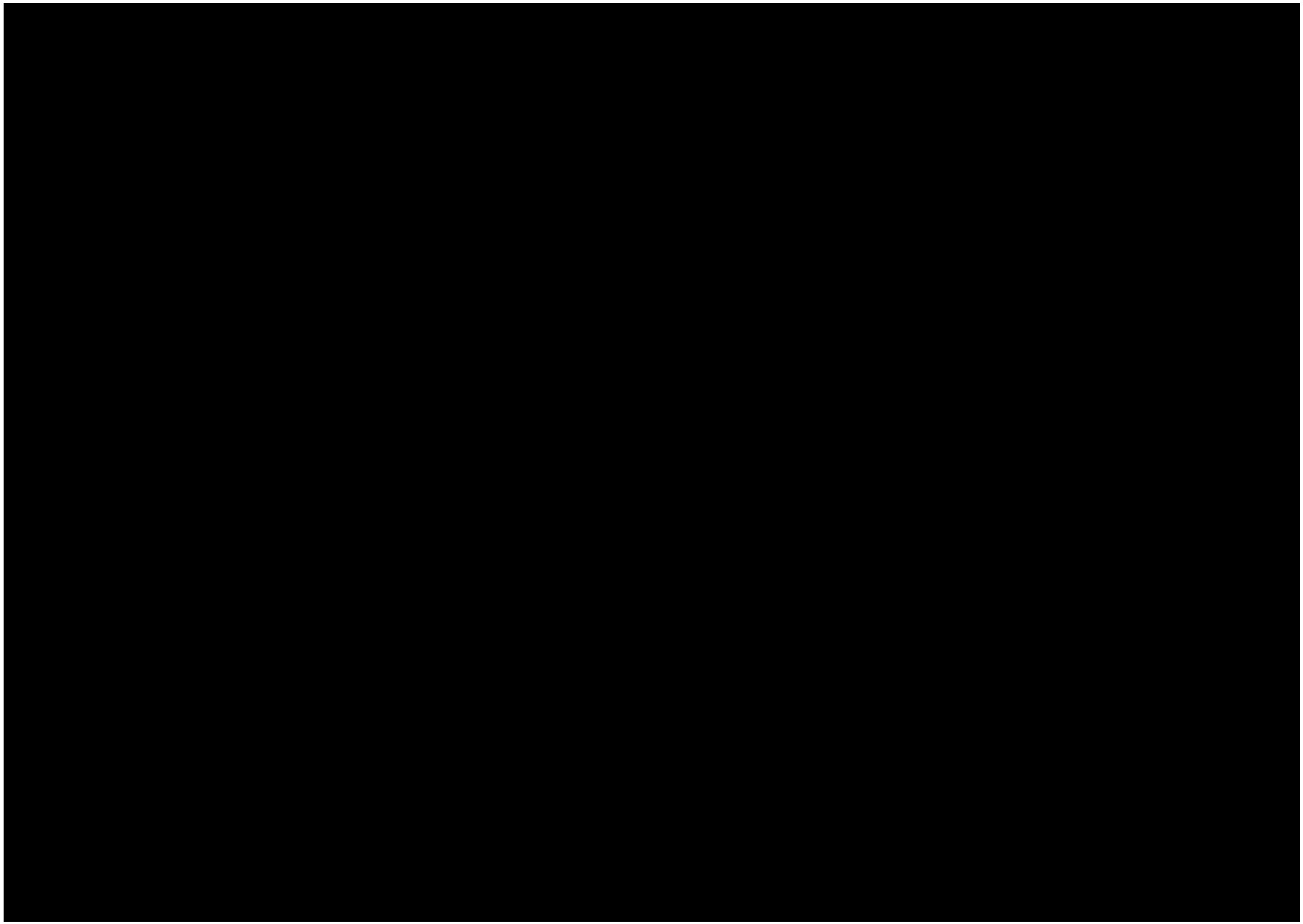


Figure 74. HLE Y29 and HLE Y30

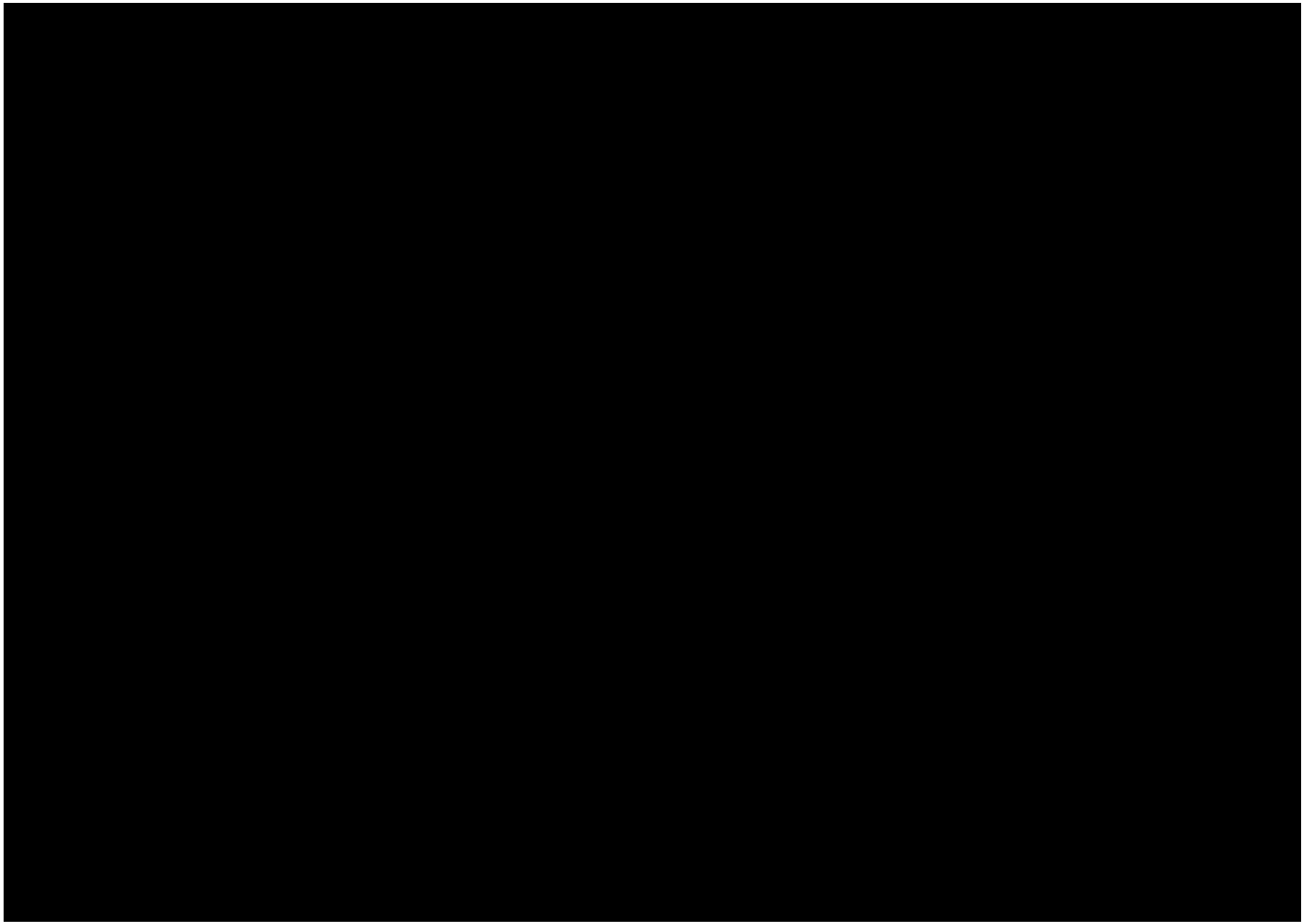


Figure 75. HLE Y PAD 23 and HLE Y PAD 24

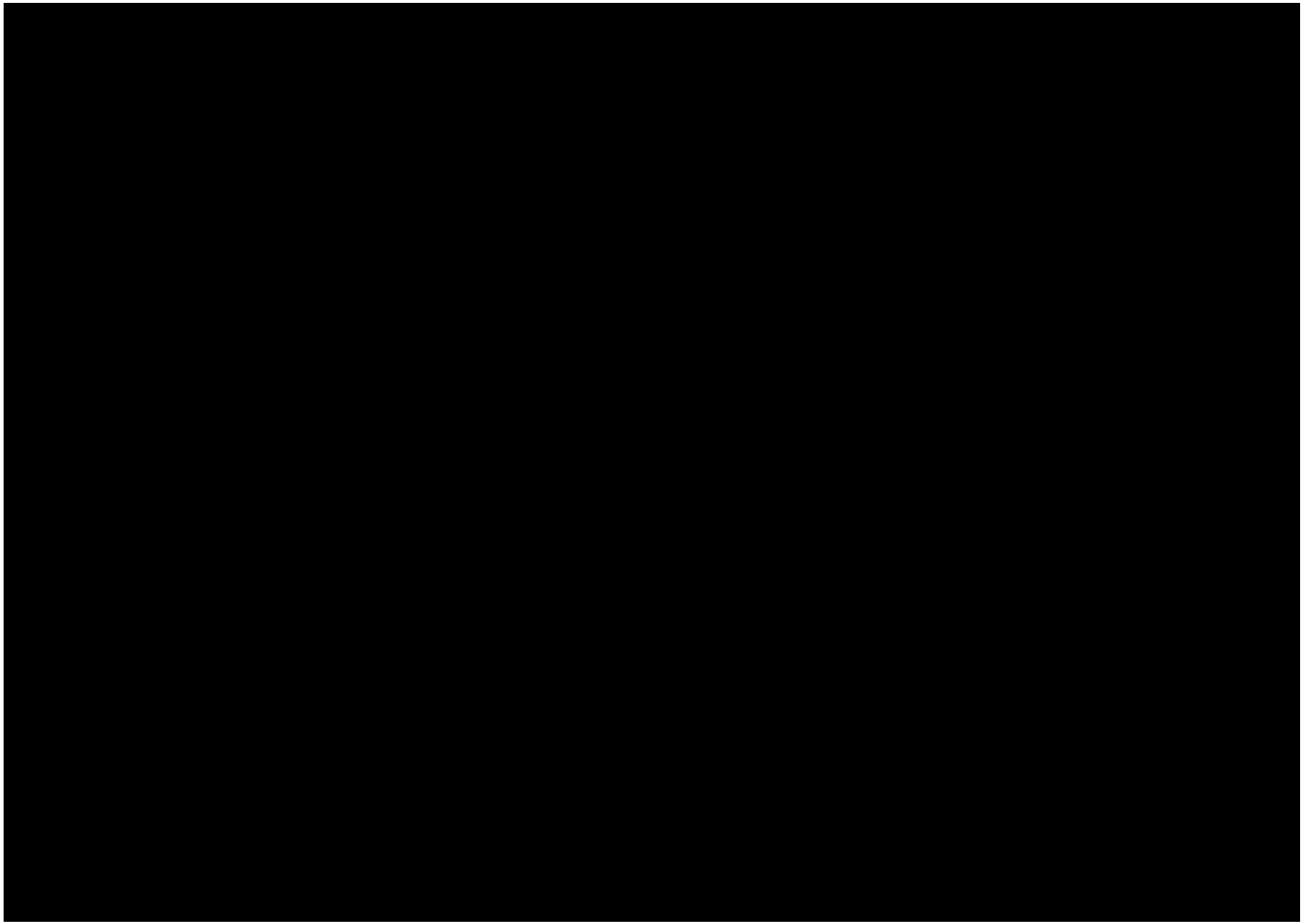


Figure 76. HLE Y PAD 30, HLE Y PAD 31, HLE Y 32 and HLE Y PAD 32

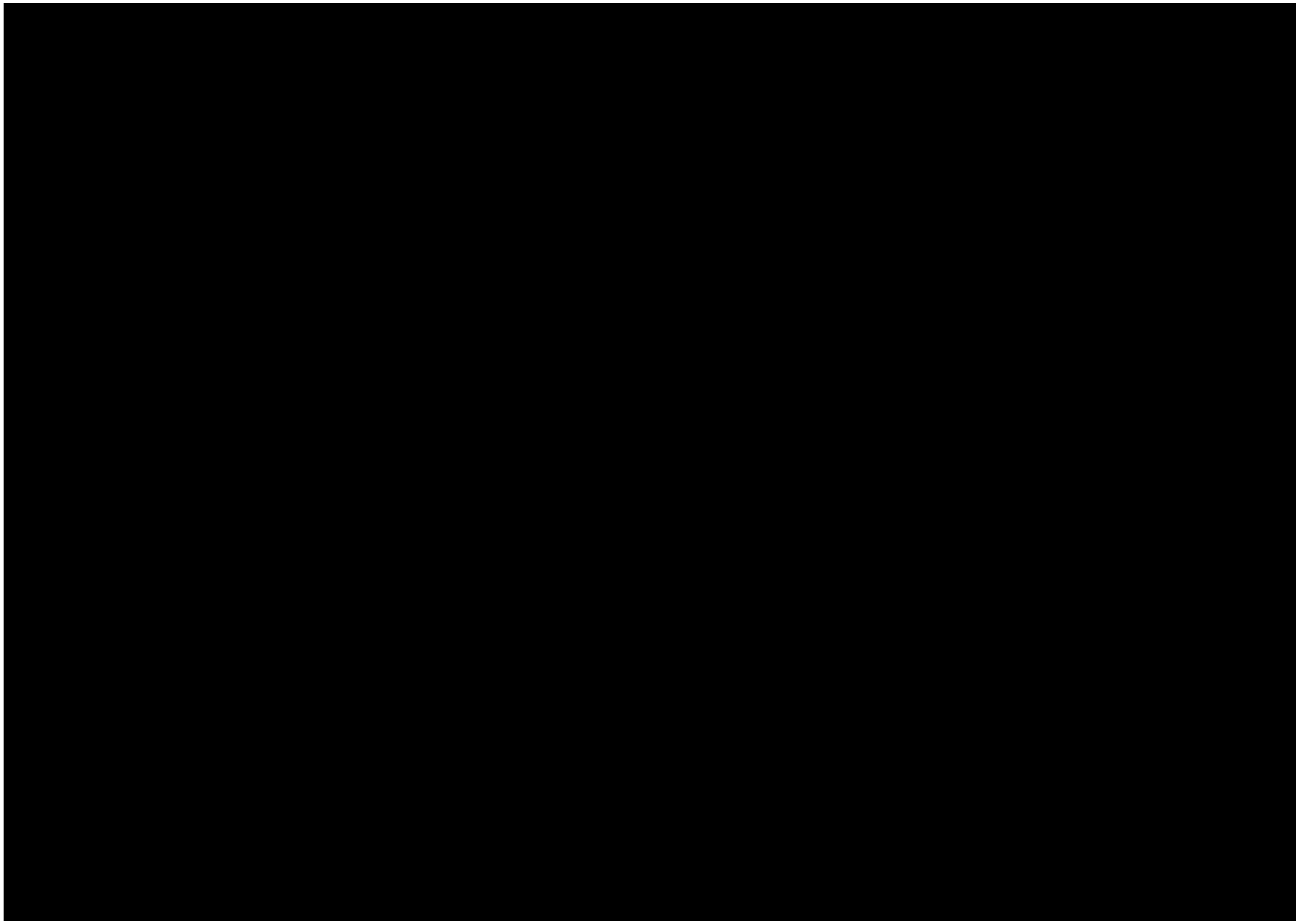


Figure 77. HLE Y27

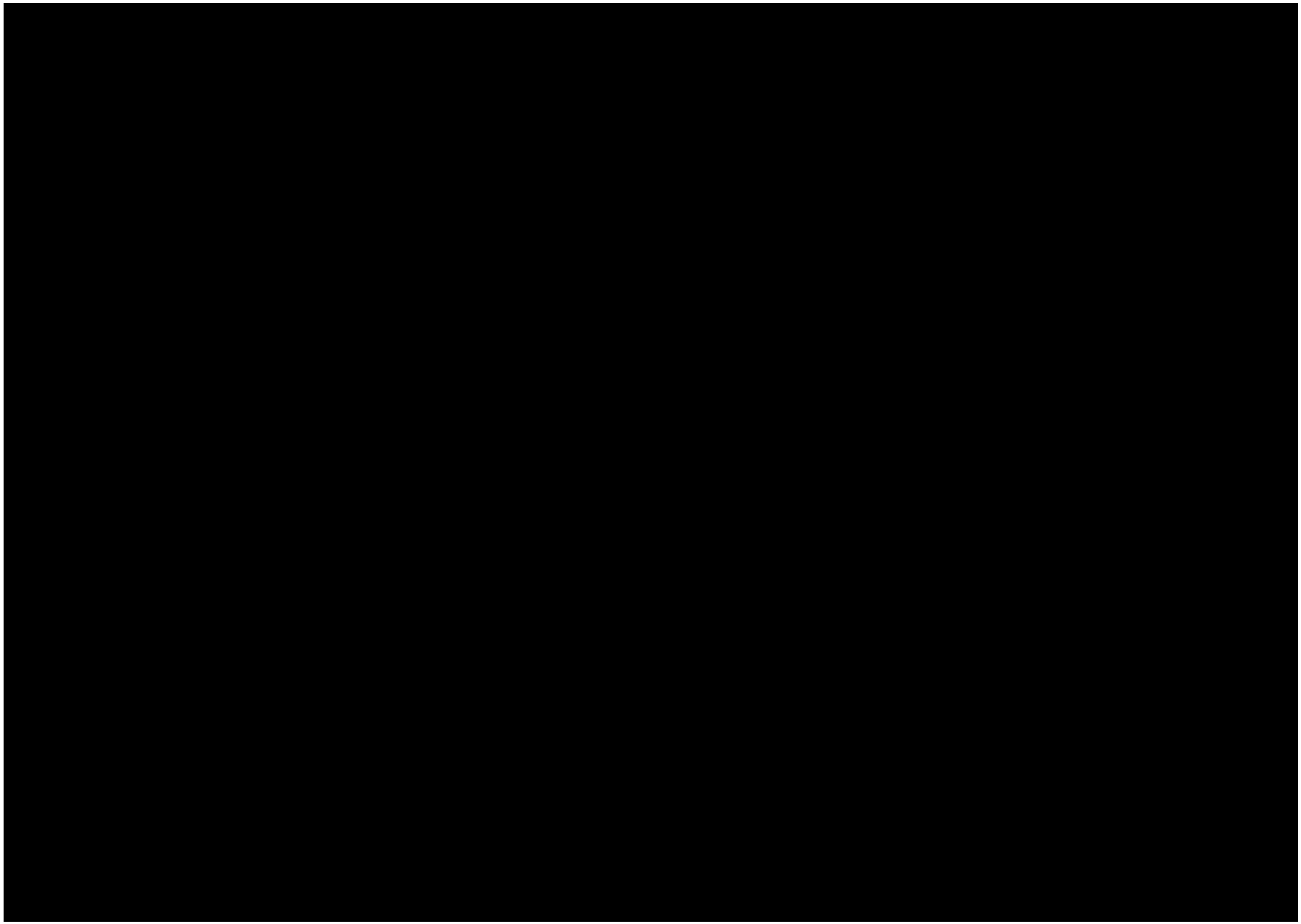


Figure 78. HLE Y PAD 28 and HLE Y PAD 25

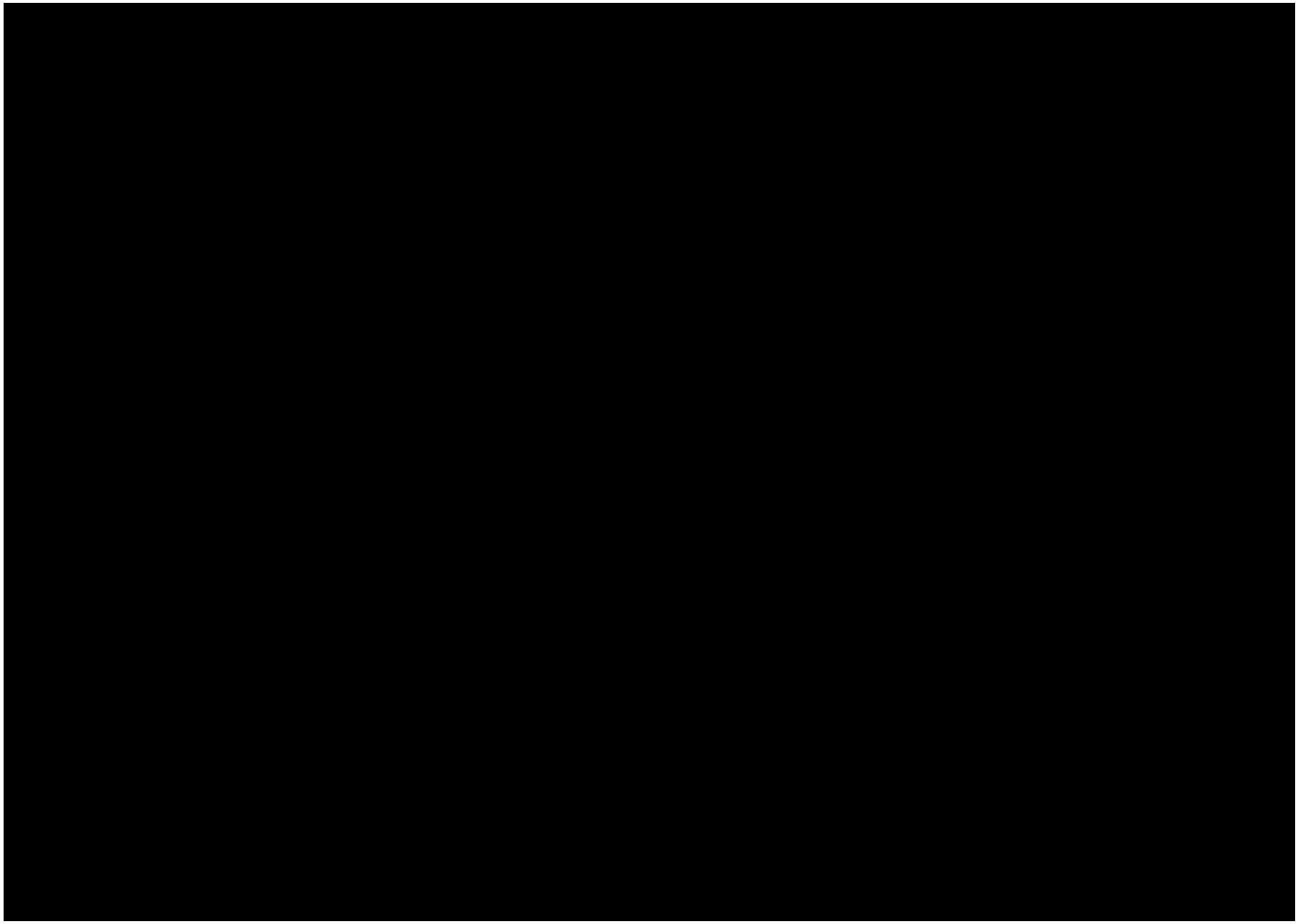


Figure 79. HLE G PAD 8

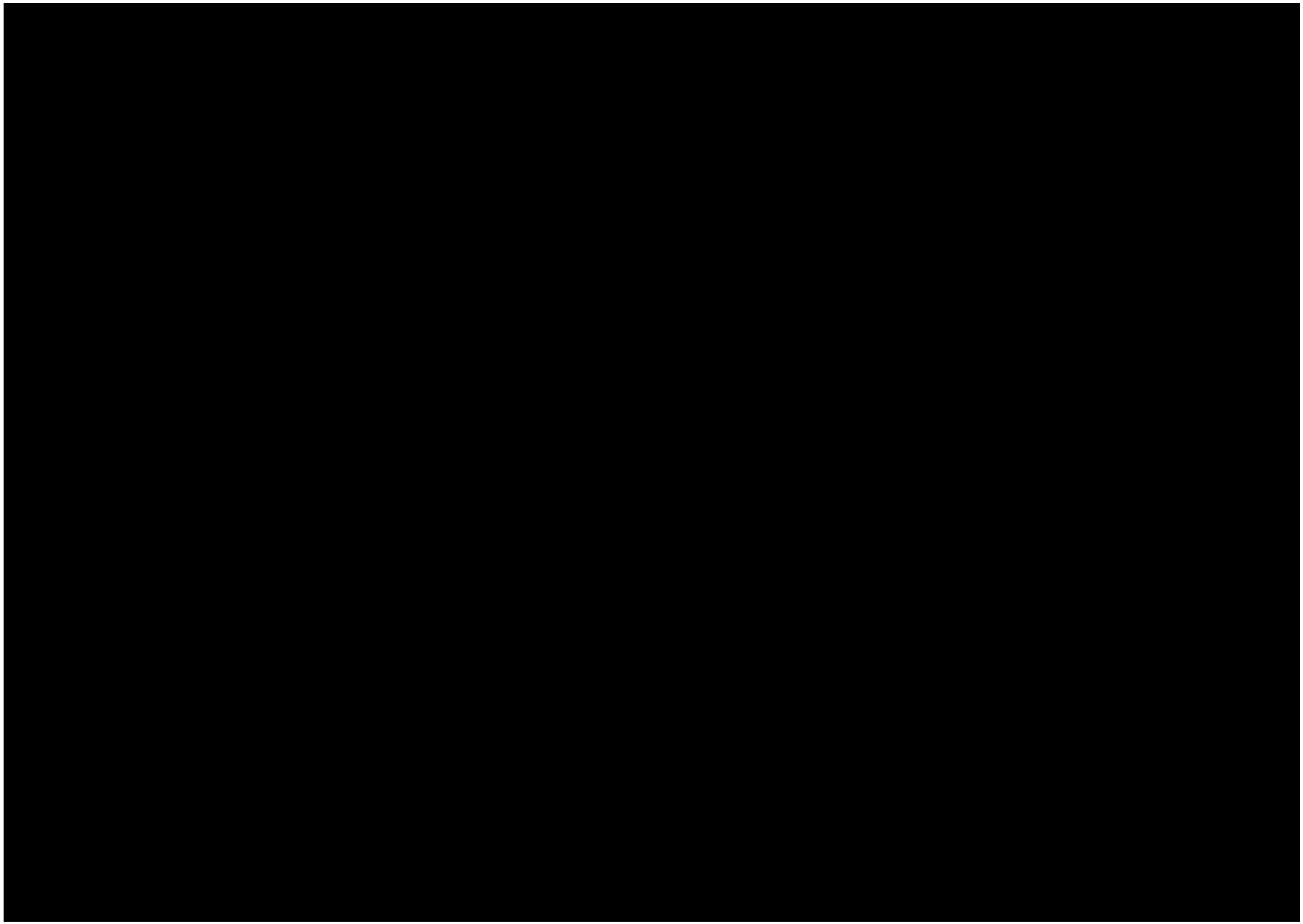


Figure 80. HLE G PAD 13, HLE G28 and HLE G29

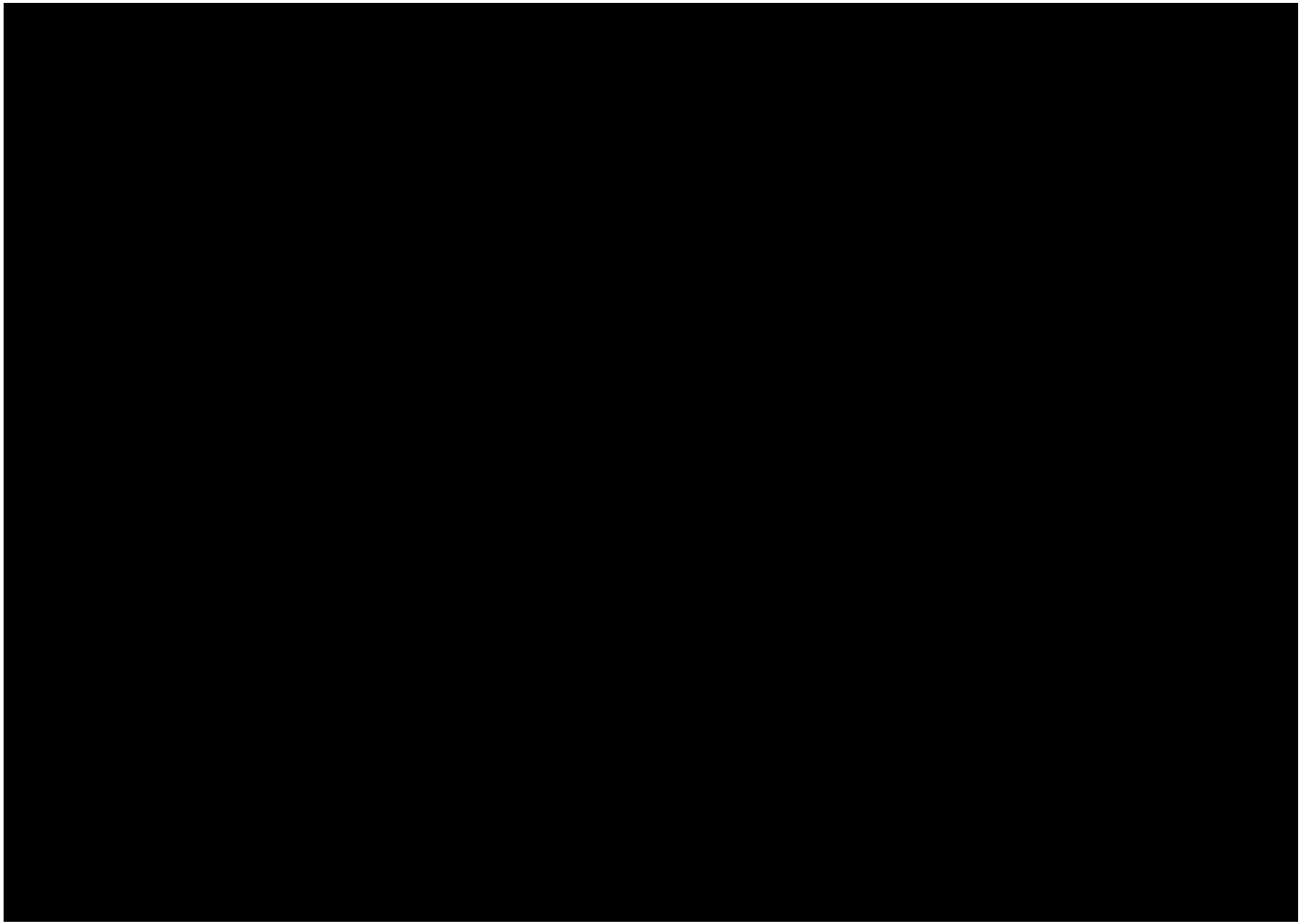


Figure 81. HLE G PAD 18 and HLE G PAD 19

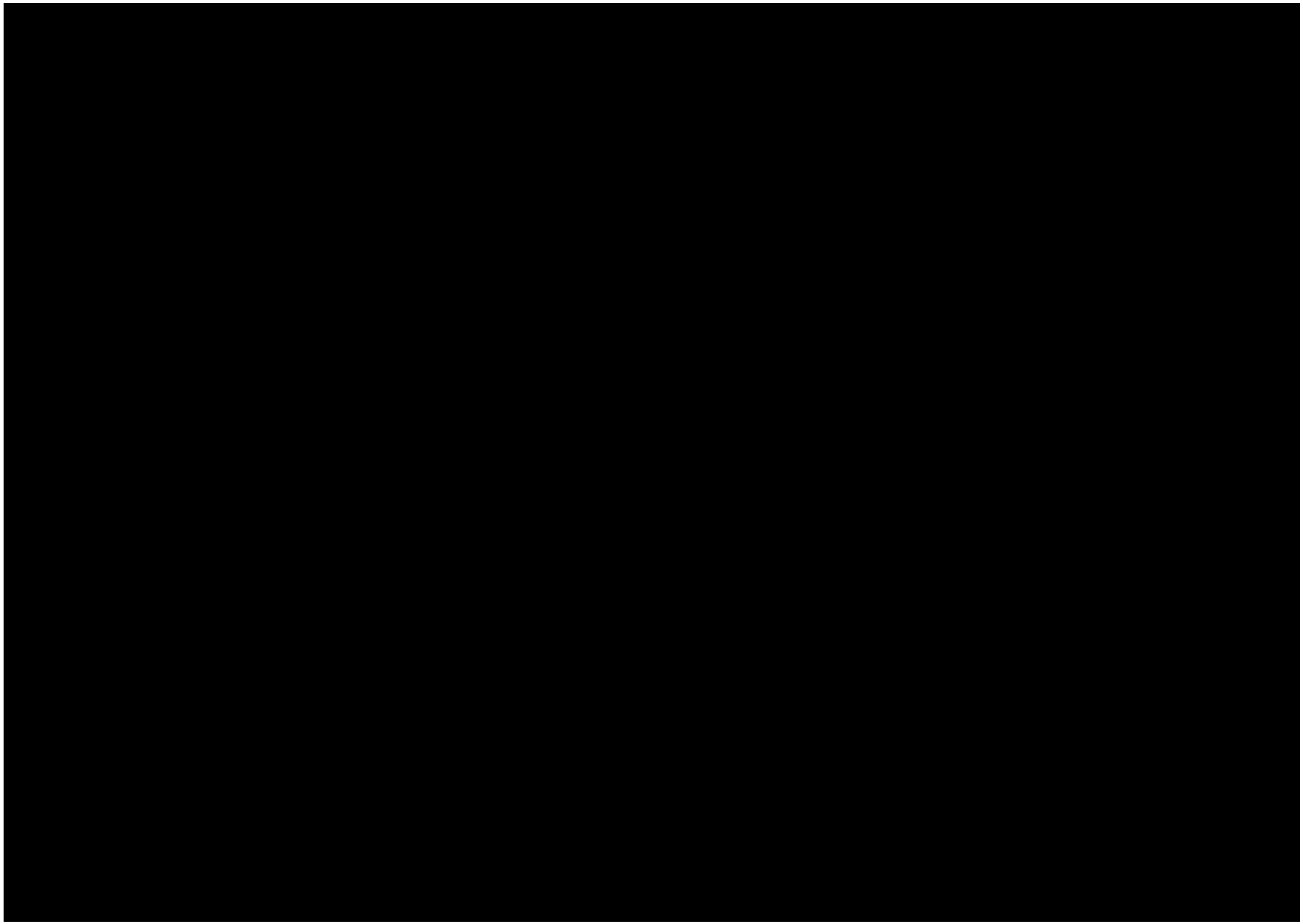


Figure 82. HLE G PAD 21

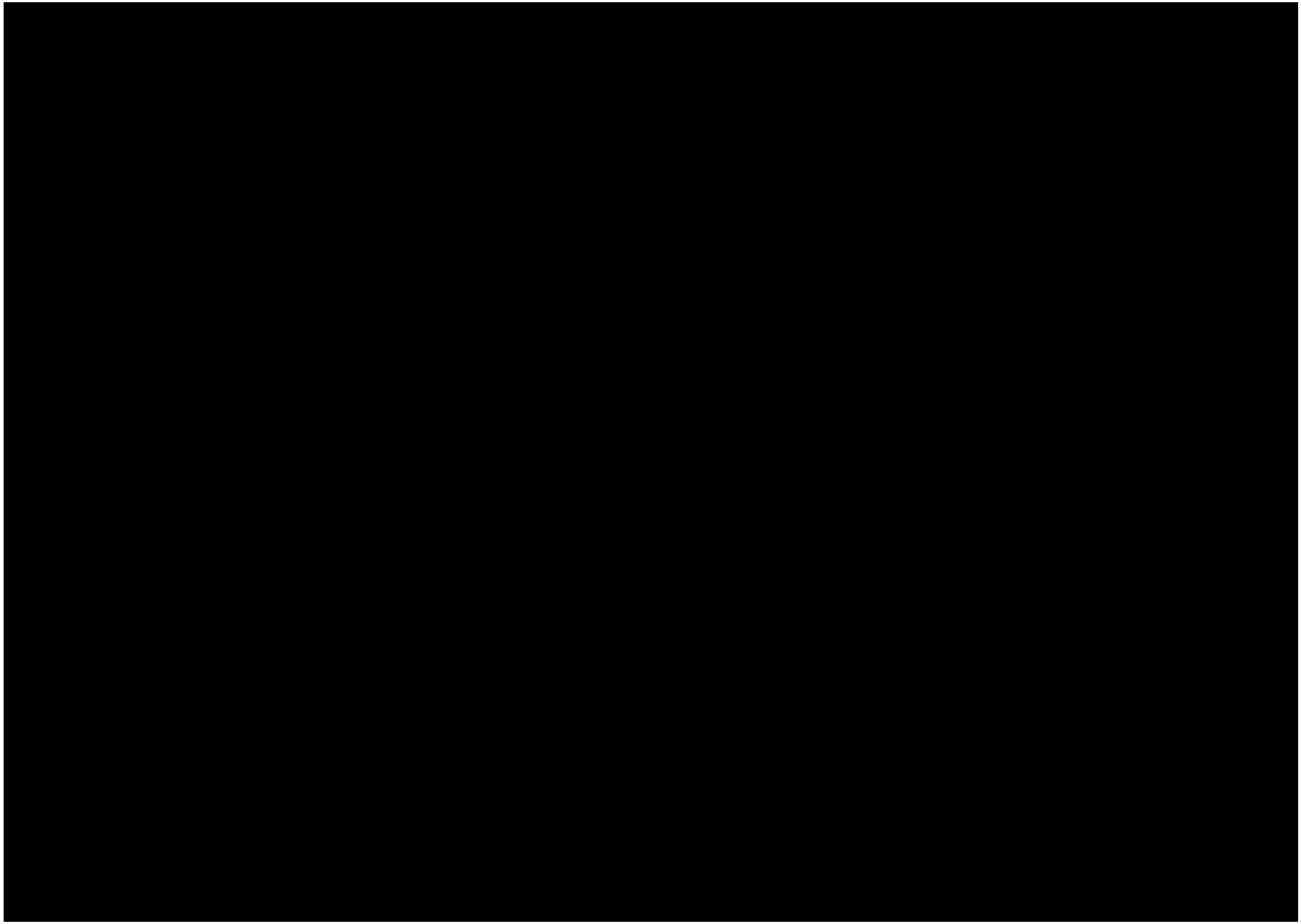


Figure 83. HLE G12, HLE G31 and HLE G30

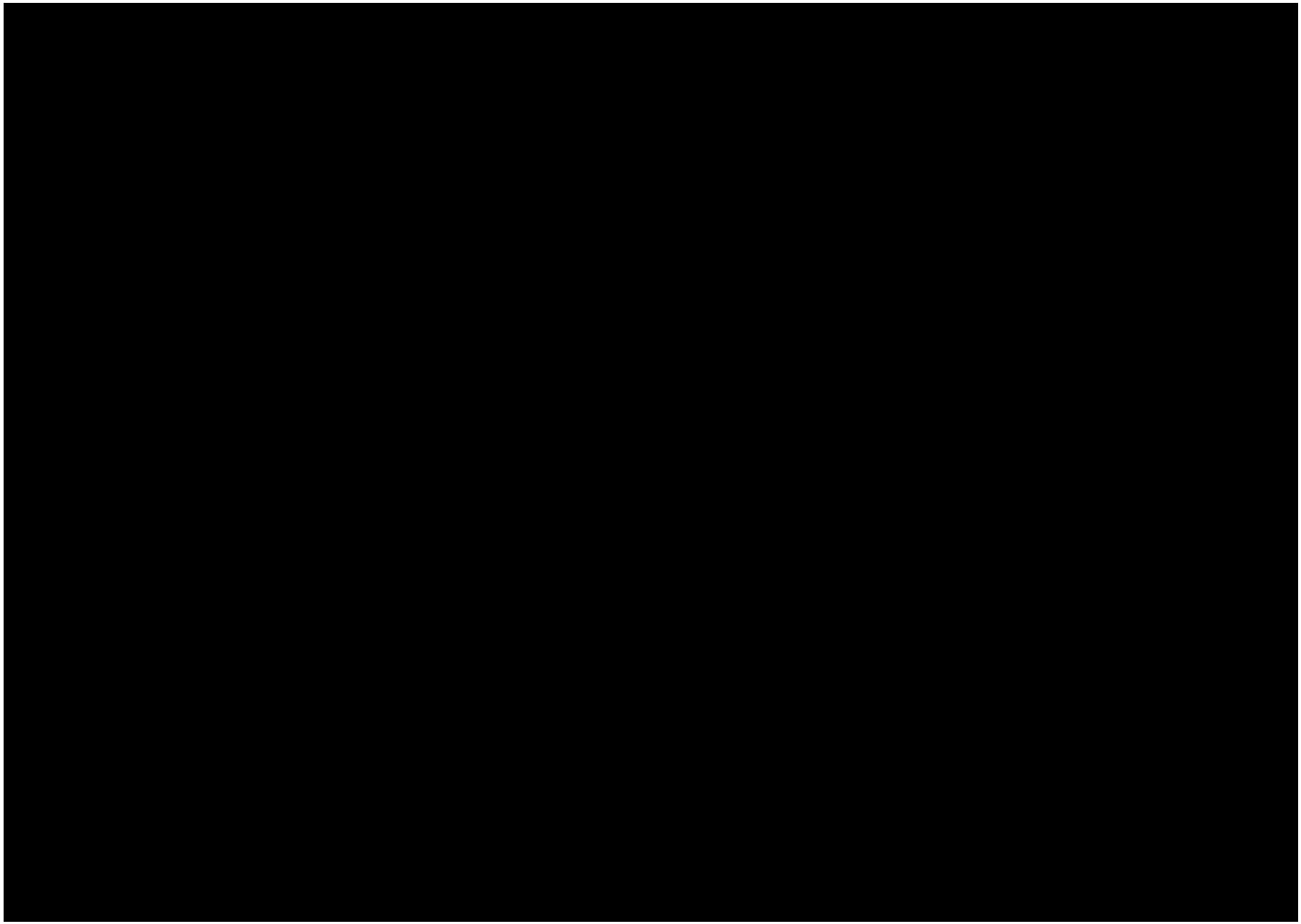


Figure 84. HLE G PAD 34 and HLE G PAD 2

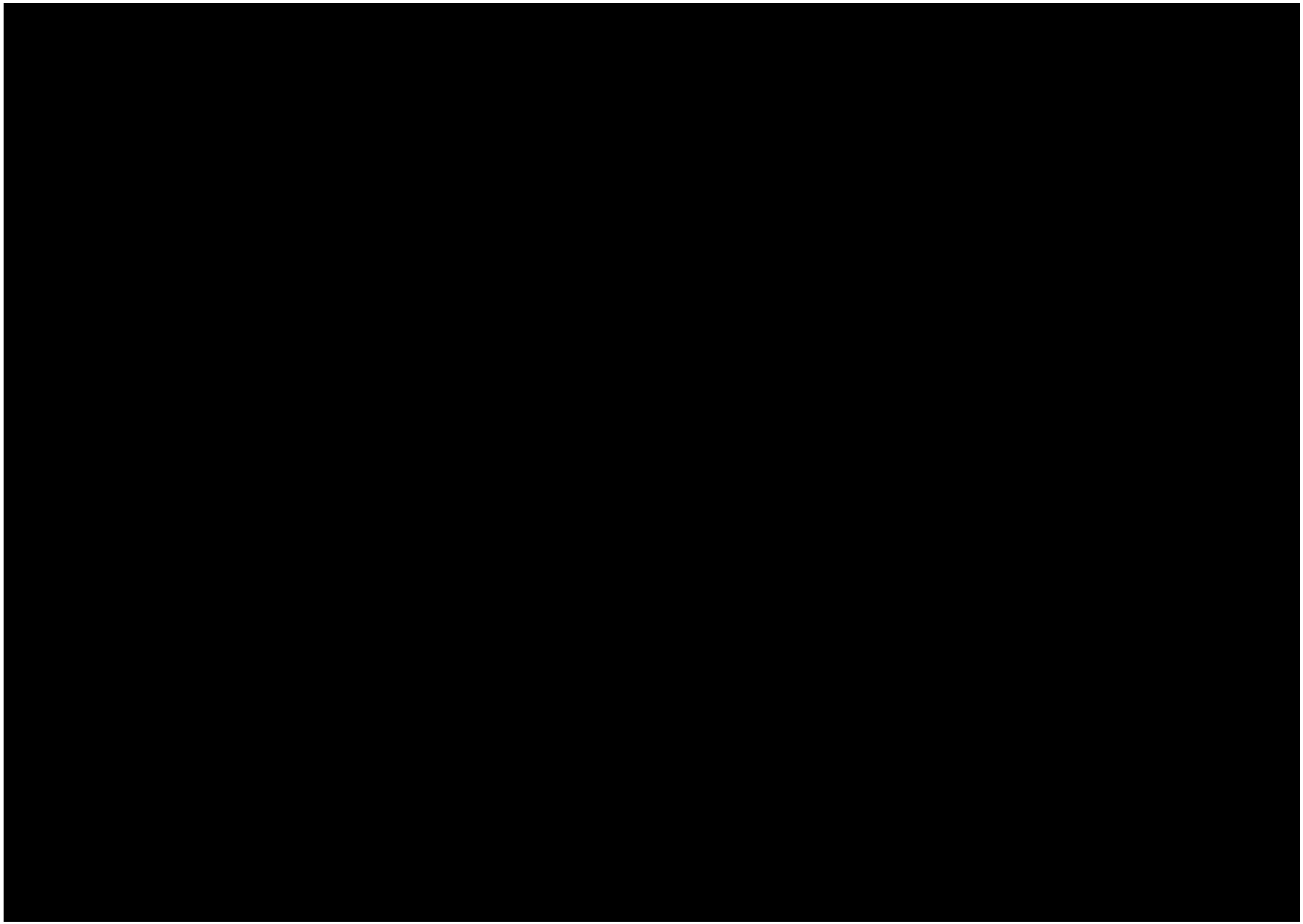


Figure 85. Bannaby 1, HL-65 and HLE G PAD 1

9 Cultural Heritage Values and Significance

9.1 Significance assessment criteria

One of the primary steps in the process of cultural heritage management is the assessment of significance. Not all sites are equally significant and not all are worthy of equal consideration and management (Sullivan and Bowdler 1984; Pearson and Sullivan 1995:7). The determination of significance can be a difficult process as the social and scientific context within which these decisions are made is subject to change (Sullivan and Bowdler 1984). This does not lessen the value of the heritage approach, but enriches both the process and the long term outcomes for future generations as the nature of what is conserved and why, also changes over time.

Significance assessments can generally be described under three broad headings (Pearson and Sullivan 1995:7):

- Value to groups such as Aboriginal communities
- Value to scientists and other information gatherers
- Value to the general public in the context of regional, state and national heritage.

The assessment of significance is a key step in the process of impact assessment for a proposed activity as the significance or value of an object, site or place will be reflected in resultant recommendations for conservation, management or mitigation. The *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* requires significance assessment according to criteria established in the *Australia ICOMOS Burra Charter* (Australia ICOMOS 2013). The *Burra Charter* and its accompanying guidelines are considered best practice standard for cultural heritage management, specifically conservation, in Australia.

Guidelines to the *Burra Charter* set out four criteria for the assessment of cultural significance:

- Aesthetic value - relates to the sense of the beauty of a place, object, site or item
- Historic value - relates to the association of a place, object, site or item with historical events, people, activities or periods
- Scientific value - scientific (or research) value relates to the importance of the data available for a place, object, site or item, based on its rarity, quality or representativeness, as well as on the degree to which the place (object, site or item) may contribute further substantial information
- Social value - relates to the qualities for which a place, object, site or item has become a focus of spiritual, political, national or other cultural sentiment to a group of people. In accordance with the Heritage NSW *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*, the social or cultural value of a place (object, site or item) may be related to spiritual, traditional, historical or contemporary associations. According to Heritage NSW, "social or cultural value can only be identified though consultation with Aboriginal people" (OEH 2011:8).
- Spiritual value - refers to the intangible values and meanings embodied in or evoked by a place which make it important to the spiritual identity, traditional knowledge, art or practices of a cultural group. Spiritual value is strongly connected to social value.

There are 50 identified Aboriginal heritage features (29 sites and 21 PADs) with Aboriginal cultural heritage value within the study area. The significance assessment for the identified archaeological sites has focussed on the social/spiritual, historic, scientific and aesthetic significance of Aboriginal heritage values as identified in *The Burra Charter*. The values assessment and significance rankings are consistent with the methodologies previously employed for the ACHAR and Revised ACHAR for the HumeLink project.

9.1.1 Cultural/Social Values

This area of assessment concerns the value/s of a place, feature or site to a particular community group, in this case the local Aboriginal community. Aspects of social significance are relevant to sites, objects and landscapes that are important or have become important to the local Aboriginal community. This importance involves both traditional links with specific areas as well as an overall concern by Aboriginal people for sites generally and their continued protection. Aboriginal cultural significance may include social, spiritual, aesthetic, historical and archaeological values.

It has been identified during background research and the broader HumeLink consultation process that the region generally holds high cultural heritage value (social value) to the local Aboriginal community. The identified cultural value is a feeling of attachment and responsibility for the land. These values become tangible when tied to identified Aboriginal objects found at the archaeological sites. In this way, Aboriginal objects can be seen as exhibiting both scientific information and cultural meaning, knowledge about the past tied with social values and belief systems. Regarding Aboriginal sites identified within the study area, no specific cultural values have been identified to date. High cultural value is usually ascribed to all Aboriginal archaeological sites and to material evidence of Aboriginal landscape use such as stone artefacts. No further cultural values were identified during the draft Addendum ACHAR review process.

9.1.2 Historic Values

Historical research has not identified any information regarding specific historical significance of identified Aboriginal archaeological sites in or near the study area. Archaeologically, the study area does not contain these values in relation to Aboriginal heritage.

9.1.3 Scientific Values

For archaeologists, scientific significance refers to the potential of a site to contribute to current research questions. Alternately, a site may be an *in situ* repository of demonstrably important information, for example rare artefacts of unusually high antiquity. Scientific significance is assessed using criteria to evaluate the contents of a site, state of preservation, integrity of deposits, representativeness of the site type, rarity/uniqueness and potential to answer research questions on past human behaviour. Thee recommended criteria for assessing archaeological significance include:

- Archaeological Research Potential - significance may be based on the potential of a site or landscape to explain past human behaviour and can incorporate the intactness, stratigraphic integrity or state of preservation of a site, the association of the site to other sites in the region (connectivity), or a datable chronology.

- Representativeness - all sites are representative of those in their class (site type/subtype) however the issue here relates to whether particular sites should be conserved to ensure a representative sample of the archaeological record is retained. Representativeness is based on an understanding of the regional archaeological context in terms of site variability in and around the study area, the resources already conserved and the relationship of sites across the landscape.

- Rarity – which defines how distinctive a site may be, based on an understanding of what is unique in the archaeological record and consideration of key archaeological research questions (*i.e.* some sites are considered more important due to their ability to provide certain information). It may be assessed at local, regional, state and national levels.

High significance is usually attributed to sites which are so rare or unique that the loss of the site would affect our ability to understand an aspect of past Aboriginal use/occupation of an area. In some cases a site may be considered highly significant because it is now rare due to destruction of the archaeological record through development.

Moderate (medium) significance is attributed to sites which provide information on an established research question. Sites with moderate significance are those that offer the potential to yield information that will contribute to the holistic understanding of the Aboriginal cultural landscape of the study area. Archaeological investigation of moderately significant sites will contribute knowledge regarding site type interrelationships, cultural use of landscape features and occupation patterns. Moderate significance is also ascribed to rarer site types such as modified trees.

Low significance is attributed to sites which cannot contribute new information about past Aboriginal use/occupation of an area. This may be due to site disturbance or the nature of the site's contents.

The archaeological sites within the study area have been assessed as displaying as range of archaeological significance levels based on their scientific values.

9.1.4 Aesthetic Values

Aesthetic values are often closely related to the social values of a site or broader cultural landscape. Aspects may include scenic sights, smells and sounds, architectural fabric and creative aspects of a place. The study area and archaeological sites it contains displays a generally low level of aesthetic value in relation to Aboriginal heritage. European land use practices, vegetation clearance and land modifications including drainage works and dam construction along the natural creeklines, as well as erosion and colluvial movement, have altered the natural landscape within and around the identified Aboriginal archaeological sites. View lines and outlooks offered from the higher topography overlook a landscape altered by European rural land use practices and, for large sections of the project, existing transmission lines. As predominantly low density surface and subsurface stone artefact sites, the sites do not display scenic or visual values beyond their position in the wider landscape.

More broadly, major landscape features including waterways such as the Tumut, Murrumbidgee and Lachlan Rivers and large permanent creeklines retain aesthetic value which may contribute to cultural or social values of associated sites. Aboriginal stakeholders have also identified Mudjarn (a sacred men's site) as having aesthetic value. Stakeholders identified how the sun and shadows hit Mudjarn at a certain time of day – at this time, Mudjarn looks as though a goanna is wrapped around it.

9.2 Assessments of significance

The previously unsurveyed areas assessed as part of this Addendum ACHAR contain 29 identified Aboriginal archaeological sites and 21 PADs. The primary identified cultural heritage values of the sites are cultural and scientific/archaeological in nature. No historic value or significance has been identified, and the sites display a generally low level of aesthetic value and significance. Based on the values assessment, the following assessments of archaeological significance were developed for the sites. Significance rankings are given in Table 36 below. For PADs and sites where the presence of subsurface archaeological deposit has not yet been investigated, an assessment of archaeological potential has been included.

Table 36. Summary of archaeological significance

Site/PAD Name	Site feature	Assessed significance / potential
HLE T4	Artefact	Low Significance
HLE T PAD 22	PAD	Moderate Potential
HLE T PAD 38	PAD	Moderate Potential
HLE T PAD 8	PAD	Moderate Potential
HLE T16	Artefact	Low Significance
HLE T17	Artefact	Low Significance
HLE T18 (includes AHIMS 56-3-0336)	Artefact; PAD	Moderate Significance
HLE T TRE 1	Potential Modified Tree	Moderate Significance
HLE T PAD 23	PAD	Moderate Potential
HLE T42	Artefact; PAD	Moderate Significance
HLE T26	Artefact; PAD	Moderate Significance
HLE T27	Artefact	Low Significance
HLE T28	Artefact; PAD	Moderate Significance (Low within disturbance footprint)
HLE Y PAD 11	PAD	Moderate Potential
HLE Y10	Artefact	Moderate Significance
HLE Y11	Artefact	Low Significance within disturbance footprint
HLE Y12	Artefact	Low Significance within disturbance footprint
HLE Y13	Artefact	Moderate Significance
HLE Y14	Artefact	Low Significance
HLE Y PAD 13	PAD	Moderate Potential
HLE Y16	Artefact; PAD	Low Significance for surface artefacts, Moderate Potential for PAD
HLE Y17	Artefact; PAD	Low Significance for surface artefacts, Moderate Potential for PAD
HLE Y18	Artefact	Low Significance
HLE Y21	Artefact	Low Significance
HLE Y29	Artefact; PAD	Low Significance for surface artefacts, Moderate Potential for PAD
HLE Y30	Artefact; PAD	Low Significance for surface artefacts, Moderate Potential for PAD
HLE Y PAD 23	PAD	Moderate Potential
HLE Y PAD 24	PAD	Moderate Potential
HLE Y PAD 30	PAD	Moderate Potential
HLE Y PAD 31	PAD	Moderate Potential
HLE Y PAD 32	PAD	Moderate Potential
HLE Y32	Artefact; PAD	Low Significance for surface artefacts, Moderate Potential for PAD
HLE Y27	Artefact	Low Significance
HLE Y PAD 25	PAD	Moderate Potential
HLE Y PAD 28	PAD	Moderate Potential
HLE G PAD 8	PAD	Moderate Potential
HLE G PAD 13	PAD	Moderate Potential
HLE G28	Artefact	Low Significance
HLE G29	Artefact; PAD	Moderate Significance

Site/PAD Name	Site feature	Assessed significance / potential
HLE G PAD 18	PAD	Moderate Potential
HLE G PAD 19	PAD	Moderate Potential
HLE G PAD 21	PAD	Moderate Potential
HLE G12	Artefact; PAD	Moderate Significance
HLE G31	Artefact	Low Significance
HLE G30	Artefact	Low Significance
HLE G PAD 2	PAD	Moderate Potential
HLE G PAD 34	PAD	Moderate Potential
HLE G PAD 1	PAD	Moderate Potential
Bannaby 1	Artefact	Moderate Significance
HL-65	Modified Tree	Moderate Significance

10 The proposed activity and impact assessment

AGJV have now progressed the HumeLink East detailed design beyond the broader area assessed for the HumeLink ACHAR and Revised ACHAR. The impact assessment for the Addendum ACHAR has been undertaken based on the current proposed disturbance footprint (as dated 7 March 2025) and is specific to the areas previously identified as unsurveyed. Potential project impacts to Aboriginal heritage outside of these unsurveyed areas are detailed in the ACHAR, Revised ACHAR and the HumeLink East HMP. The proposed activity is construction of the HumeLink East portion of the Approved Project.

The project components and activities that are assumed to cause impact within the current disturbance footprint include:

- establishment work such as vegetation clearance
- transmission line tower structure construction, including tower pads and brake and winch sites, which may involve earthmoving or cut/fill
- utility or property adjustments
- telecommunications connections to existing substations
- new and upgraded access tracks/roads
- access works where tracks/roads meet the existing road network

It is anticipated that works within the current disturbance footprint will cause either total or partial direct harm to Aboriginal heritage features:

Total direct harm or disturbance to all surface and/or subsurface features. This would generally result in a total loss of heritage value at a site. An example of a direct impact for the project is the installation of transmission line structures or construction of an access track, the disturbance area for which would wholly encompass an archaeological site.

Partial direct harm or disturbance, where direct impacts would occur to only some of the surface and/or subsurface features at an item. Partial direct harm generally results in partial loss of value at a site. An example of a partial direct harm would be where part of a site is impacted due to the installation of an access track or transmission line infrastructure.

The proposed activities would impact on Aboriginal heritage objects and sites identified during the current assessment. These sites were not assessed as part of existing HumeLink project documentation as they have only been identified subsequent to Project Approval, as part of assessment for the previously unsurveyed areas in accordance with UMM AH3 and CoA B31.

A conservative 'area-wide' impact assessment has been undertaken for the current disturbance footprint, meaning that archaeological site locations and extents within the current disturbance footprint are assumed to be impacted. This allows for the formulation of appropriate management and mitigation strategies where it is determined that impacts cannot be avoided. This approach is consistent with the impact assessment methodology utilised for the HumeLink ACHAR and Revised ACHAR, which assumed that Aboriginal objects within the project footprint were at risk of harm pending the finalisation of detailed design and determination of avoidance.

Assessed impact to Aboriginal sites/PADs within the unsurveyed areas as assessed in this Addendum ACHAR is detailed in Table 37 below. The current disturbance footprint in relation to the identified site/PAD locations is included on Figures 63-85 in Section 8. In total, 42 of the identified sites/PADs would be at least partially impacted.

Table 37. Impact assessment for identified Aboriginal sites/PADs

Site/PAD Name	Site feature	Type of harm	Degree of harm	Consequence of harm	Archaeological significance of harm
HLE T4	Artefact	Direct (Access track)	Total	Total loss of value	Low
HLE T PAD 22	PAD	Direct (Transmission tower; Access track)	Partial	Partial loss of value	Requires test excavation to assess PAD
HLE T PAD 38	PAD	None	N/A	N/A	N/A
HLE T PAD 8	PAD	None	N/A	N/A	N/A
HLE T16	Artefact	Direct (Transmission tower)	Total	Total loss of value	Low
HLE T17	Artefact	Direct (Access tracks)	Total	Total loss of value	Low
HLE T18 (includes AHIMS 56-3-0336)	Artefact; PAD	Direct (Transmission towers; Access tracks; Brake and winch sites)	Partial	Partial loss of value	Moderate

Site/PAD Name	Site feature	Type of harm	Degree of harm	Consequence of harm	Archaeological significance of harm
HLE T TRE 1	Potential Modified Tree	None	N/A	N/A	N/A
HLE T PAD 23	PAD	None	N/A	N/A	N/A
HLE T42	Artefact; PAD	Direct (Transmission tower; Access track)	Partial	Partial loss of value	Moderate
HLE T26	Artefact; PAD	Direct (Access track; Brake and winch site)	Partial	Partial loss of value	Low for surface component Requires test excavation to assess PAD
HLE T27	Artefact	Direct (Access track)	Total	Total loss of value	Low
HLE T28	Artefact; PAD	Direct (Access track)	Partial	Partial loss of value	Low
HLE Y PAD 11	PAD	Direct (Access track)	Partial	Partial loss of value	Requires test excavation to assess PAD
HLE Y10	Artefact	Direct (Transmission tower; Access track)	Partial	Partial loss of value	Moderate
HLE Y11	Artefact	Direct (Access track)	Partial	Partial loss of value	Low within current disturbance footprint
HLE Y12	Artefact	Direct (Access track)	Partial	Partial loss of value	Low within current disturbance footprint
HLE Y13	Artefact	Direct (Access track)	Partial	Partial loss of value	Moderate
HLE Y14	Artefact	Direct (Transmission tower; Access track)	Partial	Partial loss of value	Low
HLE Y PAD 13	PAD	Direct (Transmission tower)	Partial	Partial loss of value	Requires test excavation to assess PAD
HLE Y16	Artefact; PAD	Direct (Access track)	Partial	Partial loss of value	Low for surface component Requires test excavation to assess PAD
HLE Y17	Artefact; PAD	Direct (Transmission tower)	Partial	Partial loss of value	Low for surface component Requires test excavation to assess PAD
HLE Y18	Artefact	Direct	Partial	Partial loss of value	Low
HLE Y21	Artefact	Direct (Access track)	Total	Total loss of value	Low
HLE Y29	Artefact; PAD	Direct (Access track)	Partial	Partial loss of value	Low for surface component Requires test excavation to assess PAD
HLE Y30	Artefact; PAD	Direct (Access track)	Partial	Partial loss of value	Low for surface component Requires test excavation to assess PAD
HLE Y PAD 23	PAD	Direct (Access track)	Partial	Partial loss of value	Requires test excavation to assess PAD
HLE Y PAD 24	PAD	Direct (Access track)	Partial	Partial loss of value	Requires test excavation to assess PAD
HLE Y PAD 30	PAD	Direct (Transmission tower)	Partial	Partial loss of value	Requires test excavation to assess PAD
HLE Y PAD 31	PAD	Direct (Transmission tower; Access track)	Partial	Partial loss of value	Requires test excavation to assess PAD
HLE Y PAD 32	PAD	None	N/A	N/A	N/A
HLE Y32	Artefact; PAD	Direct (Access track; Brake and winch site)	Partial	Partial loss of value	Low for surface component Requires test excavation to assess PAD
HLE Y27	Artefact	Direct (Access track)	Partial	Partial loss of value	Low
HLE Y PAD 25	PAD	Direct (Transmission tower; Access track)	Partial	Partial loss of value	Requires test excavation to assess PAD
HLE Y PAD 28	PAD	None	N/A	N/A	N/A
HLE G PAD 8	PAD	Direct (Access track)	Partial	Partial loss of value	Requires test excavation to assess PAD

Site/PAD Name	Site feature	Type of harm	Degree of harm	Consequence of harm	Archaeological significance of harm
HLE G PAD 13	PAD	Direct (Transmission tower; Access track)	Partial	Partial loss of value	Requires test excavation to assess PAD
HLE G28	Artefact	Direct (Access track)	Total	Total loss of value	Low
HLE G29	Artefact; PAD	Direct (Access track)	Partial	Partial loss of value	Moderate
HLE G PAD 18	PAD	Direct (Access track)	Partial	Partial loss of value	Requires test excavation to assess PAD
HLE G PAD 19	PAD	Direct (Transmission tower; Access track)	Partial	Partial loss of value	Requires test excavation to assess PAD
HLE G PAD 21	PAD	Direct (Transmission tower; Access track)	Partial	Partial loss of value	Requires test excavation to assess PAD
HLE G12	Artefact; PAD	Direct (Transmission tower; Access track)	Partial	Partial loss of value	Moderate
HLE G31	Artefact	Direct (Transmission tower)	Total	Total loss of value	Low
HLE G30	Artefact	None	N/A	N/A	NA
HLE G PAD 2	PAD	Direct (Transmission tower; Access track)	Partial	Partial loss of value	Requires test excavation to assess PAD
HLE G PAD 34	PAD	Direct (Access track)	Partial	Partial loss of value	Requires test excavation to assess PAD
HLE G PAD 1	PAD	Direct (Transmission tower; Access track)	Partial	Partial loss of value	Requires test excavation to assess PAD
Bannaby 1	Artefact	Direct (Transmission tower; Access track)	Partial	Partial loss of value	Moderate
HL-65	Modified Tree	None	N/A	N/A	N/A

11 Avoiding and/or Mitigating Harm

The assessment applied the principles of Ecologically Sustainable Development (ESD) to the current proposal. The principles of Ecologically Sustainable Development are defined in Section 6 of the NSW *Protection of the Environment Administration Act 1991*. The ESD principles relevant to Aboriginal cultural heritage within the impact area are: the Precautionary Principle and the Principle of Inter-Generational Equity. The application of these principles in relation to the current proposal is discussed below.

11.1.1 The Precautionary Principle

The Precautionary Principle states "that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation".

Scientific confidence regarding the nature, extent and significance of Aboriginal archaeological heritage within the unsurveyed areas has been achieved through archaeological investigations (Sections 5 and 6). Regarding Aboriginal cultural value confidence, no specific cultural or social values expressed by these sites have been identified to date but they form part of a highly significant cultural landscape (Section 7). As detailed in Sections 8 and 9, the assessment has determined that the Aboriginal archaeological sites within the impact area display low and moderate significance.

Where access for archaeological field survey has not been possible, full scientific certainty has yet to be achieved. However, in accordance with the precautionary principle, this has not been used as a reason to defer consideration of potential Aboriginal heritage impacts. Analysis of the existing archaeological sensitivity modelling and updated findings from the field surveys and test excavation permit more informed management of these areas as access becomes available and the required surveys area completed. Fieldwork and analysis completed to date provides additional context for understanding the site types, distribution and significance of Aboriginal objects that may occur in these areas.

Similarly, for identified sites with a PAD component where testing has been recommended but not yet completed, the development of the standardised investigation methodology in Section 5.6 of the HumeLink East HMP and the successful employment of this methodology during preparation of the Addendum ACHAR establishes a strong scientific baseline for understanding the nature, distribution and significance of additional subsurface archaeological site components in these areas which have the potential to be impacted by the project.

As the detailed design process continues to progress, additional opportunities for site avoidance will be identified and evaluated based on the Addendum ACHAR results. The inclusion of Aboriginal heritage matters during this process allows for a) more informed management of the archaeological resource and b) potential avoidance or minimisation of impacts where it has been established that Aboriginal objects are present.

Where impacts cannot be avoided, the proposed salvage of surface artefacts and subsurface deposits, represents a precautionary measure against the harm to archaeological material at these locations. This is especially relevant for the partial impacts proposed at the majority of the sites, as it contributes to a better understanding and improved management of the remaining archaeological resource within the project corridor. The recorded finds from these actions would inform an understanding of past human behaviour. The subsequent written record created through the reporting process would create new knowledge. The knowledge generated through the reporting process acts as another harm mitigation measure, consistent with the recommendations of the ACHAR and Revised ACHAR.

11.1.2 The Principle of Inter-Generational Equity

The Principle of Inter-Generational Equity states "that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations".

The archaeological sites located within the unsurveyed area and current disturbance footprint have been evaluated in relation to intergenerational equity and in particular, the cumulative impact of the proposal on the Aboriginal heritage of the region. As discussed in Section 4, previous archaeological investigations have identified a variety of Aboriginal archaeological sites in the region and within the HumeLink project corridor. These represent a range of site types and display varying levels of significance. Sites identified during the current assessment fit local and regional archaeological trends and are consistent in nature, extent and significance with sites already considered as part of the wider HumeLink project.

Sites within the current proposed disturbance footprint within the unsurveyed areas do not display features or characteristics sufficient to warrant outright conservation, being representative of their type and not rare. The sites have all been affected to some degree by land use practices or natural processes such as erosion or flooding, and would continue to be so, regardless of construction of HumeLink East.

Existing Aboriginal heritage management measures for the HumeLink project (specifically UMM AH2) require that:

> *The finalisation of the project design and construction methodology, and associated final disturbance areas, will be developed to avoid harm to sites of moderate or above Aboriginal heritage significance as far as practicable. The objective is to further reduce potential impacts through considered placement of transmission line structure locations and design refinement of proposed infrastructure and the associated construction methodology. Avoidance and minimisation of harm to sites and potential archaeological deposits (PADs) will be prioritised.*

Similarly, CoA Appendix 3 Table 3-2 states for all identified Aboriginal archaeological sites to:

> *Investigate micro-siting of the project infrastructure and construction activities to avoid or minimise impacts to sites.*

As detailed design for the HumeLink East project has progressed following the issue of Project Approval, it is becoming evident that many of the sites located within the approved HumeLink project boundary will be avoided or minimally impacted by construction. This reduces the cumulative harm that would be posed by impact to sites identified in the unsurveyed area disturbance footprint as a result of construction of the project. Six sites identified during the HumeLink EIS, five of which fall under HumeLink East, have been wholly avoided during the initial design process and now fall outside the approved project boundary. These include high significance artefact scatter site HL-62, and three culturally significant trees.

For the current Addendum ACHAR, the identified Aboriginal archaeological sites recorded within the unsurveyed areas have been considered in relation to the proposed construction activities. Changes and refinements to the disturbance footprint have resulted in avoidance of eight identified sites/PADs and limited, partial impacts to the majority of impacted sites/PADs. Sites which have been avoided include:

- HLE T PAD 38
- HLE T PAD 8
- HLE T TRE 1
- HLE T PAD 23
- HLE G30
- HL-65
- HLE Y PAD 28
- HLE Y PAD 32

This list includes two modified trees (a regionally-rarer site type) and several PADs located on significant landforms with at least moderate potential to contain archaeological deposit. Avoidance measures have included re-routing planned access tracks and considered placement of transmission tower and brake/winch pads to avoid the identified areas, where feasible. For example, HLE T TRE 1 and HLE T PAD 23 within property MA-059-13 were previously impacted by (respectively) a planned access track route, and a brake and winch pad. The original placement of this proposed infrastructure as per the EIS and AR defines these sections of the approved project boundary (refer Figure 67). The detailed design for these sections has now refined the proposed disturbance footprint to a) re-route the proposed access track to avoid HLE T TRE 1 and b) avoid the requirement for a break/winch site at the nominated location, avoiding the well-defined PAD landform. Similarly, refinement of the proposed creek crossing arrangements at Gocup Creek has avoided impact to the intact creekside landform associated with HLE T PAD 38, moving south west to use an existing, disturbed access track (Figure 64). Alternative track routing to the south is also being investigated for property YG-020 to avoid impacting HLE Y PAD 23 and HLE Y PAD 24 (Figure 75). At property BY-156, considered placement of transmission tower pads between Wargeila Road and Fairy Hole Creek has avoided impact to HLE Y PAD 32, which occurs on a unique landform and geological formation (Figure 76) and displays a generally higher level of research potential than other PADs identified in this property.

While conservation is the best approach when considering Aboriginal heritage, and the project aims to avoid or minimise impacts where possible consistent with the HumeLink mitigation measures described above, the avoidance of all Aboriginal archaeological sites and PADs within the unsurveyed areas is not practicable due to construction requirements and the ubiquity of archaeological materials throughout the landscape. Where reasonable and feasible, alternative track routing and infrastructure placement has been investigated to avoid archaeological sites and PADs, in accordance with UMM AH2 and CoA Appendix 3 Table 3-2. Similarly, where total avoidance is not possible, micrositing of disturbance elements where possible has avoided impact to the better portion of some identified sites/PADs and landforms (see further discussion in Section 11.2.2 below).

Where conservation is not feasible and some level of impact is unavoidable, appropriate mitigation strategies have been developed to minimise the archaeological significance of harm. Mitigation actions would be restricted to the confirmed, unavoidable impact area, minimising the overall disturbance footprint as much as practicable and leaving the remaining portions of affected sites in situ.

11.2 Mitigation Measures

Suitable management and mitigation recommendations for the identified impacts have been developed based on environmental context and condition, background research and consultation with stakeholders. Proposed management and mitigation strategies are consistent with the existing Aboriginal heritage management mitigation measures for the project as described in the CoA, UMMs and approved HumeLink East HMP. Measures for mitigating harm to the sites are described below and specified in Table 38. Figures 62-85 show the site/PAD locations.

11.2.1 Avoidance and site protection

Following the finalisation of detailed design, construction methodology and access requirements for the project, site protection and management measures for avoided sites or non-impacted portions of sites will be implemented in accordance with the existing strategies for Active Avoidance and Active Protection in Section 4.2 of the HumeLink East HMP.

Where the surface collection of artefacts or archaeological test or salvage excavation has been nominated for impacted Aboriginal sites/PADs, no construction activities can occur on the lands to be investigated until the relevant archaeological work at the nominated site has been completed.

Prior to the commencement of works a construction heritage site map identifying the Aboriginal sites requiring the collection of surface artefacts, Aboriginal sites requiring further investigations, and Aboriginal sites to be avoided (for all sites in proximity to the project boundary) will be prepared. In accordance with the HumeLink East HMP, this may be combined into the Environmental Control Measures (ECMs).

All employees, contractors, subcontractors and agents carrying out works activities must undertake an induction (including the distribution of a construction heritage site map/ECMs) to ensure that they have an understanding of and are aware of the heritage issues affecting the activity (refer HumeLink East HMP Section 4.3).

11.2.2 Mitigation of impacts

Where direct impacts to sites cannot be further avoided during design refinement, the following identified mitigation measures would be implemented to minimise the impacts on Aboriginal heritage. The loss of intrinsic Aboriginal cultural value of the impacted sites cannot be offset or mitigated; however, the information already recovered from the additional field surveys and test excavation program has added to our understanding of Aboriginal landscape use and the nature of the archaeological record in these areas, and allowed for the formulation of appropriate management. Recovery of further information via mitigation activities will also ensure more informed management of the remaining site areas.

The disturbance footprint within the unsurveyed areas contains 43 Aboriginal archaeological sites and PADs that would be at least partially impacted. Proposed mitigation strategies are in accordance with the existing, approved mitigation strategies as described in the HumeLink East HMP. The proposed archaeological mitigation is primarily based on archaeological significance: sites of greater significance require a greater mitigation effort. Given the small size of the proposed disturbance corridor in relation to the wider approved project boundary, in many cases this results in partial impact to sites. In this instance, appropriate mitigation and management measures have been recommended based on the archaeological significance of the proposed harm within the current disturbance footprint.

For the current disturbance footprint within the unsurveyed areas, the proposed impact to some of the partially impacted sites is to a more disturbed or less archaeologically valuable portion of the site. For example, the use of existing access tracks where possible minimises the overall disturbance footprint. While surface artefacts are more commonly identified in these areas due to greater exposure and ground surface visibility, the objects themselves tend to be out of context and lack integrity, although likely derived from the immediate area, exposed due to disturbance .The adjacent portions of the relevant landform which have *not* been disturbed by tracks offer greater archaeological value due to better integrity and the likelihood of more intact subsurface deposits. In these cases, the archaeological significance of harm is assessed as low, despite the site's overall moderate significance ranking.

For example, HLE T28 in property MA-094 (Figure 70) includes a disturbed surface component on the existing vehicle track and within the current disturbance footprint. This part of the site displays low integrity. The assessed site extent includes the prominent spur extending northwest along the creek, which has suffered lower levels of disturbance and likely represents the better portion of the site. This area is not impacted by the project, and use of the existing vehicle track within the approved project boundary reduces impact to the remnant portions of the site that extend to the south east within the project boundary.

Similarly, some sites' significance is increased due to their spatial relationship to other sites or specific environmental factors. For example, HLE Y10 and HLE Y11 form part of a complex of small sites located on the defined knolls and saddles of a ridgeline overlooking the Murrumbidgee River. The archaeological significance of the partial impacts proposed by the current disturbance footprint for these sites is low due to disturbance from the existing access track, however if the disturbance footprint changes and impacts increase (particularly to the less disturbed portion of the sites away from the existing track), the sites may require salvage excavation. For sites and PADs where the recommended testing has not yet been undertaken, further assessment is required to determine the significance of harm and whether additional salvage mitigation is necessary.

Surface collection

Where the archaeological significance of harm is assessed as low, these sites are located within more disturbed environmental contexts, having been subject to ongoing land use effects and natural disturbance processes. Test excavation in these areas did not identify substantially intact or significant subsurface archaeological deposit and further archaeological work is not warranted, as these sites display low research potential. Recorded surface materials are of low density and not in situ. Collection of artefacts at the sites is recommended as an impact mitigation measure. This mitigation strategy is consistent with the existing recommendation for low-significance artefact sites in the HumeLink East HMP. It is noted that surface collection is recommended for all identified artefact sites, whether or not they include a recorded surface artefact component. Surface collection would be undertaken in accordance with the methodology outlined in Section 5.4 of the HumeLink East HMP. If it is determined in consultation with RAPs that surface salvage via movement of recorded surface artefact materials is an appropriate management strategy, this may also be undertaken in accordance with the methodology outlined in Section 5.5 of the HumeLink East HMP.

Archaeological salvage excavation

Where the archaeological significance of harm is assessed as moderate, sites are considered to display moderate archaeological value and significance based on their potential to inform on Aboriginal landscape use of the region. The scientific value of these archaeological sites is linked to the physical information the sites contain. Test excavation demonstrated or is expected to demonstrate higher artefact densities, relatively intact deposit, and good spatial integrity of archaeological materials. Artefact assemblages contained a variety of raw materials and reduction types, including tools. Recovery of further information through archaeological salvage excavation of the impacted portions of the sites will increase our understanding, strengthen our interpretations and improve ongoing and future management of Aboriginal heritage in the surrounding area. Archaeological salvage excavation of the sites is therefore recommended as an impact mitigation measure. This mitigation strategy is consistent with the existing recommendation for moderate-significance sites in the HumeLink East HMP. Salvage excavation would be undertaken in accordance with the methodology outlined in Section 5.7 of the HumeLink East HMP. Salvaged sites would also be surface collected.

PADs/sites requiring test excavation

For sites and PADs identified in this Addendum ACHAR where test excavation within the current disturbance footprint has been recommended but not yet undertaken, further investigation will be undertaken using the assessment methodology employed for this Addendum ACHAR and outlined in Section 5.6 of the HumeLink East HMP. Further investigation of identified sites may also be required where sites extend across property boundaries, and where proposed ground disturbance extends further into the site boundaries e.g. HLE T18 (includes AHIMS 56-3-0336), HLE T42, HLE Y10-14, HLE G29 and HLE G12. The requirement for additional testing would be determined by any changes in the indicative disturbance footprint and relationship to areas subject to previous testing (i.e. is further archaeological information required to inform the impact assessment and management/mitigation strategies).

Where it is identified that subsurface deposits are present and impact from the project is unavoidable, suitable mitigation measures would be determined in accordance with the CoA and HumeLink East HMP, based on the significance of the proposed harm. These may include the requirement for further actions including salvage excavation, surface collection/movement, or detailed recording. Any additional mitigation activities would be undertaken in accordance with the archaeological methodologies approved as part of the HumeLink East HMP, consistent with the Addendum ACHAR assessment.

Remaining unsurveyed areas

The required surveys for unsurveyed areas where access has not yet been possible will be undertaken in accordance with the requirements of UMM AH3, Section 5.2 of the HumeLink East HMP and the assessment methodology employed for this Addendum ACHAR. If Aboriginal archaeological sites or PADs are located in additional survey areas, impacts would be avoided, as far as practicable. If impact avoidance is possible, this should be ensured using the site protection procedures outlined in Section 4.2 of the HumeLink East HMP. For sites or PADs where it is identified that impact from the project is unavoidable, suitable mitigation measures would be determined in accordance with the CoA and HumeLink East HMP. These may include the requirement for further actions including test and/or salvage excavation, surface collection/movement, or detailed recording. Any additional mitigation activities would be undertaken in accordance with the archaeological methodologies approved as part of the HumeLink East HMP, consistent with the Addendum ACHAR assessment.

Table 38. Mitigation and management measures for identified sites/PADs

Site/PAD Name	Site feature	Degree / significance of current impact	• Management and mitigation measures
HLE T4	Artefact	Total / Low	• Surface collection in accordance with Section 5.4 of HumeLink East HMP
HLE T PAD 22	PAD	Partial / Further investigation required	• Test excavation in accordance with Section 5.6 of HumeLink East HMP
HLE T PAD 38	PAD	Not currently impacted	• Avoidance/protection in accordance with Section 4.2 of HumeLink East HMP
HLE T PAD 8	PAD	Not currently impacted	• Avoidance/protection in accordance with Section 4.2 of HumeLink East HMP
HLE T16	Artefact	Total / Low	• Surface collection in accordance with Section 5.4 of HumeLink East HMP
HLE T17	Artefact	Total / Low	• Surface collection in accordance with Section 5.4 of HumeLink East HMP
HLE T18 (includes AHIMS 56-3-0336)	Artefact; PAD	Partial / Moderate	• Surface collection in accordance with Section 5.4 of HumeLink East HMP • Salvage excavation in accordance with Section 5.7 of HumeLink East HMP
HLE T TRE 1	Potential Modified Tree	Not currently impacted	• Avoidance/protection in accordance with Section 4.2 of HumeLink East HMP
HLE T PAD 23	PAD	Not currently impacted	• Avoidance/protection in accordance with Section 4.2 of HumeLink East HMP
HLE T42	Artefact; PAD	Partial / Moderate	• Surface collection in accordance with Section 5.4 of HumeLink East HMP • Salvage excavation in accordance with Section 5.7 of HumeLink East HMP
HLE T26	Artefact; PAD	Partial / Further investigation required	• Surface collection in accordance with Section 5.4 of HumeLink East HMP • Test excavation in accordance with Section 5.6 of HumeLink East HMP
HLE T27	Artefact	Total / Low	• Surface collection in accordance with Section 5.4 of HumeLink East HMP
HLE T28	Artefact; PAD	Partial / Low	• Surface collection in accordance with Section 5.4 of HumeLink East HMP
HLE Y PAD 11	PAD	Partial / Further investigation required	• Test excavation in accordance with Section 5.6 of HumeLink East HMP
HLE Y10	Artefact	Partial / Moderate	• Surface collection in accordance with Section 5.4 of HumeLink East HMP • Salvage excavation in accordance with Section 5.7 of HumeLink East HMP
HLE Y11	Artefact	Partial / Low	• Surface collection in accordance with Section 5.4 of HumeLink East HMP
HLE Y12	Artefact	Partial / Low	• Surface collection in accordance with Section 5.4 of HumeLink East HMP
HLE Y13	Artefact	Partial / Moderate	• Surface collection in accordance with Section 5.4 of HumeLink East HMP • Salvage excavation in accordance with Section 5.7 of HumeLink East HMP
HLE Y14	Artefact	Partial / Low	• Surface collection in accordance with Section 5.4 of HumeLink East HMP
HLE Y PAD 13	PAD	Partial / Further investigation required	• Test excavation in accordance with Section 5.6 of HumeLink East HMP
HLE Y16	Artefact; PAD	Partial / Further investigation required	• Surface collection in accordance with Section 5.4 of HumeLink East HMP • Test excavation in accordance with Section 5.6 of HumeLink East HMP
HLE Y17	Artefact; PAD	Partial / Further investigation required	• Surface collection in accordance with Section 5.4 of HumeLink East HMP • Test excavation in accordance with Section 5.6 of HumeLink East HMP
HLE Y18	Artefact	Partial / Low	• Surface collection in accordance with Section 5.4 of HumeLink East HMP
HLE Y21	Artefact	Total / Low	• Surface collection in accordance with Section 5.4 of HumeLink East HMP

Site/PAD Name	Site feature	Degree / significance of current impact	• Management and mitigation measures
HLE Y29	Artefact; PAD	Partial / Further investigation required	• Surface collection in accordance with Section 5.4 of HumeLink East HMP • Test excavation in accordance with Section 5.6 of HumeLink East HMP
HLE Y30	Artefact; PAD	Partial / Further investigation required	• Surface collection in accordance with Section 5.4 of HumeLink East HMP • Test excavation in accordance with Section 5.6 of HumeLink East HMP
HLE Y PAD 23	PAD	Partial / Further investigation required	• Test excavation in accordance with Section 5.6 of HumeLink East HMP
HLE Y PAD 24	PAD	Partial / Further investigation required	• Test excavation in accordance with Section 5.6 of HumeLink East HMP
HLE Y PAD 30	PAD	Partial / Further investigation required	• Test excavation in accordance with Section 5.6 of HumeLink East HMP
HLE Y PAD 31	PAD	Partial / Further investigation required	• Test excavation in accordance with Section 5.6 of HumeLink East HMP
HLE Y PAD 32	PAD	Not currently impacted	• Avoidance/protection in accordance with Section 4.2 of HumeLink East HMP
HLE Y32	Artefact; PAD	Partial / Further investigation required	• Surface collection in accordance with Section 5.4 of HumeLink East HMP • Test excavation in accordance with Section 5.6 of HumeLink East HMP
HLE Y27	Artefact	Partial / Low	• Surface collection in accordance with Section 5.4 of HumeLink East HMP
HLE Y PAD 25	PAD	Partial / Further investigation required	• Test excavation in accordance with Section 5.6 of HumeLink East HMP
HLE Y PAD 28	PAD	Not currently impacted	• Avoidance/protection in accordance with Section 4.2 of HumeLink East HMP
HLE G PAD 8	PAD	Partial / Further investigation required	• Test excavation in accordance with Section 5.6 of HumeLink East HMP
HLE G PAD 13	PAD	Partial / Further investigation required	• Test excavation in accordance with Section 5.6 of HumeLink East HMP
HLE G28	Artefact	Total / Low	• Surface collection in accordance with Section 5.4 of HumeLink East HMP
HLE G29	Artefact; PAD	Partial / Moderate	• Surface collection in accordance with Section 5.4 of HumeLink East HMP • Salvage excavation in accordance with Section 5.7 of HumeLink East HMP
HLE G PAD 18	PAD	Partial / Further investigation required	• Test excavation in accordance with Section 5.6 of HumeLink East HMP
HLE G PAD 19	PAD	Partial / Further investigation required	• Test excavation in accordance with Section 5.6 of HumeLink East HMP
HLE G PAD 21	PAD	Partial / Further investigation required	• Test excavation in accordance with Section 5.6 of HumeLink East HMP
HLE G12	Artefact; PAD	Partial / Moderate	• Surface collection in accordance with Section 5.4 of HumeLink East HMP • Salvage excavation in accordance with Section 5.7 of HumeLink East HMP
HLE G31	Artefact	Total / Low	• Surface collection in accordance with Section 5.4 of HumeLink East HMP
HLE G30	Artefact	Not currently impacted	• Avoidance/protection in accordance with Section 4.2 of HumeLink East HMP
HLE G PAD 2	PAD	Partial / Further investigation required	• Test excavation in accordance with Section 5.6 of HumeLink East HMP
HLE G PAD 34	PAD	Partial / Further investigation required	• Test excavation in accordance with Section 5.6 of HumeLink East HMP
HLE G PAD 1	PAD	Partial / Further investigation required	• Test excavation in accordance with Section 5.6 of HumeLink East HMP
Bannaby 1	Artefact	Partial / Moderate	• Surface collection in accordance with Section 5.4 of HumeLink East HMP • Salvage excavation in accordance with Section 5.7 of HumeLink East HMP
HL-65	Modified Tree	Not currently impacted	• Avoidance/protection in accordance with Section 4.2 of HumeLink East HMP

12 Management Requirements

The previously unsurveyed areas assessed as part of this Addendum ACHAR contain 29 identified Aboriginal archaeological sites and 21 PADs. A further four properties and additional access tracks which are impacted by the current disturbance footprint still require field survey. The following general management outcomes for the identified sites and PADs will be implemented in accordance with the mitigation and management strategies detailed in Section 11. These management strategies are consistent with those already approved for the HumeLink project, as detailed in the CoA, Project UMMs and the HumeLink East HMP and have been consulted on with the Project RAPs. All additional assessments required for the unsurveyed areas will be undertaken in accordance with these management requirements.

12.1 Field survey required

Archaeological field survey is still required for the following properties:

- BY-112-01A - Figure B- 18
- BY-090 - Figure B- 23
- BY-070 - Figure B- 26

And for the following access track locations:

- AT-451 and AT-450 (MA-054) - Figure B- 30
- AT-256 (YG-009) - Figure B- 14
- AT-173 (BY-112-01A) - Figure B- 18

Archaeological field survey will be undertaken in accordance with Section 5.2 of the HumeLink East HMP and the assessment methodology employed for this Addendum ACHAR.

12.2 Test excavation required

The following locations have been identified as requiring test excavation to determine the nature and extent of any associated subsurface deposit. Test results will be used to determine archaeological significance of identified sites, and whether further mitigation will be required where project impacts cannot be avoided in accordance with the HumeLink East HMP. Test excavation is still required for the following sites/PADs:

- HLE T PAD 22 - Figure 64
- HLE T26 - Figure 69
- HLE Y PAD 11 - Figure 71
- HLE Y PAD 13 - Figure 72
- HLE Y16 - Figure 72
- HLE Y17 - Figure 72
- HLE Y PAD 30 - Figure 76
- HLE Y PAD 31- Figure 76
- HLE Y32- Figure 76
- HLE Y PAD 25 - Figure 78
- HLE G PAD 13 - Figure 80
- HLE G PAD 21 - Figure 82
- HLE G PAD 19 - Figure 81
- HLE G PAD 18 - Figure 81
- HLE G PAD 2 - Figure 84
- HLE G PAD 34 - Figure 84
- HLE G PAD 1 - Figure 85
- HLE Y29 - Figure 74
- HLE Y30 - Figure 74
- HLE Y PAD 23 - Figure 75
- HLE Y PAD 24 - Figure 75
- HLE G PAD 8 - Figure 79

Test excavation will be undertaken as required in accordance with Section 5.6 of the HumeLink East HMP and the assessment methodology employed for this Addendum ACHAR.

12.3 Mitigation through archaeological salvage excavation

The following sites will require archaeological salvage excavation to mitigate the proposed impact of the current disturbance footprint. Salvage excavation must be completed prior to any activities which may harm Aboriginal objects at these locations:

- HLE T18 (includes AHIMS 56-3-0336) - Figure 66
- HLE T42 - Figure 68
- HLE Y10 - Figure 71
- HLE Y13 - Figure 71
- HLE G29 - Figure 80
- HLE G12 - Figure 83
- Bannaby 1 - Figure 85

Salvage excavation will be undertaken in accordance with Section 5.7 of the HumeLink East HMP.

12.4 Mitigation through the collection of surface artefacts

The following sites will require the collection of surface artefacts to mitigate the proposed impact of the current disturbance footprint. The collection must be completed prior to any activities which may harm Aboriginal objects at these site locations:

- HLE T18 (includes AHIMS 56-3-0336) - Figure 66
- HLE T16 - Figure 65
- HLE T17 - Figure 65
- HLE T42 - Figure 68
- HLE T26 - Figure 69
- HLE T27 - Figure 70
- HLE T28 - Figure 70
- HLE Y10 - Figure 71
- HLE Y11 - Figure 71
- HLE Y12 - Figure 71
- HLE Y13 - Figure 71
- HLE Y14 - Figure 71
- HLE Y18 - Figure 72
- HLE Y16 - Figure 72
- HLE Y17 - Figure 72
- HLE Y32 - Figure 76
- HLE Y27 - Figure 77
- HLE G28 - Figure 80
- HLE G29 - Figure 80
- HLE G12 - Figure 83
- HLE G31 - Figure 83
- Bannaby 1 - Figure 85
- HLE T4 - Figure 63
- HLE Y21 - Figure 73
- HLE Y29 - Figure 74
- HLE Y30 - Figure 74

Surface collection will be undertaken in accordance with Section 5.4 of the HumeLink East HMP.

12.5 Site Protection

Where required, site protection activities would be undertaken in accordance with the methodology contained in the HumeLink East HMP Section 4.2 “Avoiding Impacts to Heritage”. The following sites/PADs are not impacted by the current disturbance footprint:

- HLE T PAD 38 - Figure 64
- HLE T PAD 8 - Figure 64
- HLE T PAD 23 - Figure 67
- HLE Y PAD 32 - Figure 76
- HLE Y PAD 28 - Figure 78
- HLE G30 - Figure 83
- HL-65 - Figure 85
- HLE T TRE 1 - Figure 67

Site avoidance/protection will be undertaken as required in accordance with Section 4.2 of the HumeLink East HMP.

12.6 Salvaged Aboriginal objects

The short- and long-term management of Aboriginal objects recovered from mitigation activities would be undertaken in accordance with the methodology contained in the HumeLink East HMP Section 5.9 “Management Strategies for Salvaged Archaeological Material”.

12.7 Unexpected Finds

The existing Unexpected Finds Procedure contained in the HumeLink East HMP Section 4.4 “Unexpected Finds Protocol” would be employed in the event of an unexpected heritage find during mitigation, pre-construction or construction activities within the unsurveyed areas.

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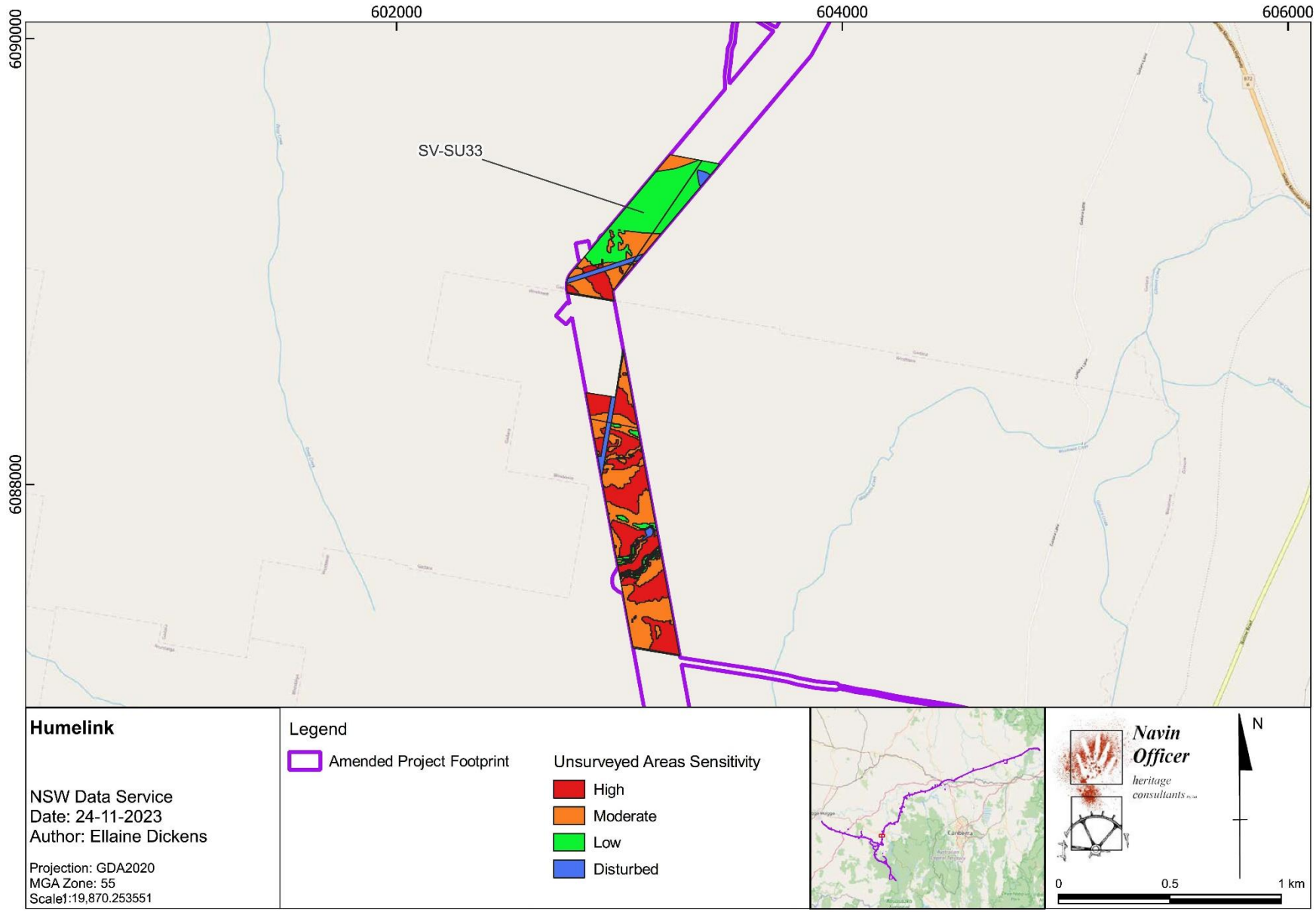
Appendix A Revised ACHAR Unsurveyed Areas and Archaeological Sensitivity (Map series A5.2, NOHC 2024a)



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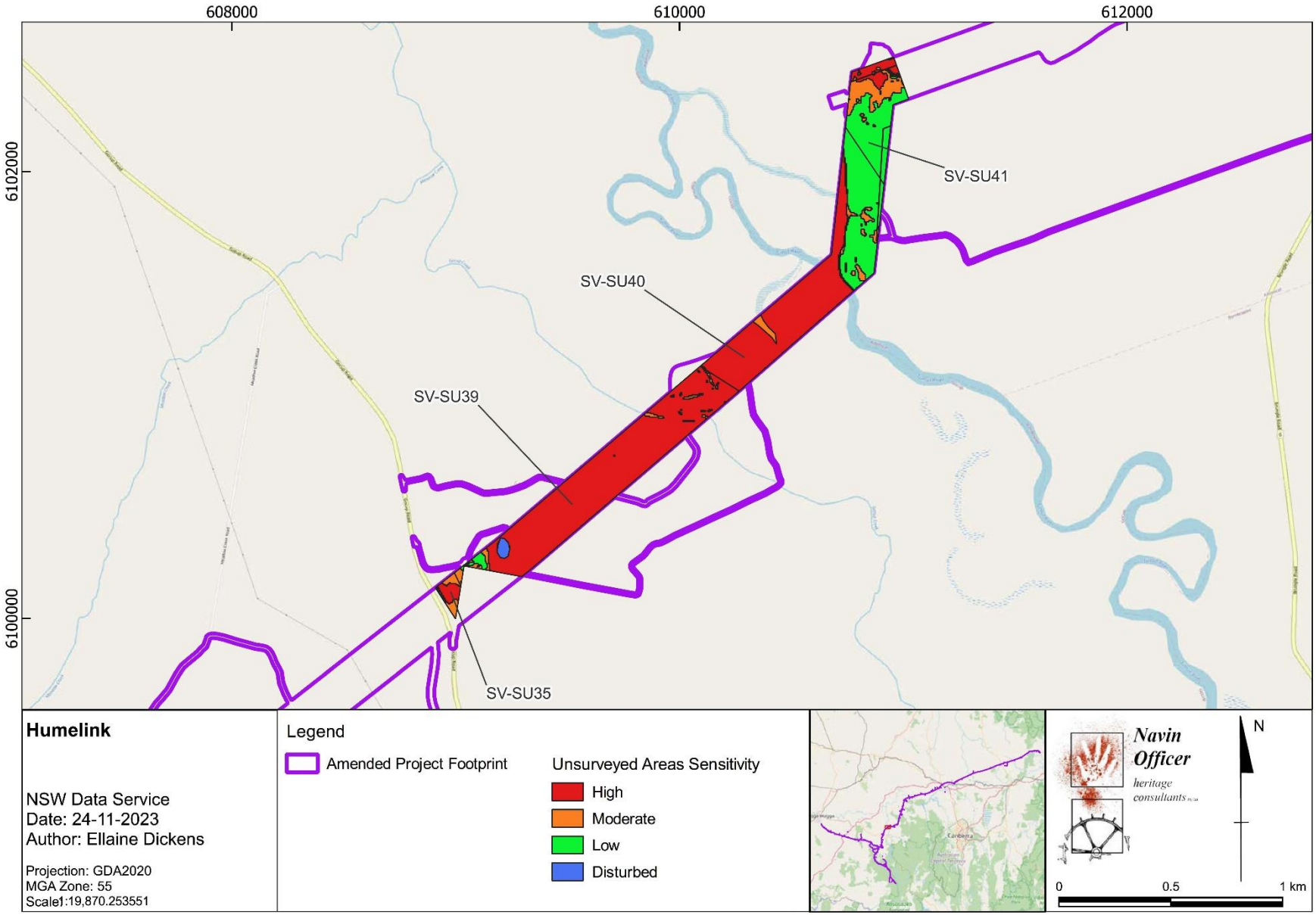


Figure A- 2. MA-059-07, MA-059-08, MA-059-09, MA-059-10

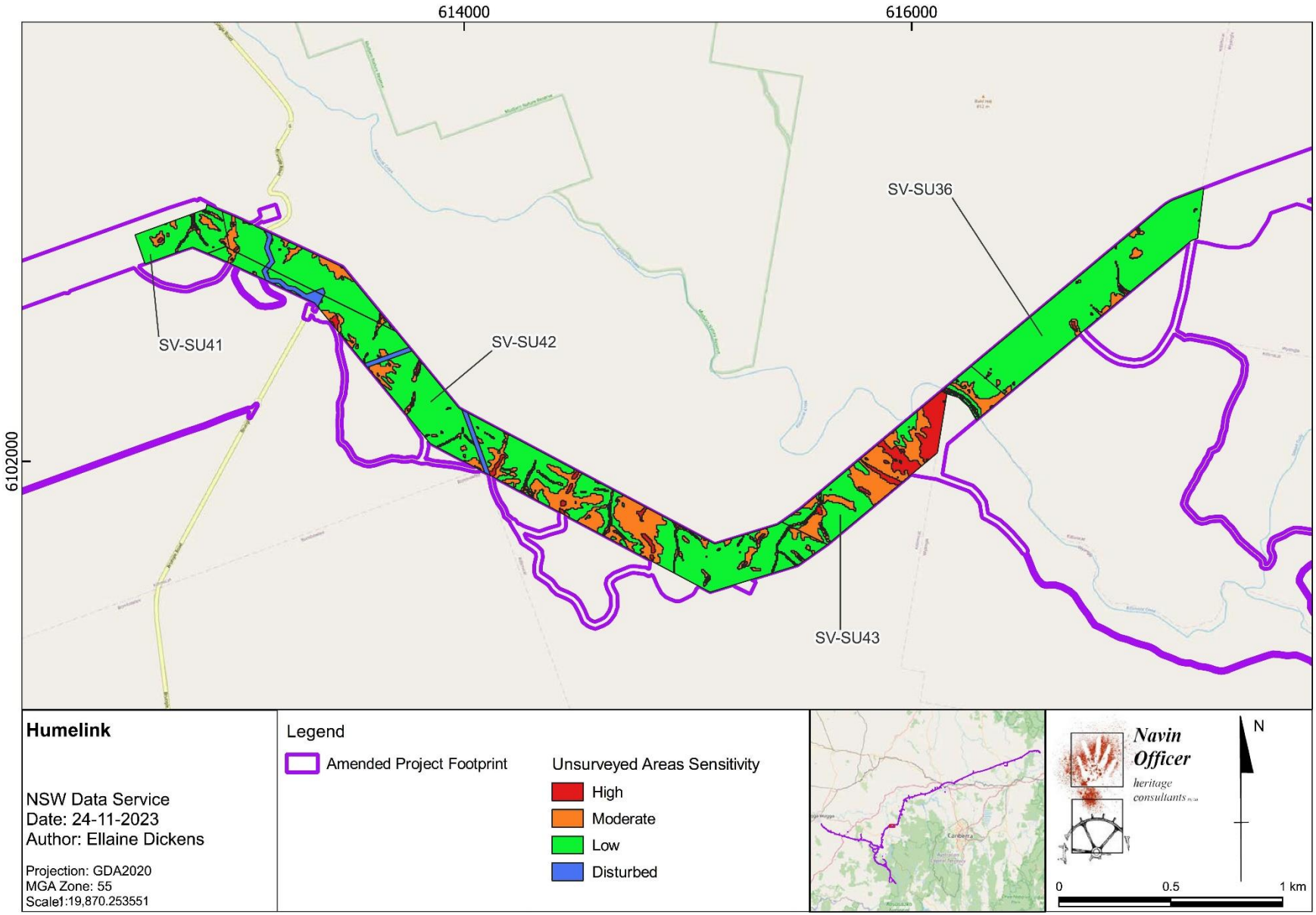


Figure A- 3. MA-059-13, MA-059-13A, MA-059-15, MA-059-16, MA-077, MA-077-01

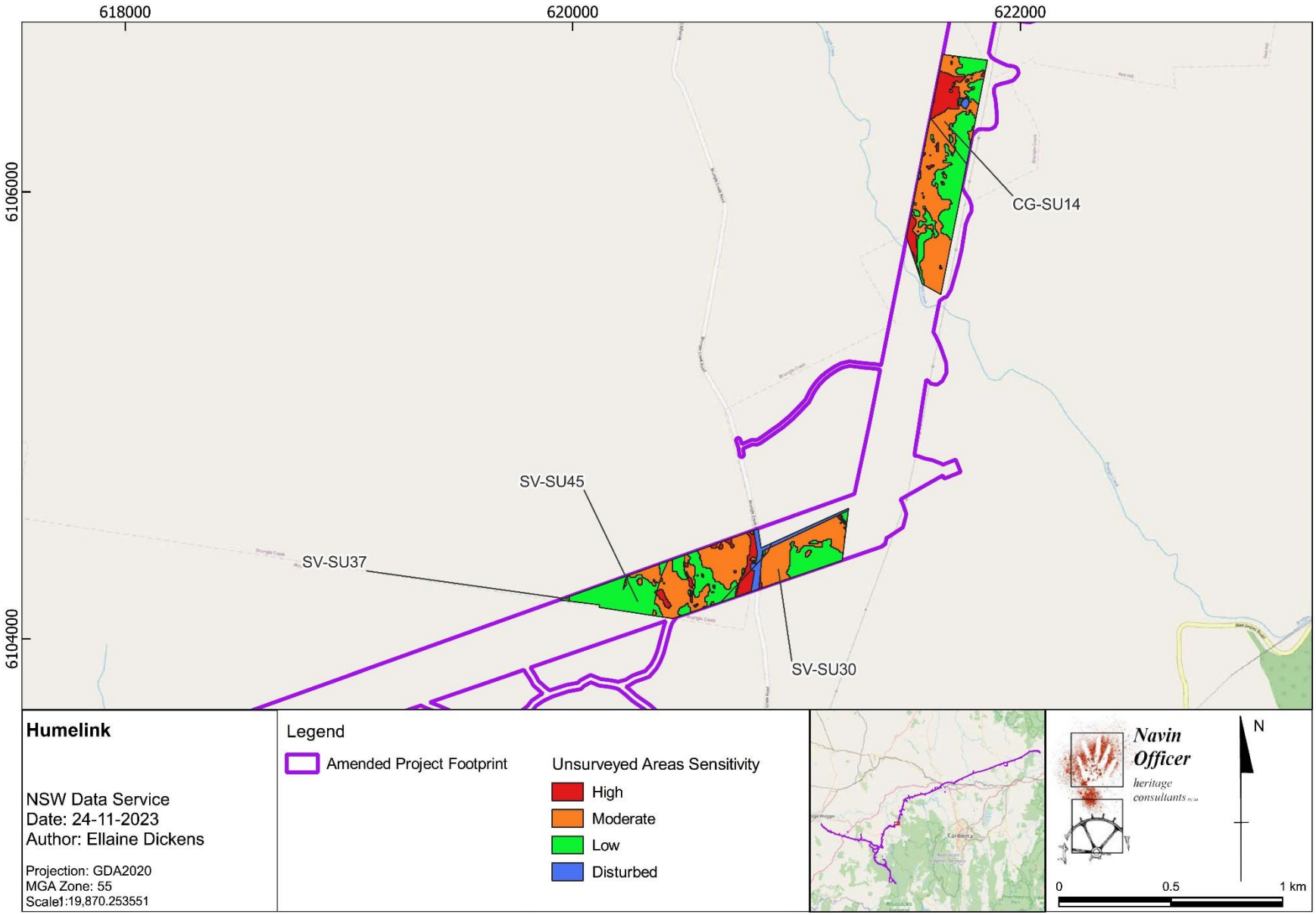


Figure A- 4. MA-085, MA-089, MA-088

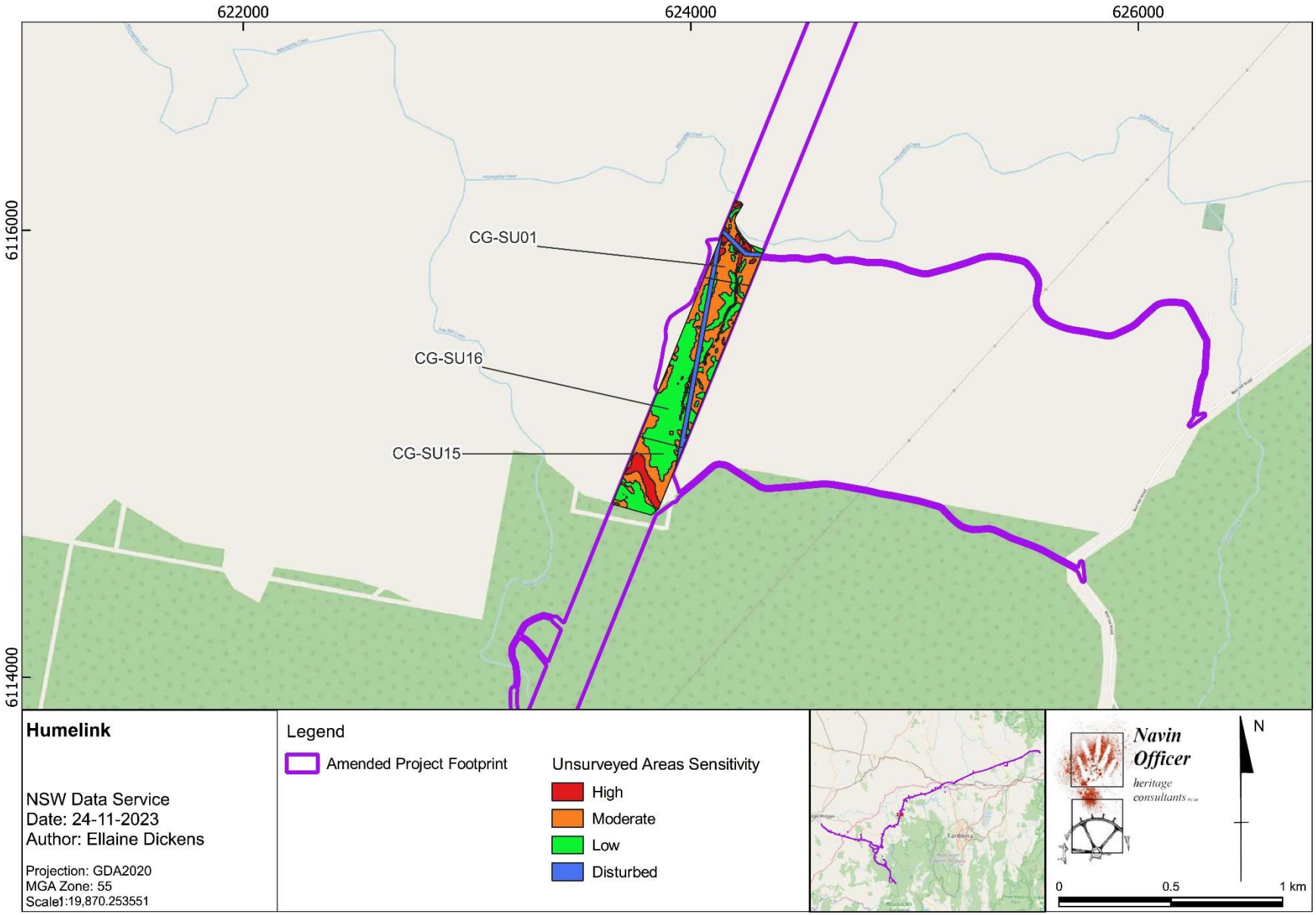


Figure A- 5. MA-094

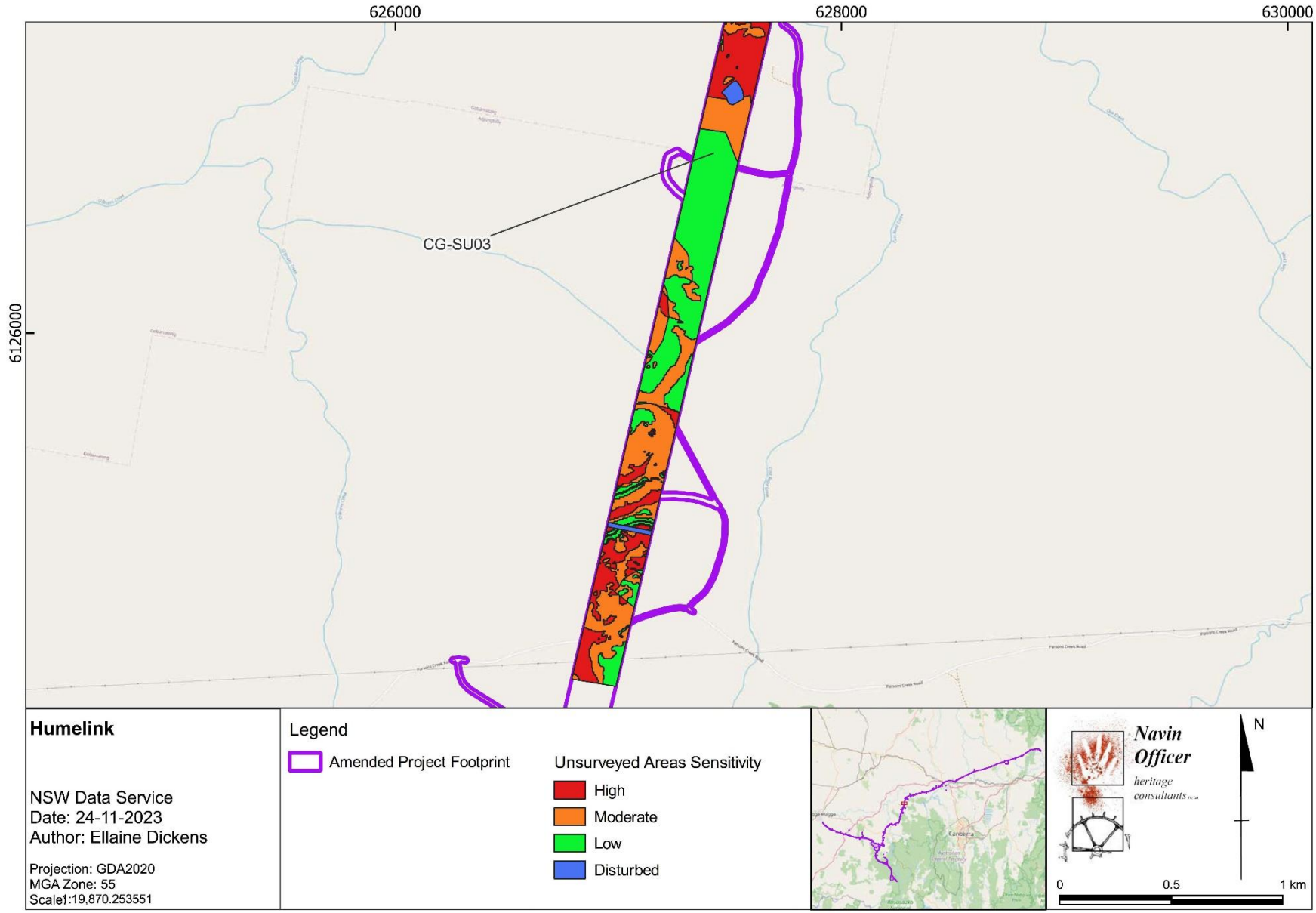


Figure A- 6. MA-100 (south)

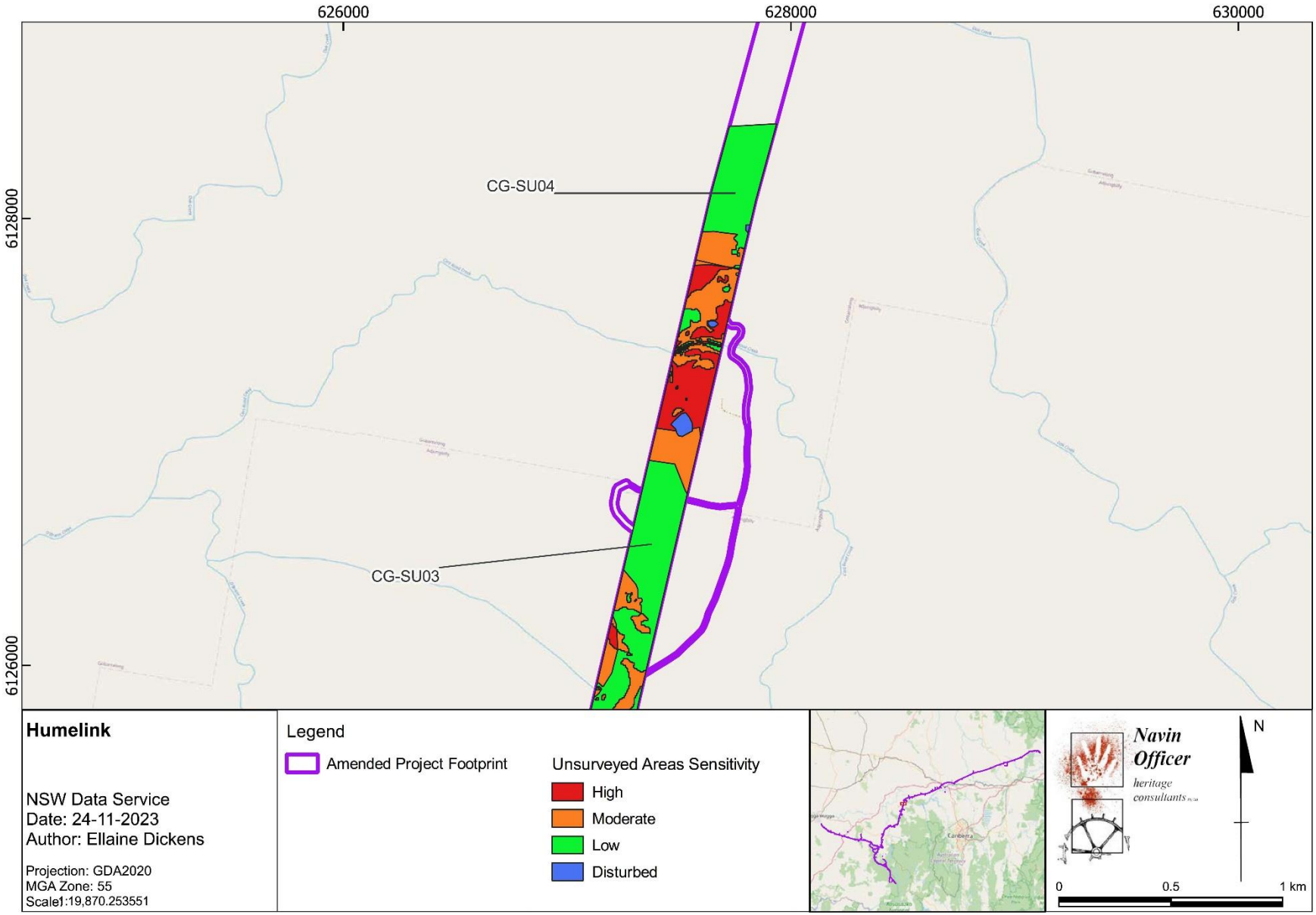


Figure A- 7. MA-100 (north)

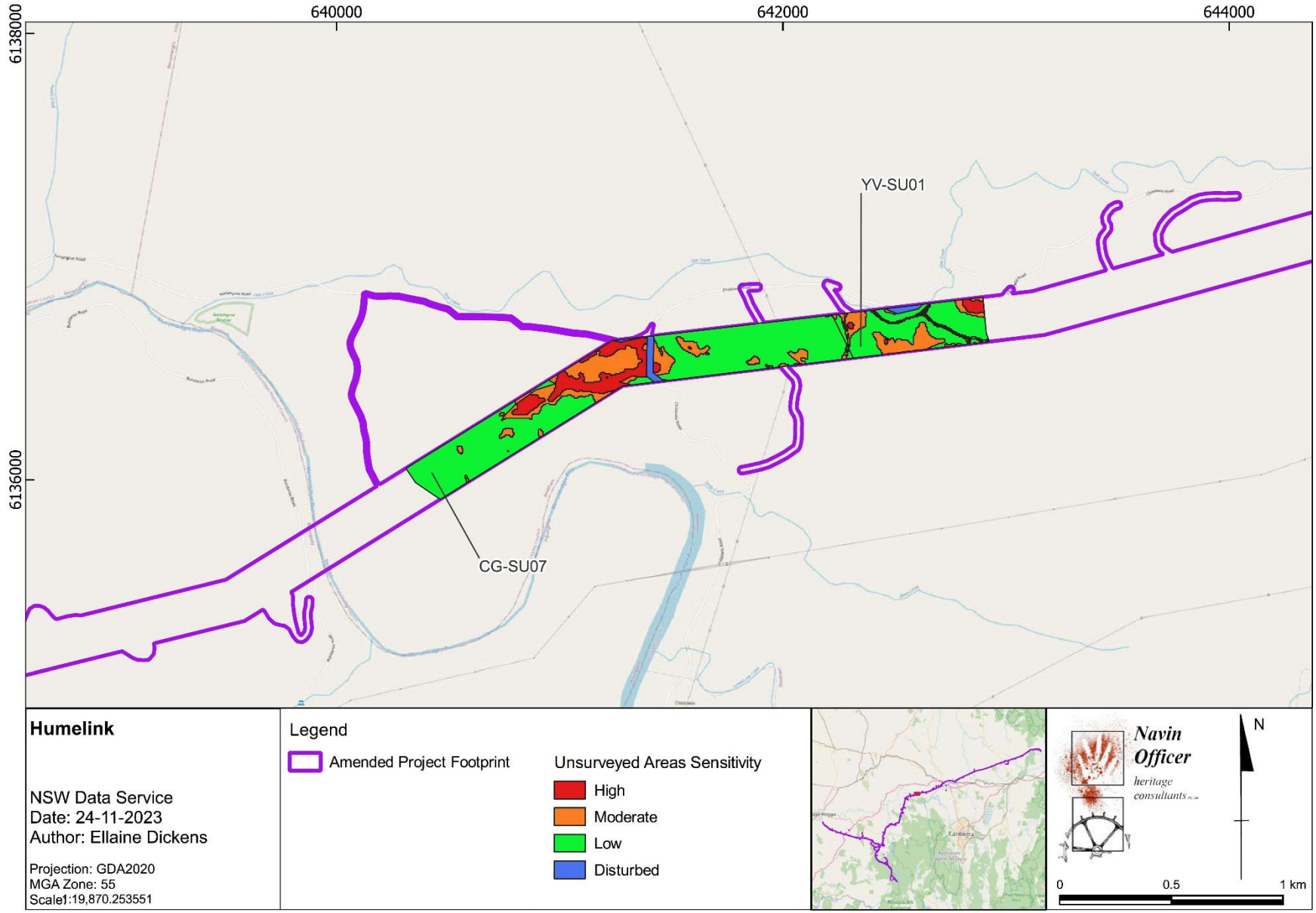
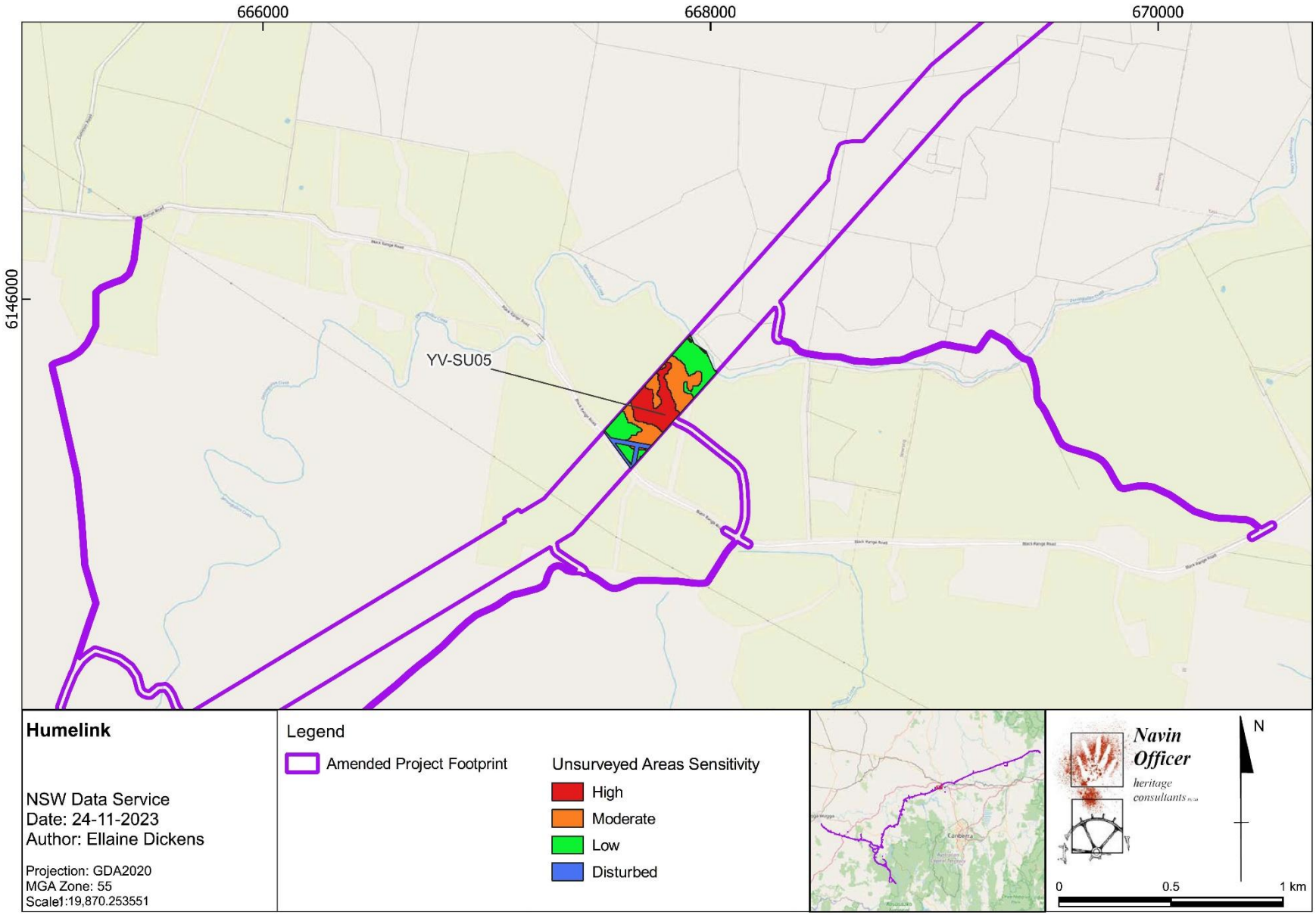


Figure A- 8. YG-034, YG-031



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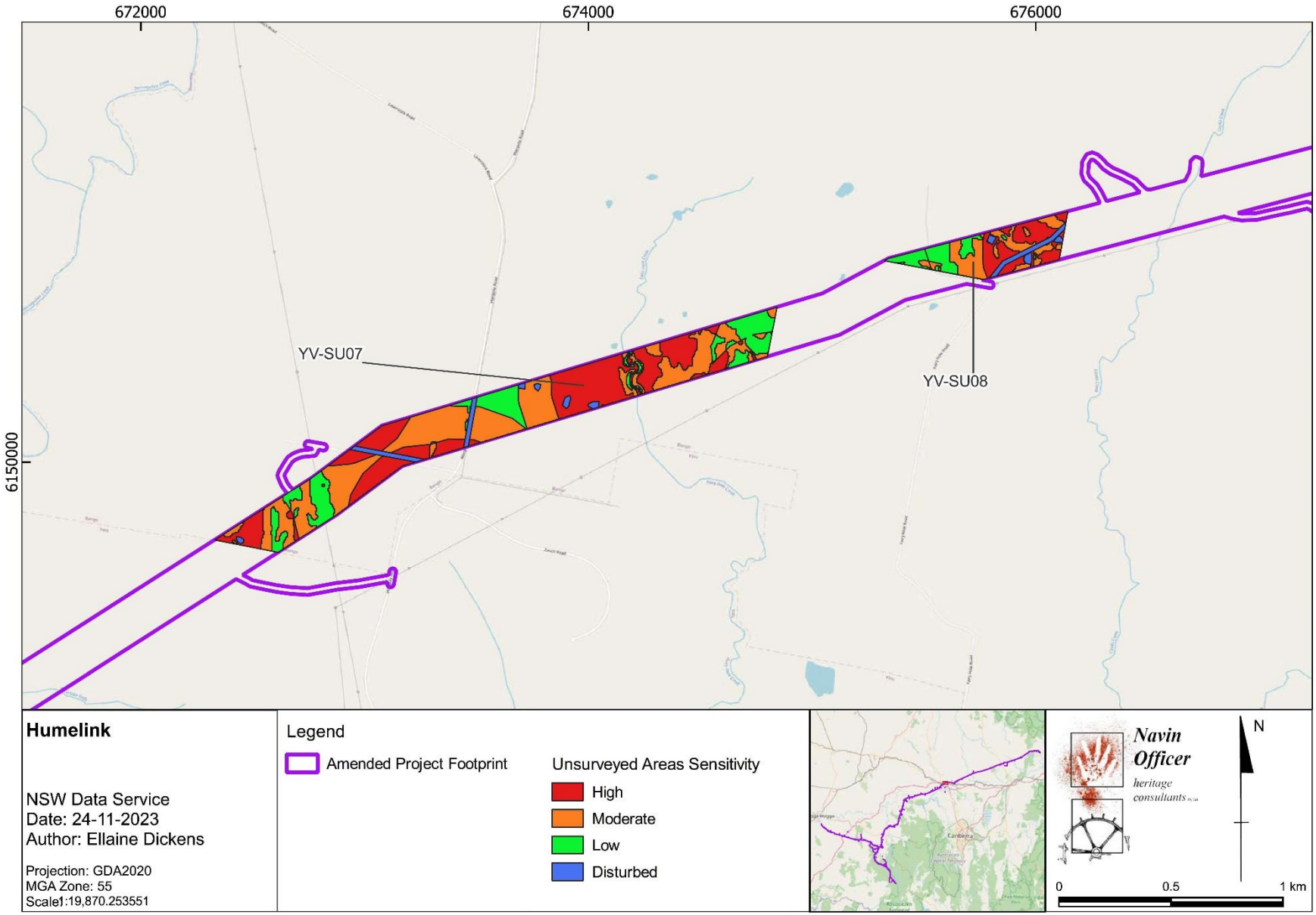
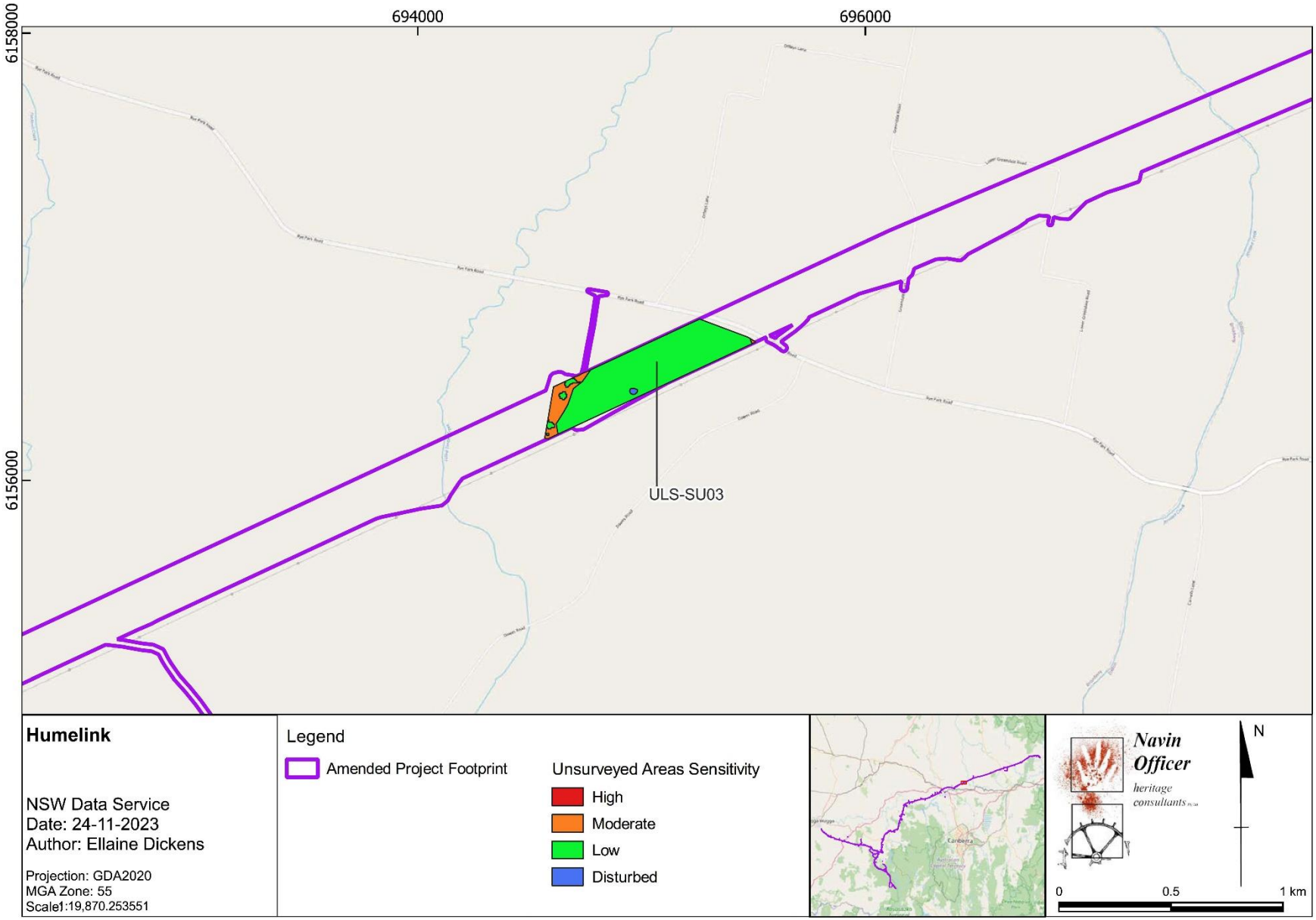


Figure A- 10. BY-156, BY-152, BY-151, BY-150



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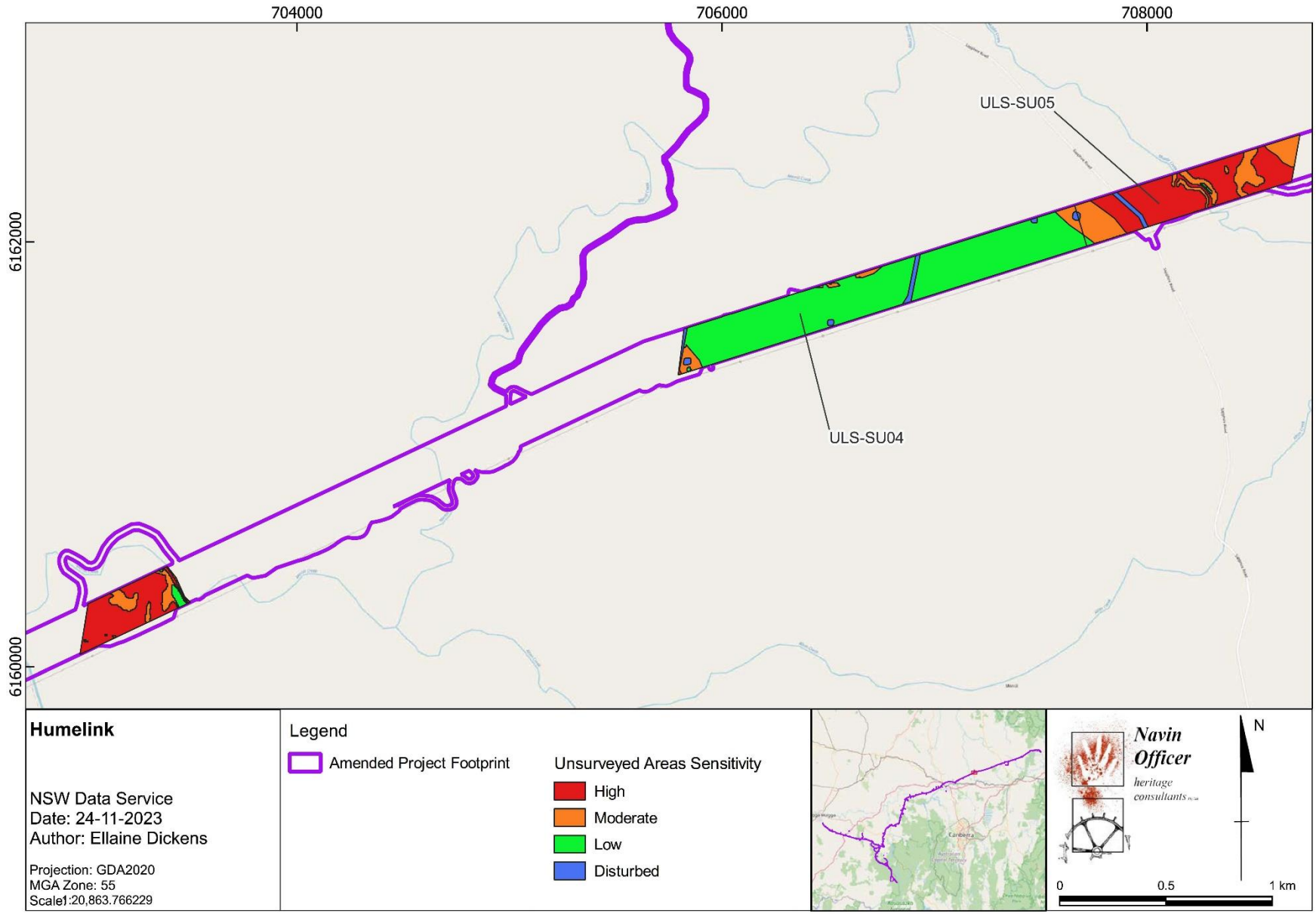


Figure A- 12. BY-112-01A, BY-109, BY-108, BY-107

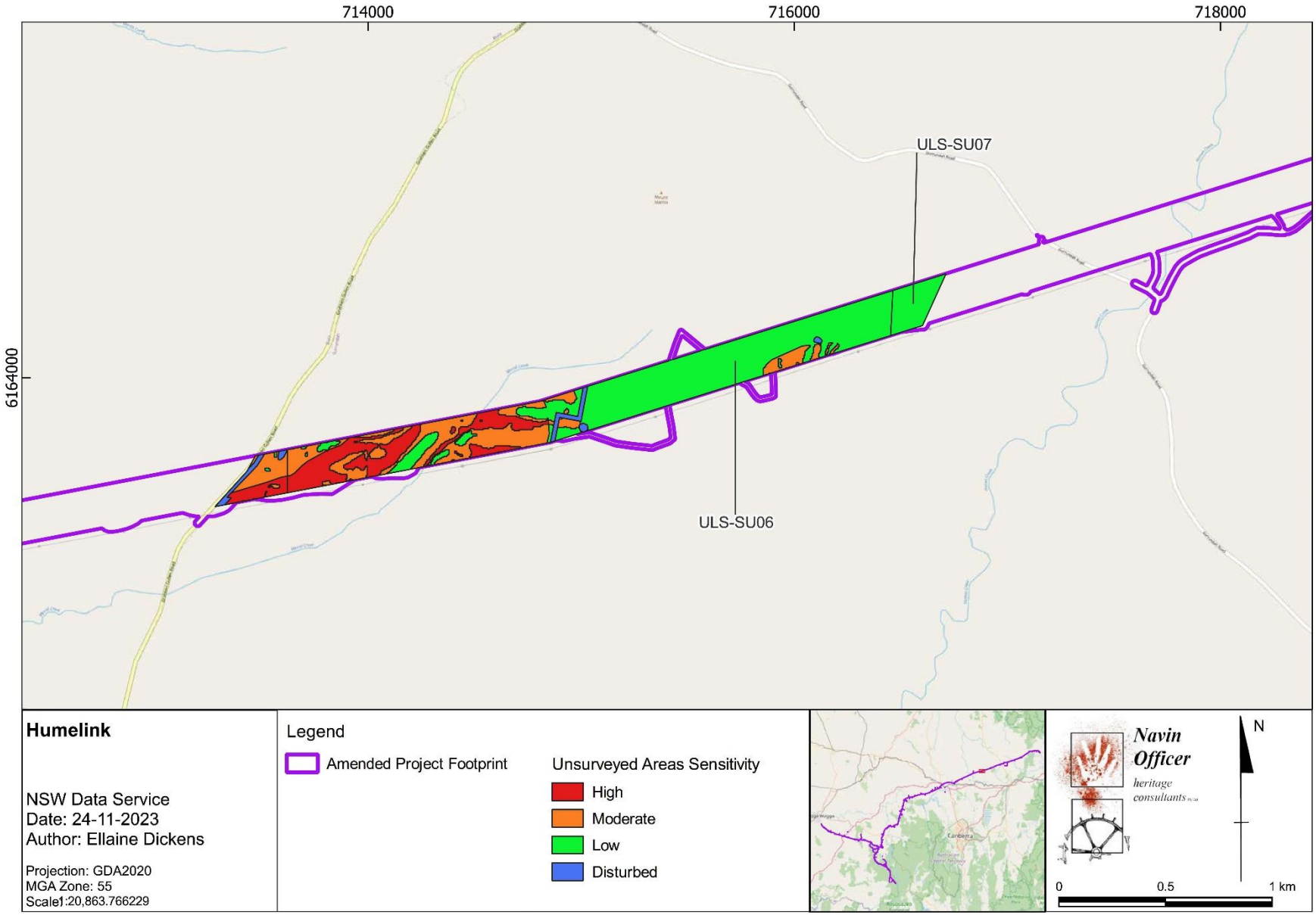
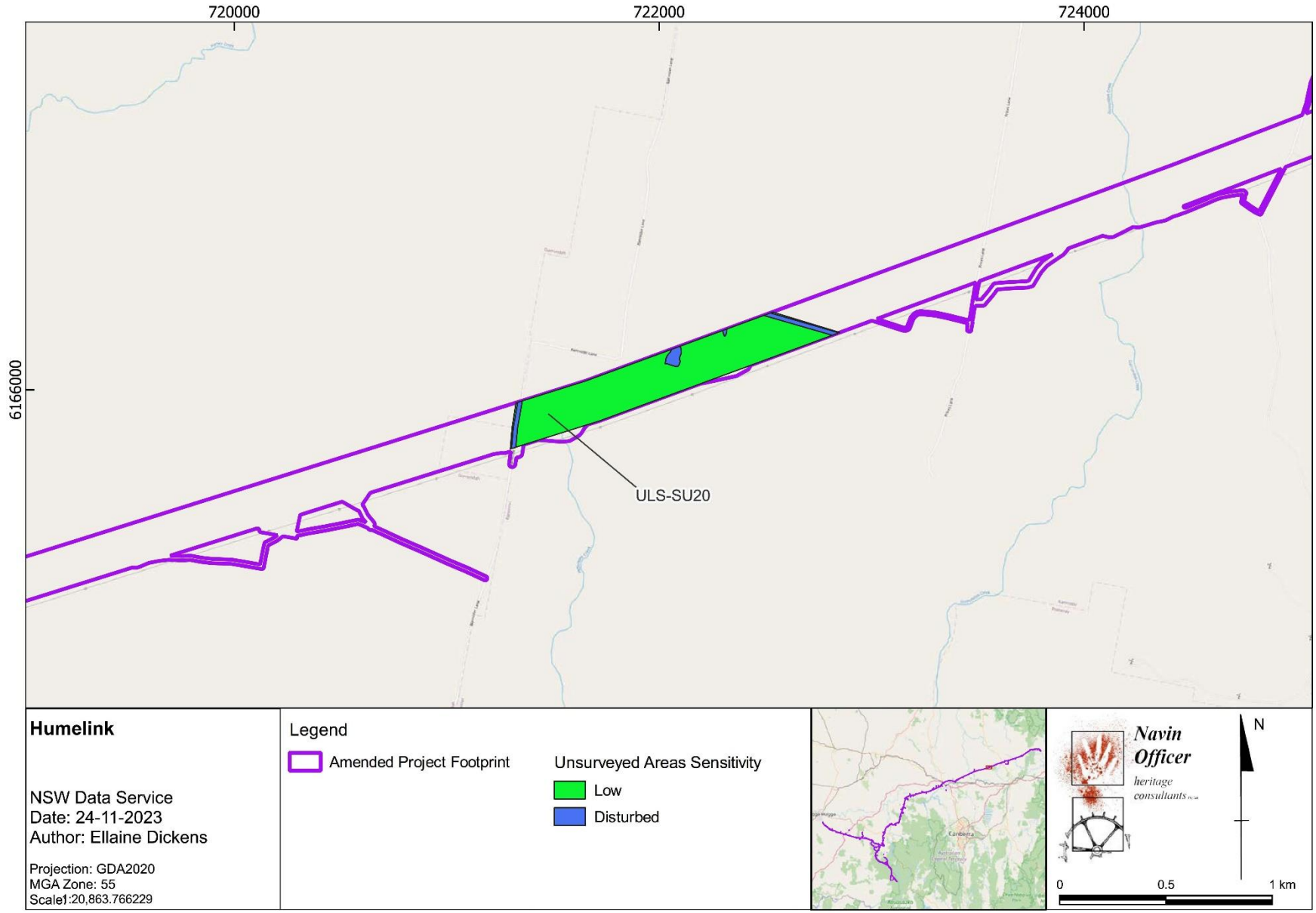


Figure A- 13. BY-097, BY-101



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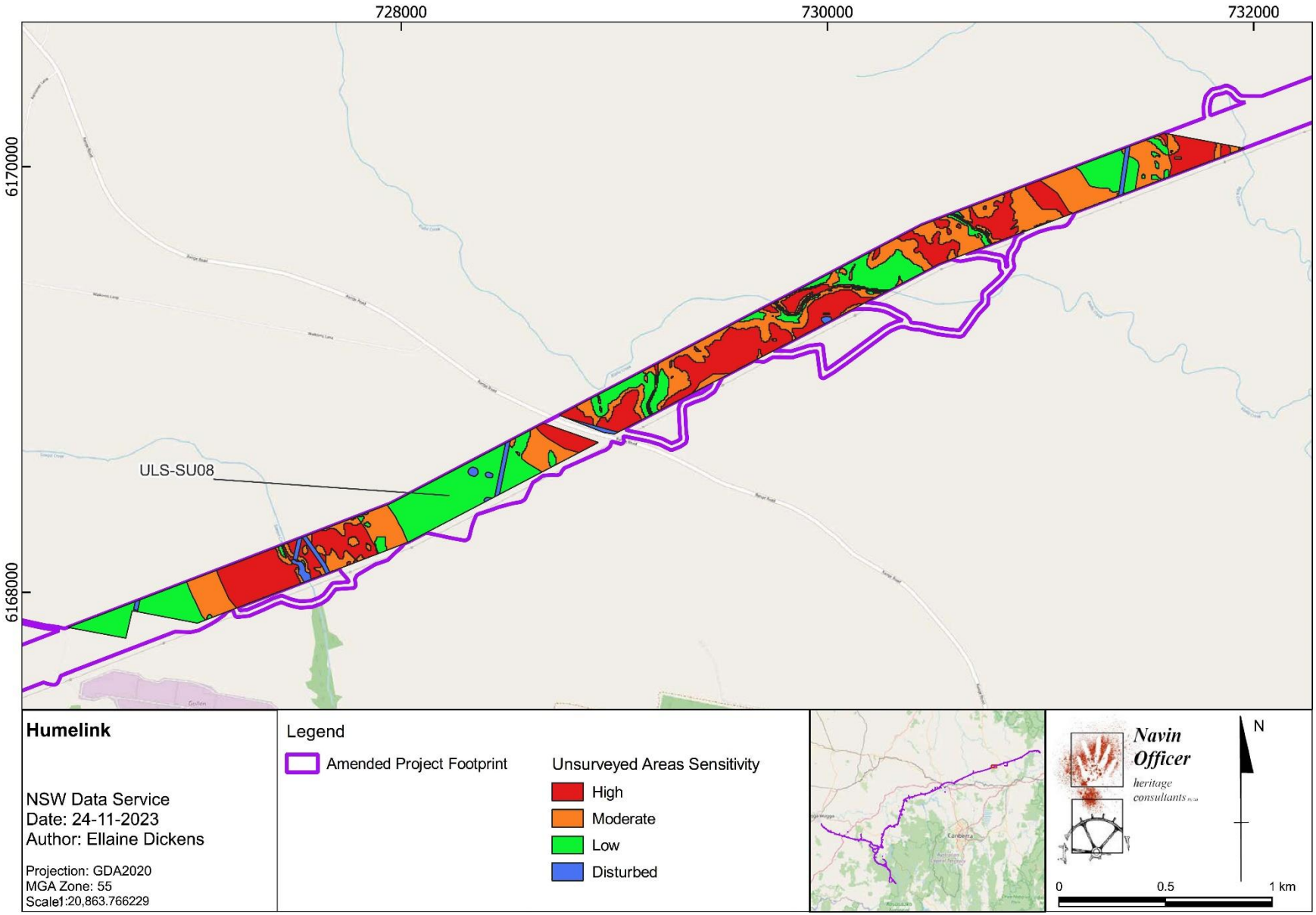


Figure A- 15. BY-074, BY-072, BY-070

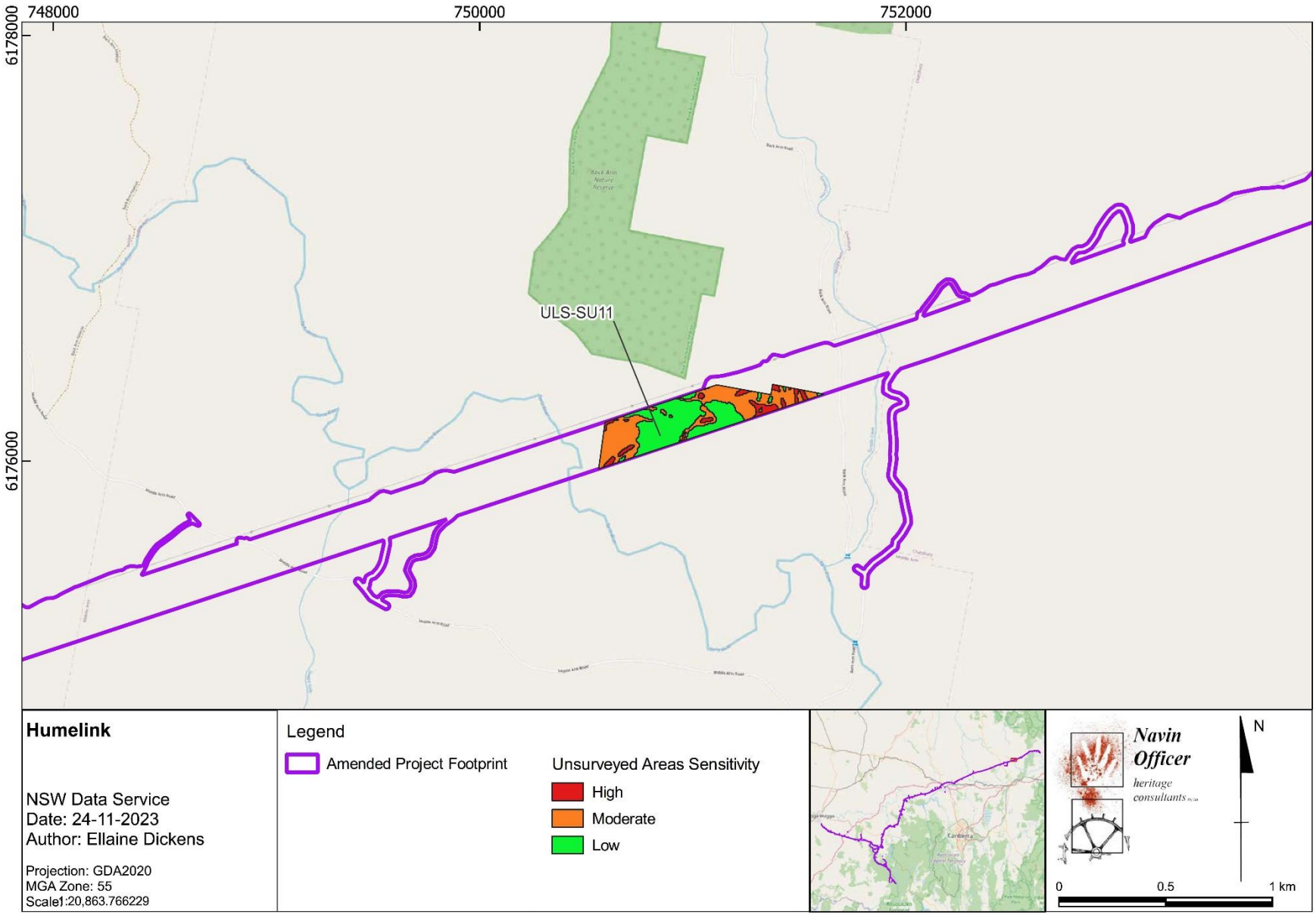


Figure A- 16. BY-046

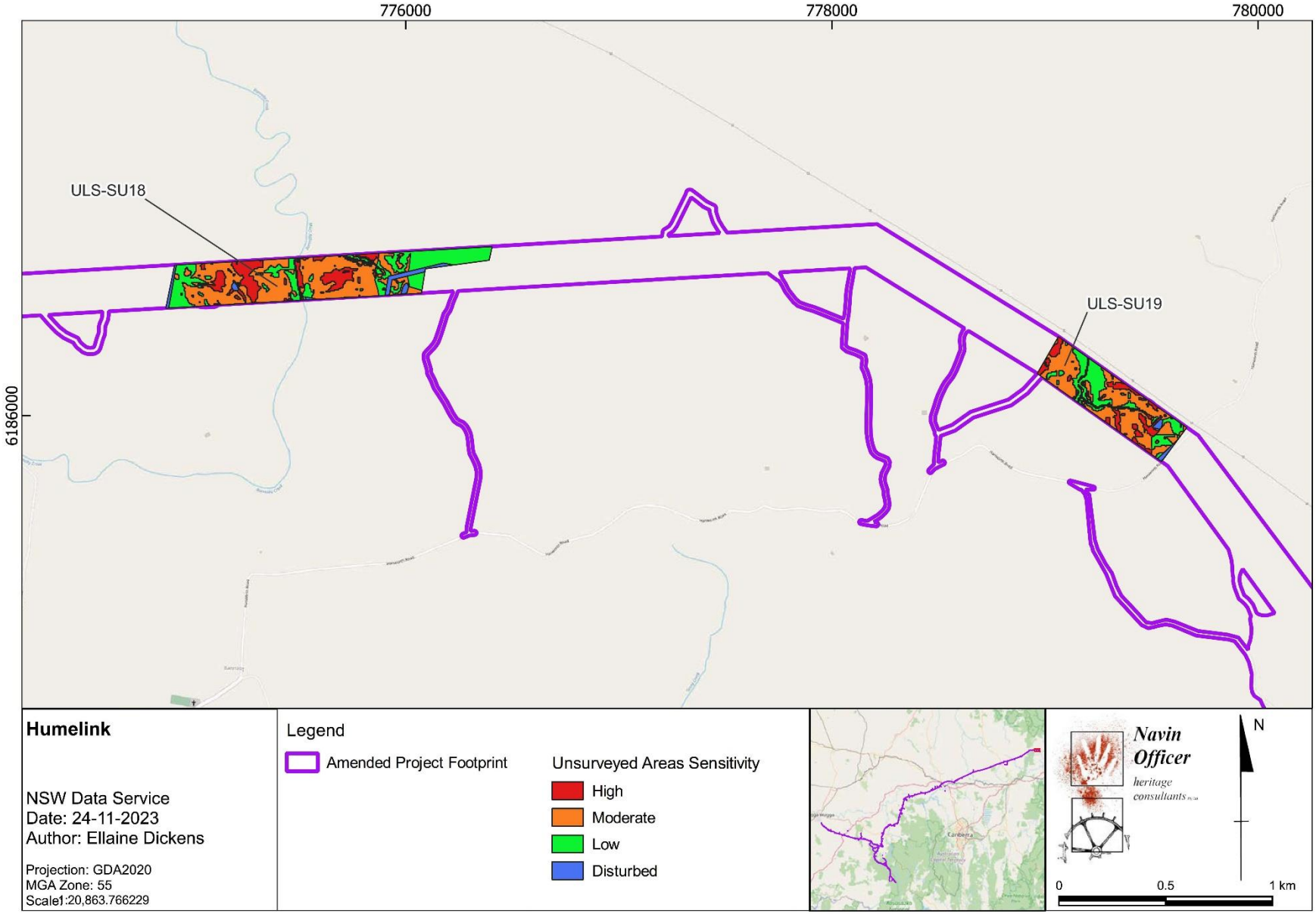


Figure A- 17. BY-006, BY-007, BY-003

Appendix B Survey Results Mapping

LEGEND for Appendix B map series

- Approved SSI-36656827 project boundary
- Property holding boundaries
- Unsurveyed area
- Current disturbance footprint
- Identified archaeological site/PAD area
- Identified archaeological site location

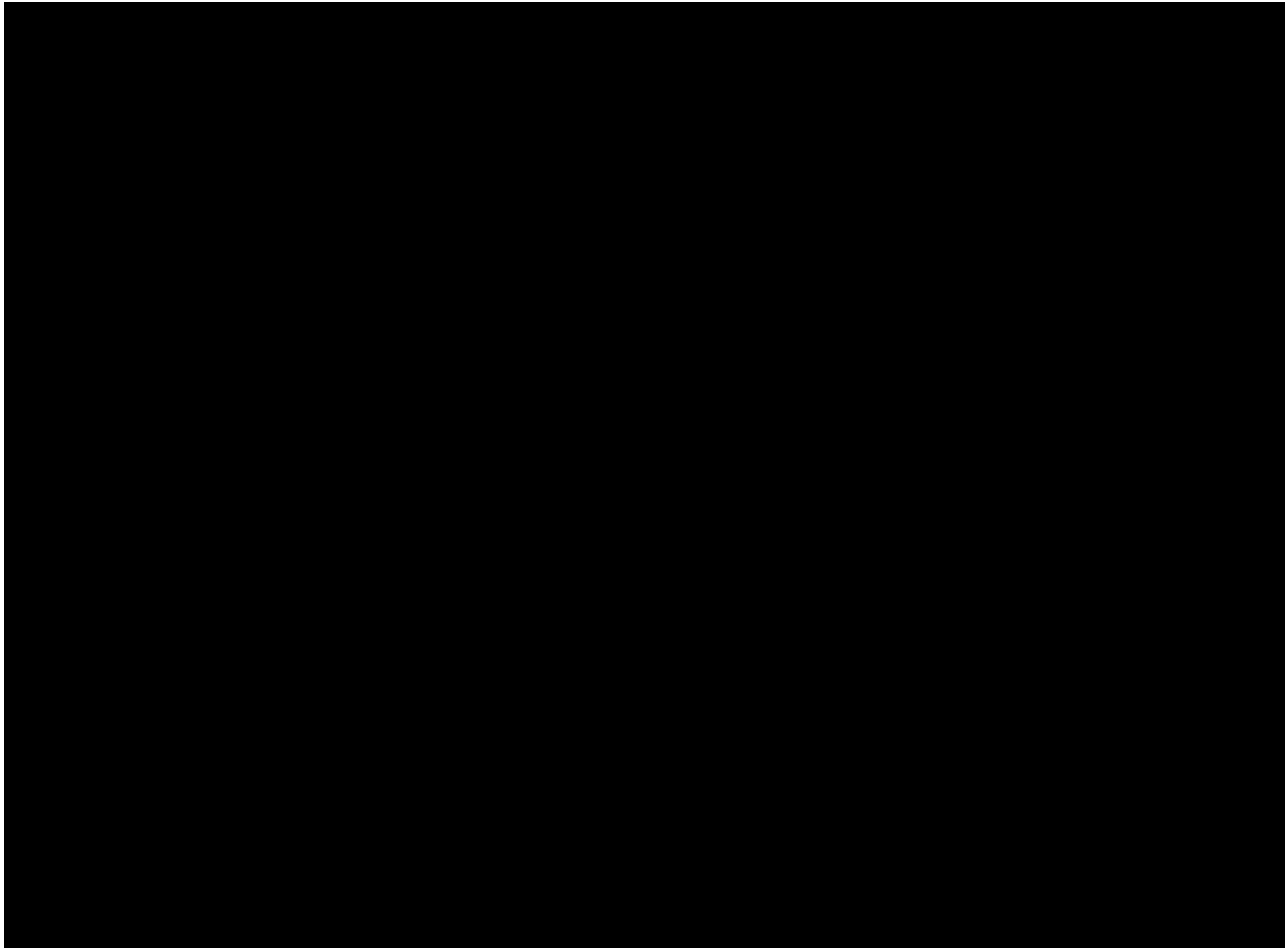


Figure B- 1. MA-047 and AT-463 (MA-047)

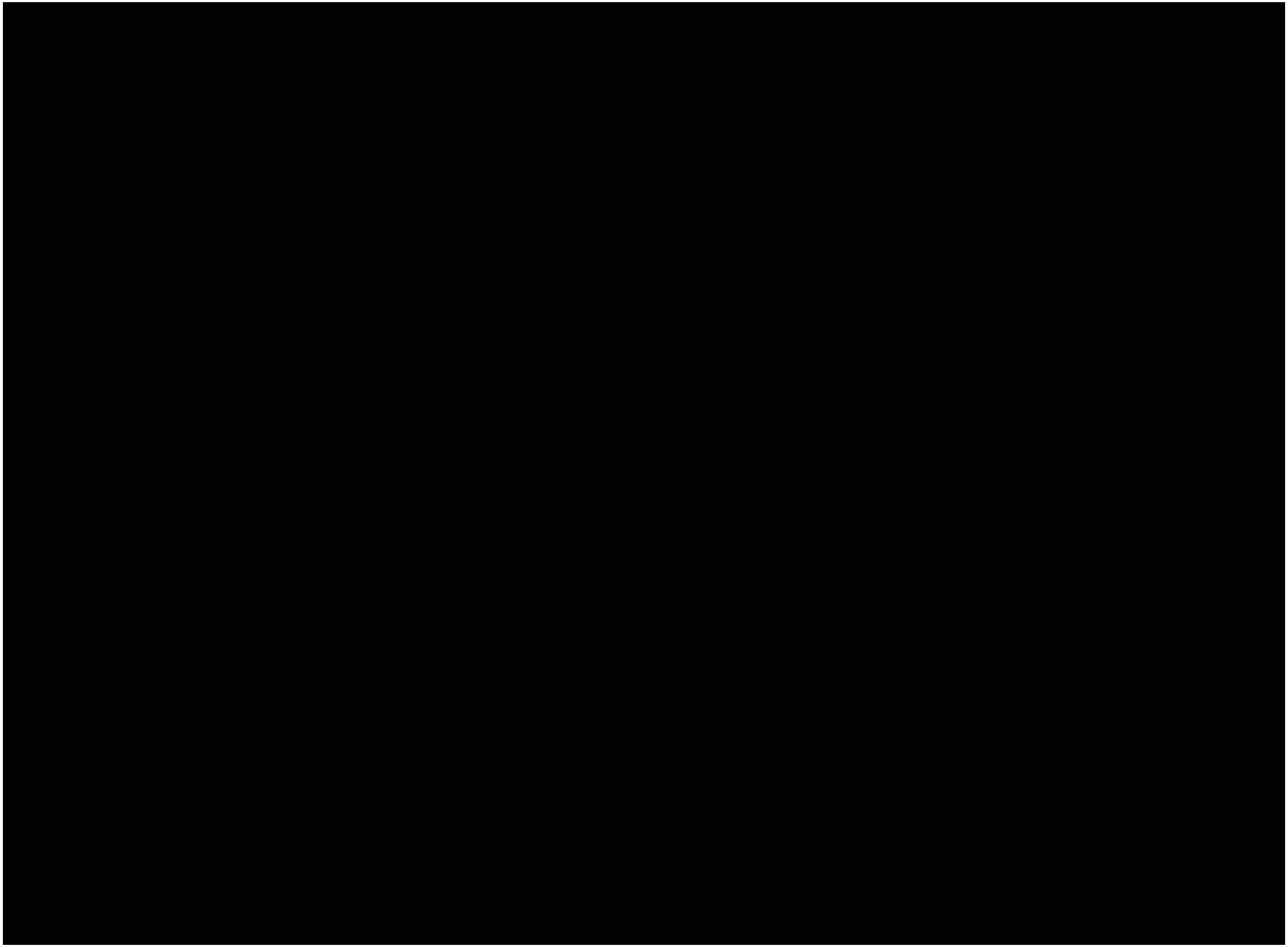


Figure B- 2. MA-059-07, MA-059-08, MA-059-09, and access tracks AT-431 (MA-059-08/MA-059-09) and unnamed track (MA-059-08)

Figure B- 3. MA-059-10, and access tracks AT-428, AT-426, and unnamed track.

Figure B- 4. MA-059-13 and MA-059-13A, and access tracks AT-423, and unnamed track

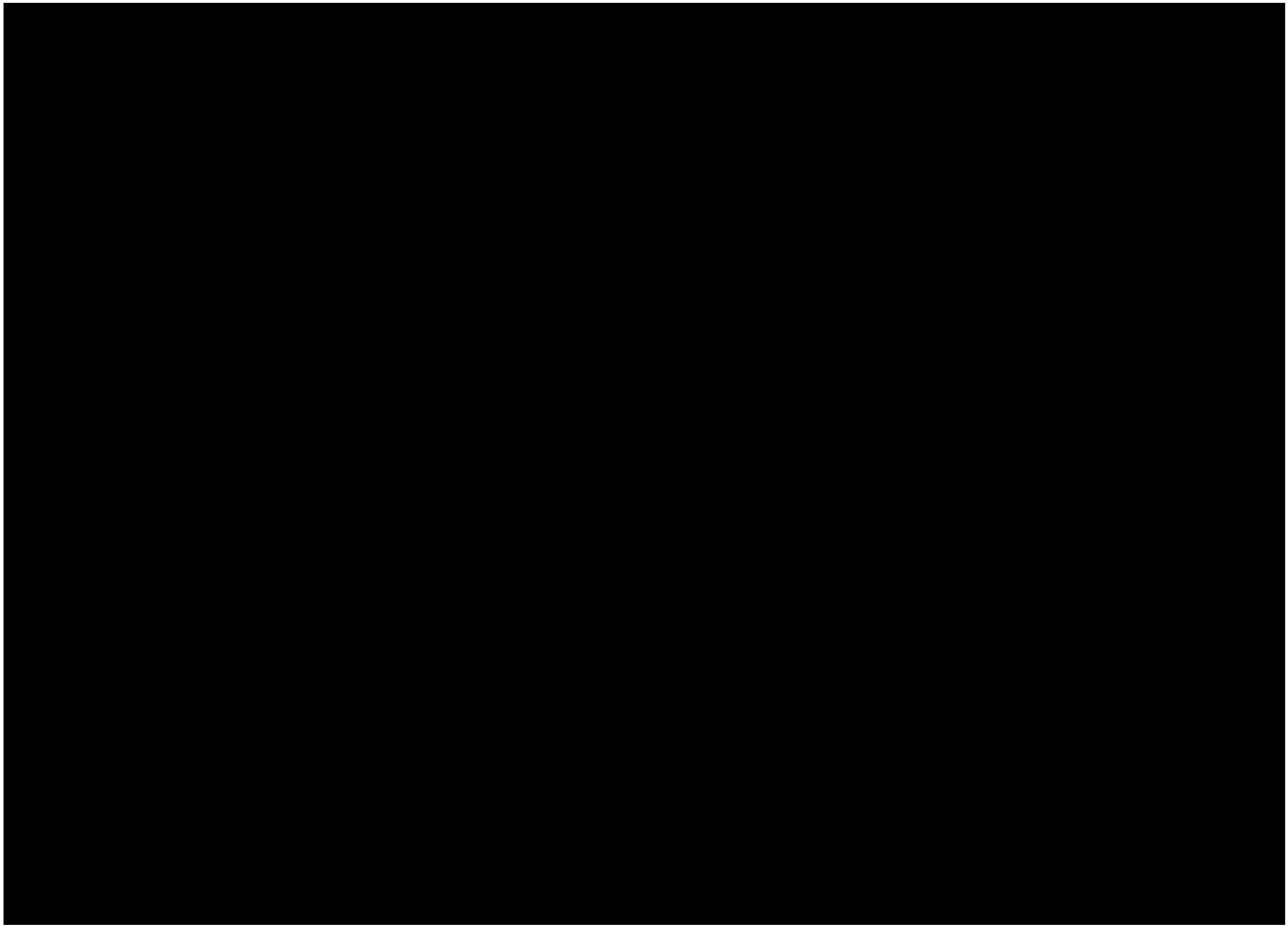


Figure B- 5. MA-059-15 and MA-059-16, and access tracks AT-419, AT-420, AT-417, AT-418, and AT-416

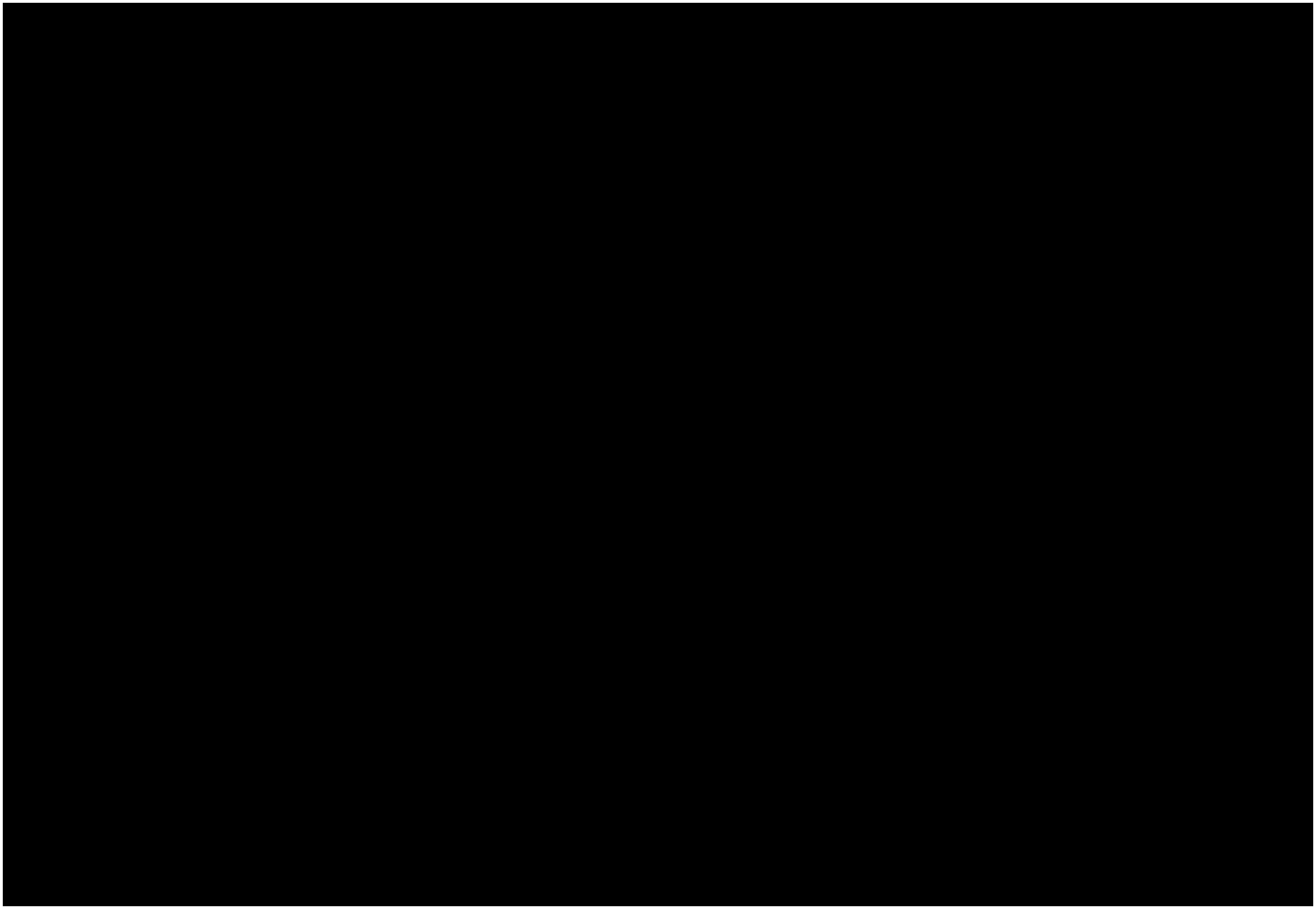


Figure B- 6. MA-077

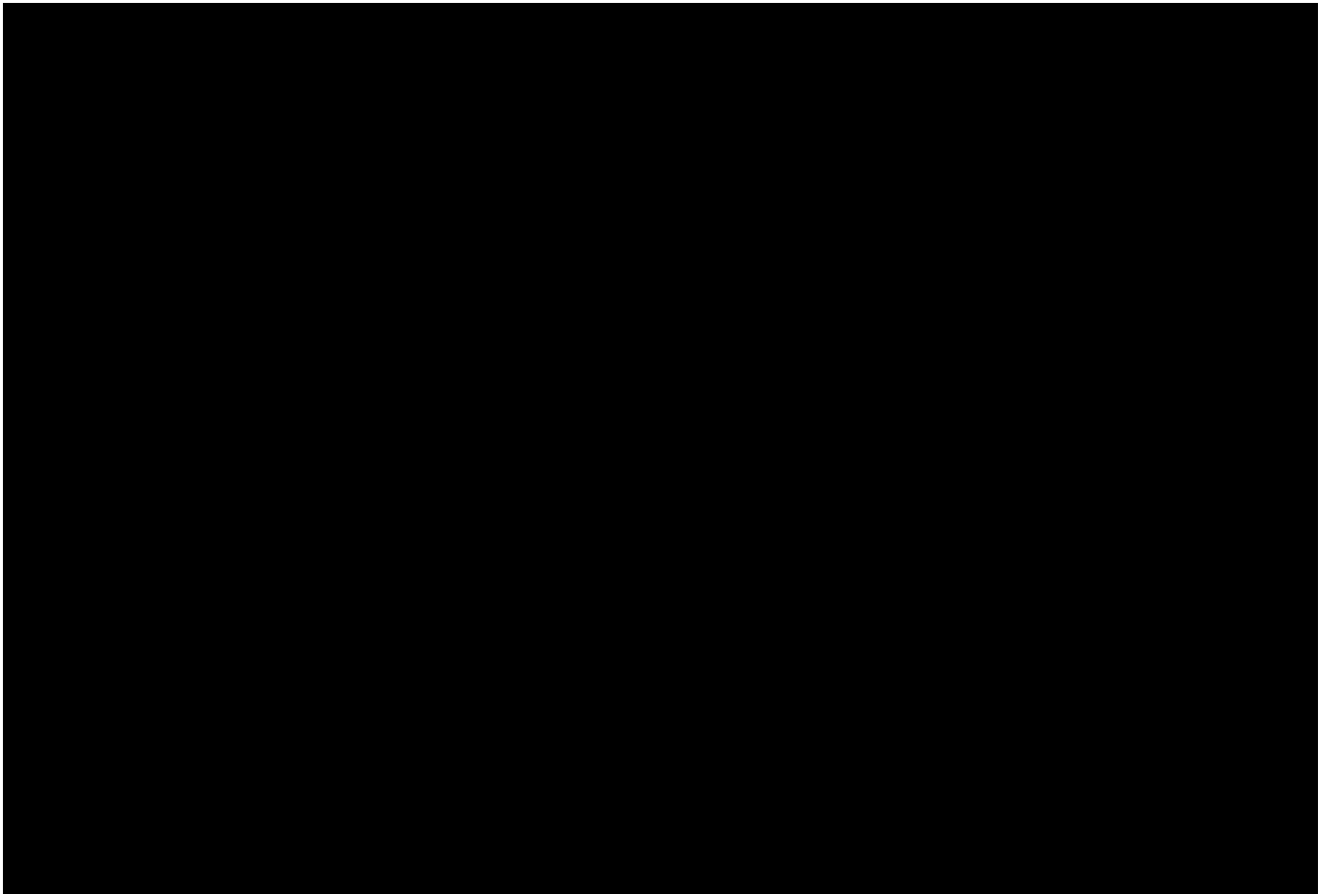


Figure B- 7. MA-077-01, access track AT-412, and unnamed track.

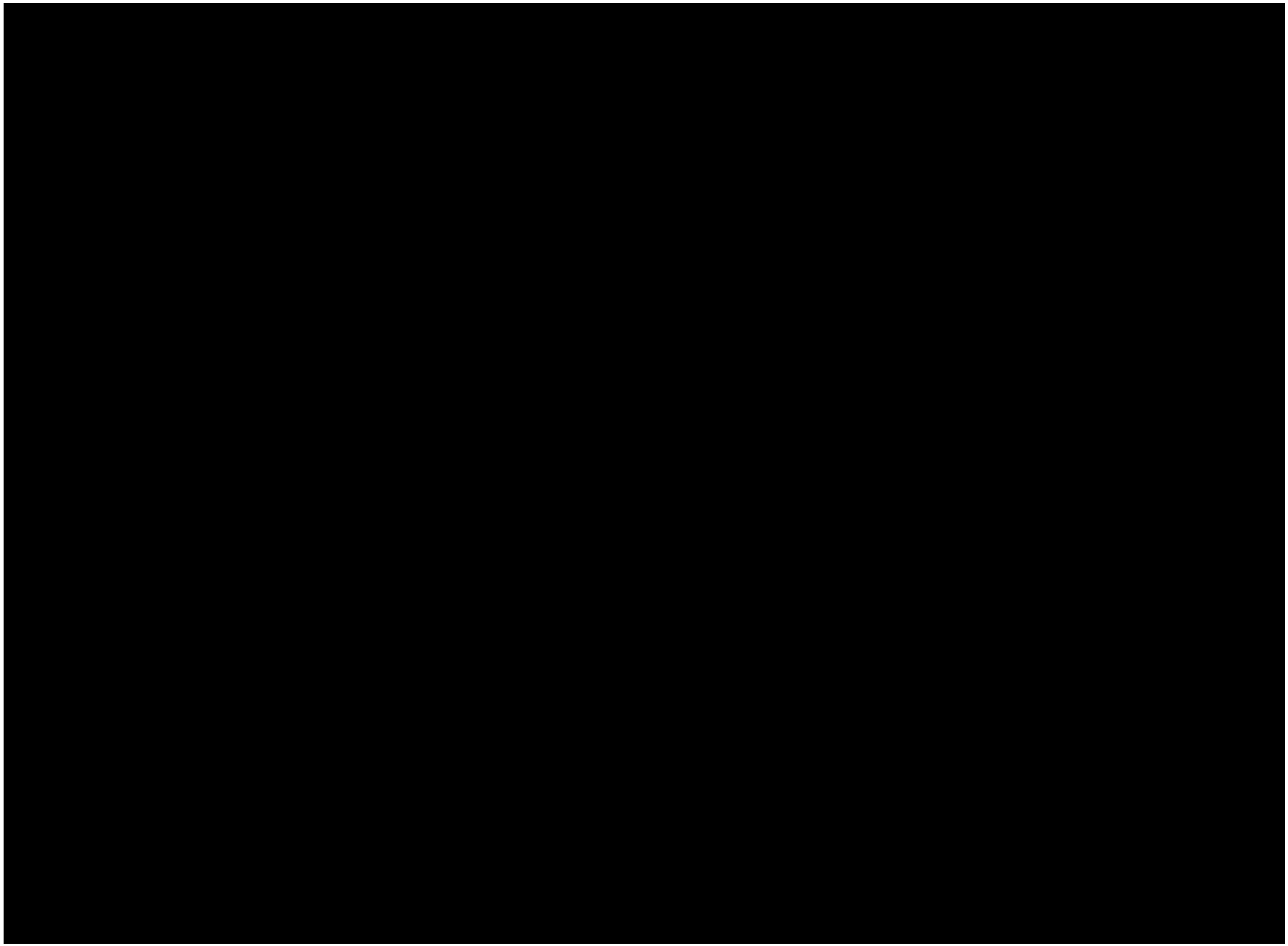
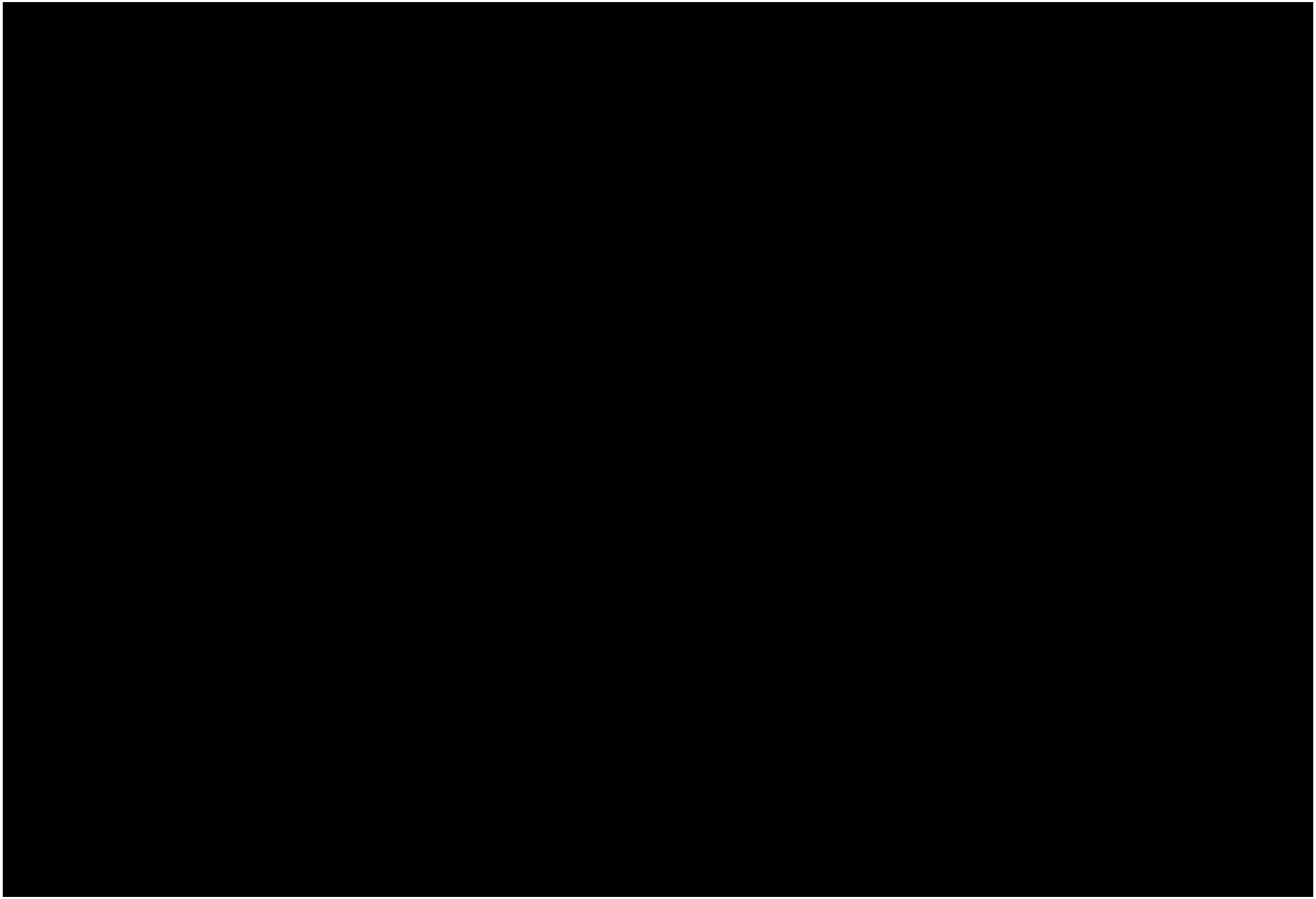


Figure B- 8. MA-085 and MA-089



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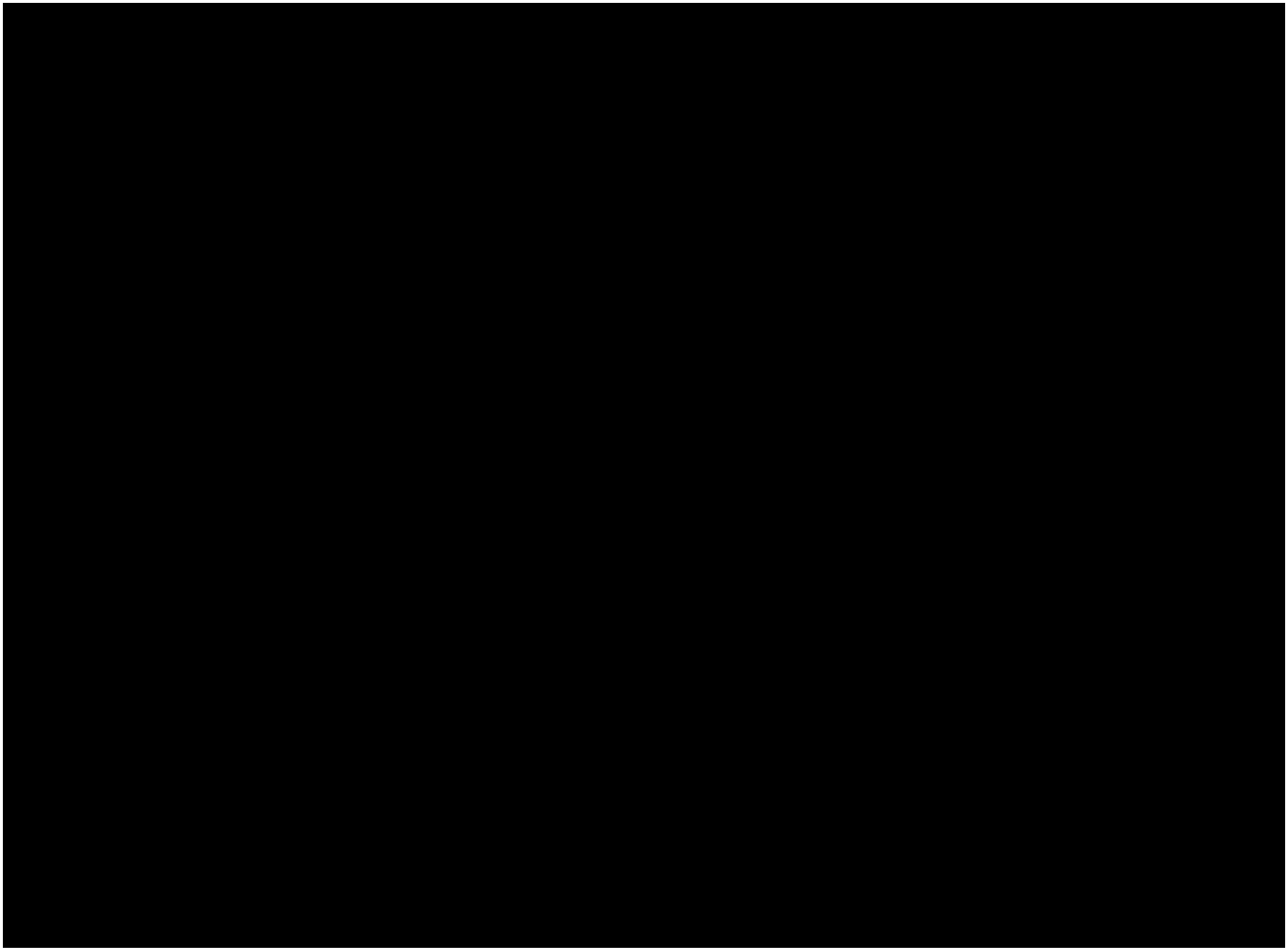


Figure B- 10. MA-094

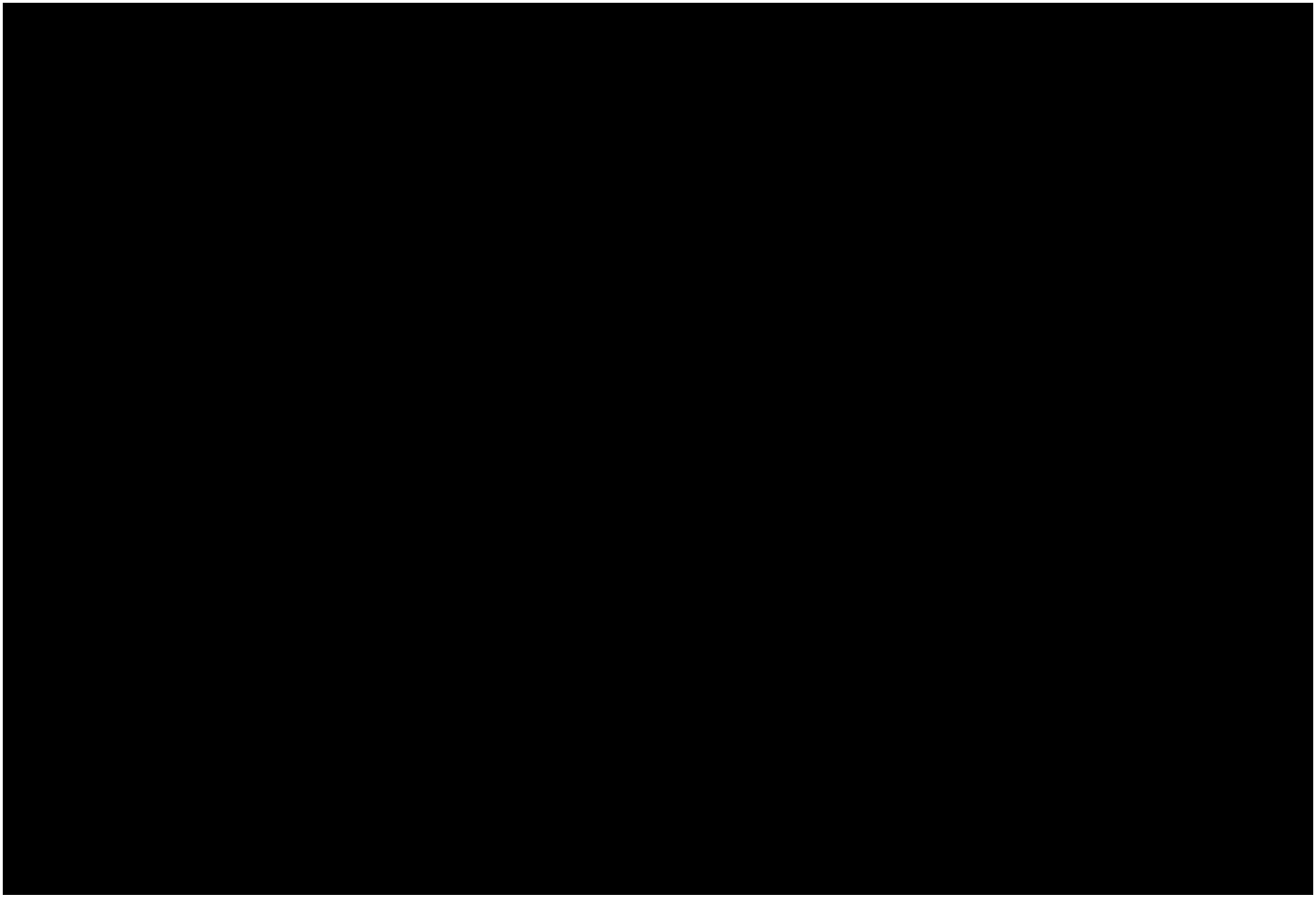


Figure B- 11. MA-100, and access track AT-353 to 358 (see inset).

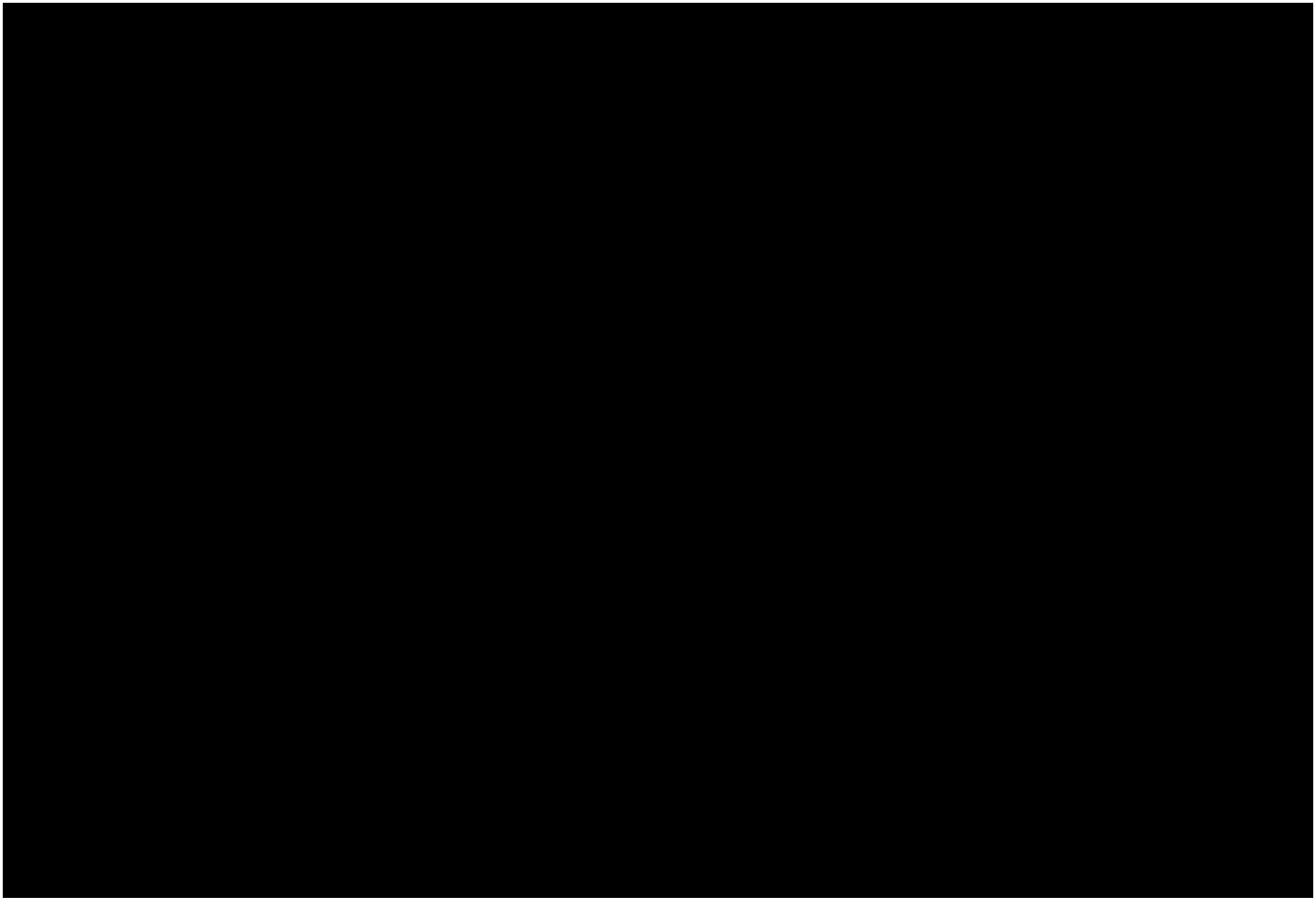


Figure B- 12. YG-034

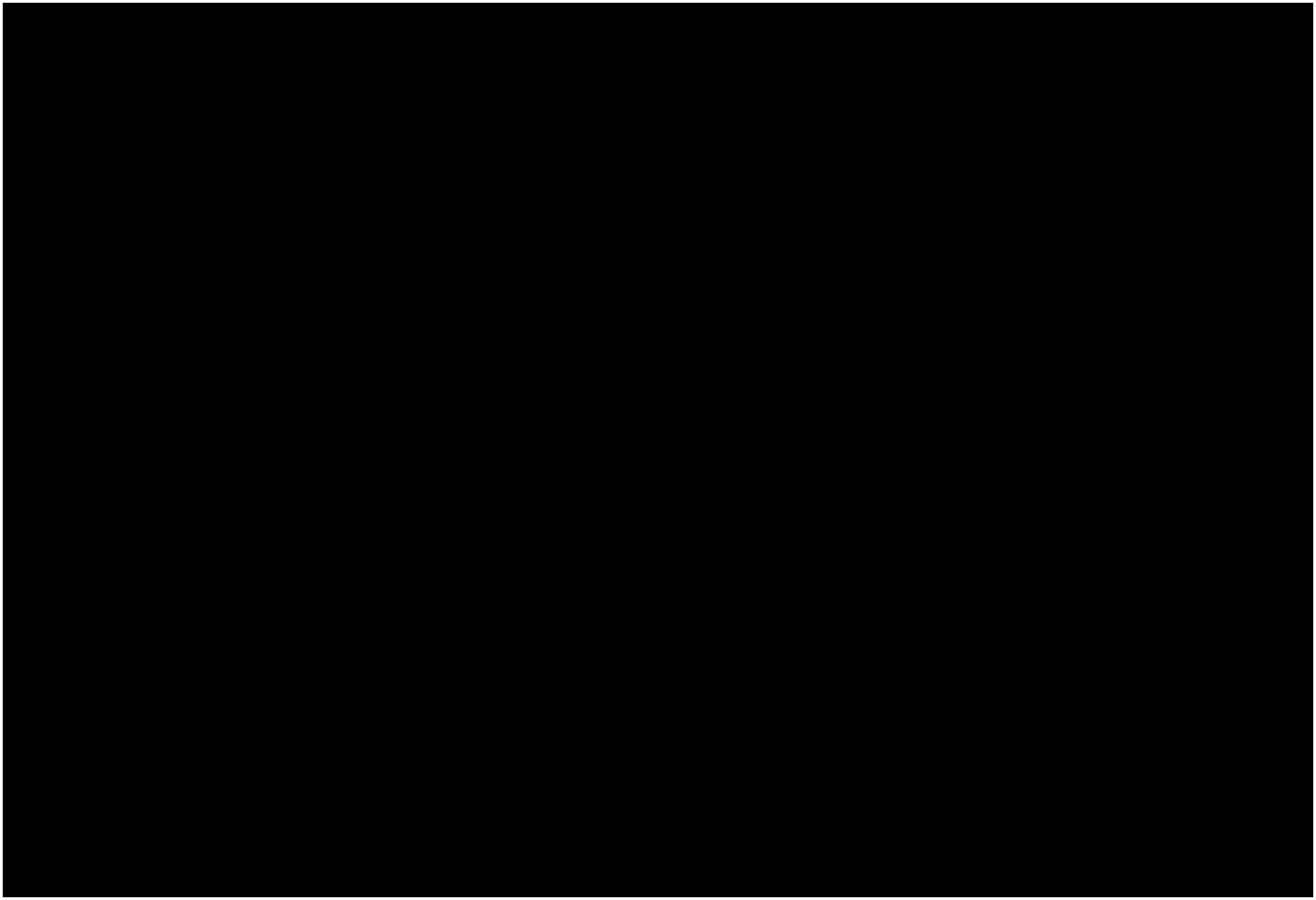


Figure B- 13. YG-031.

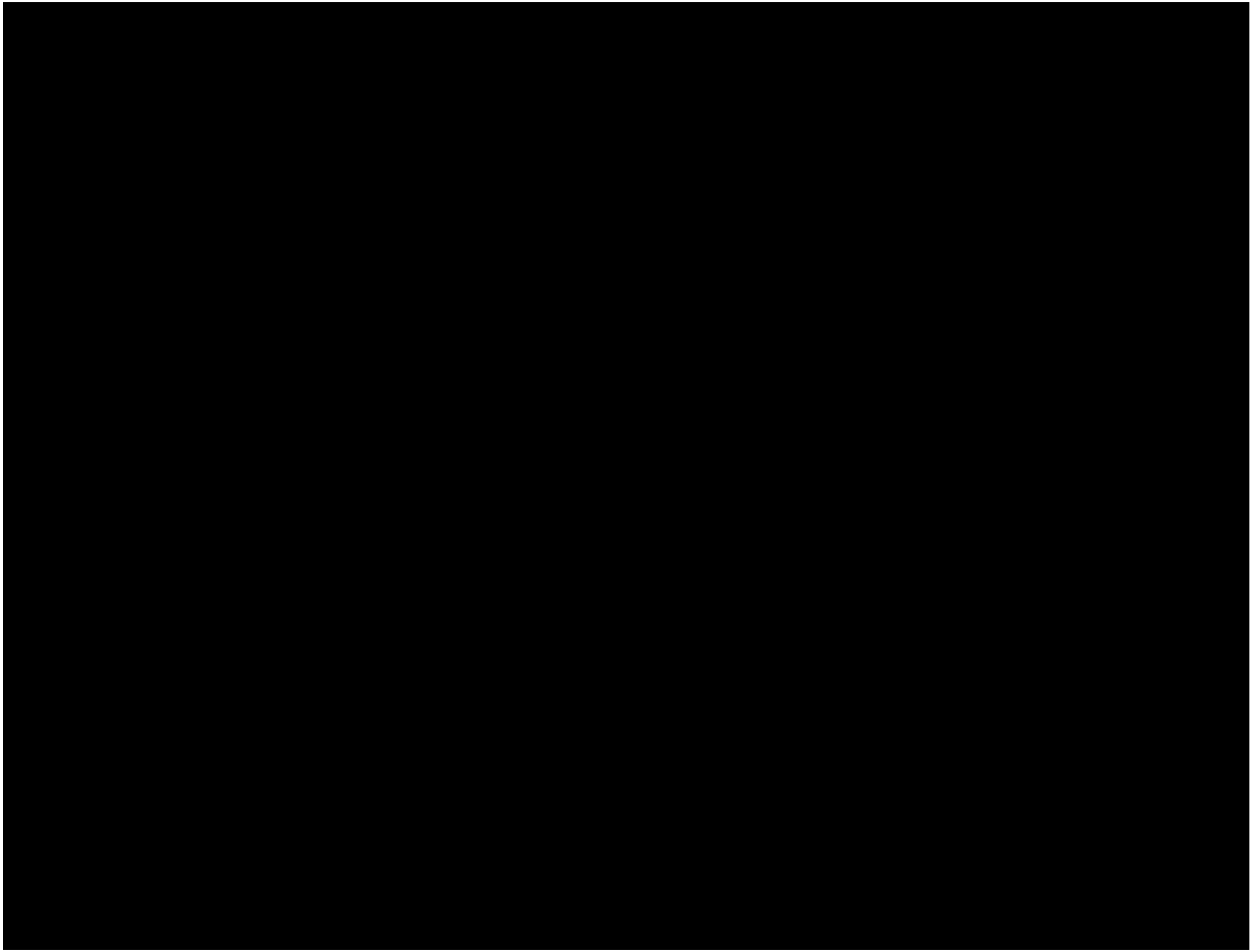


Figure B- 14. YG-009 and AT-256 – not surveyed.

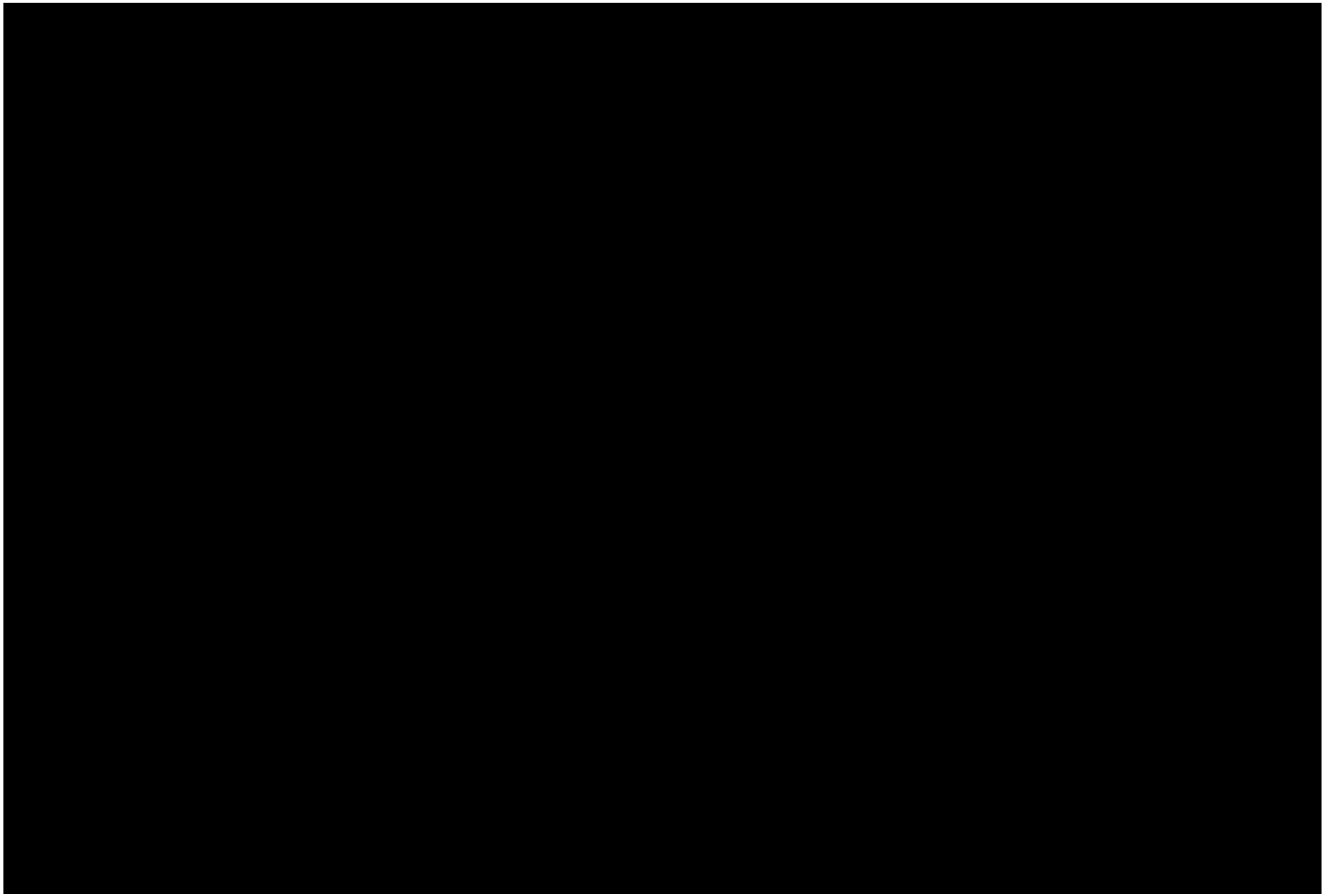


Figure B- 15. BY-156

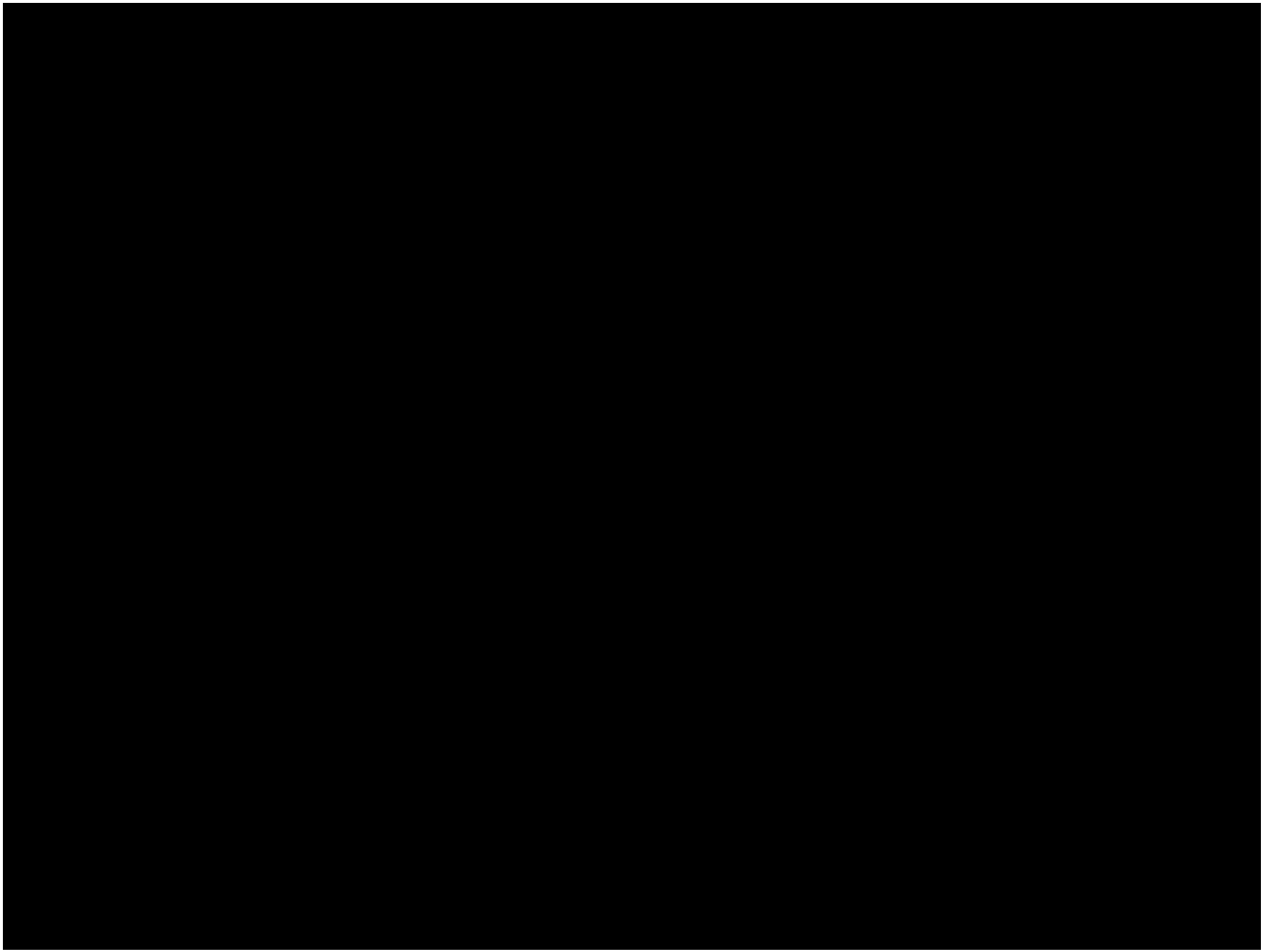


Figure B- 16. BY-152 (not surveyed), BY-151, BY-150

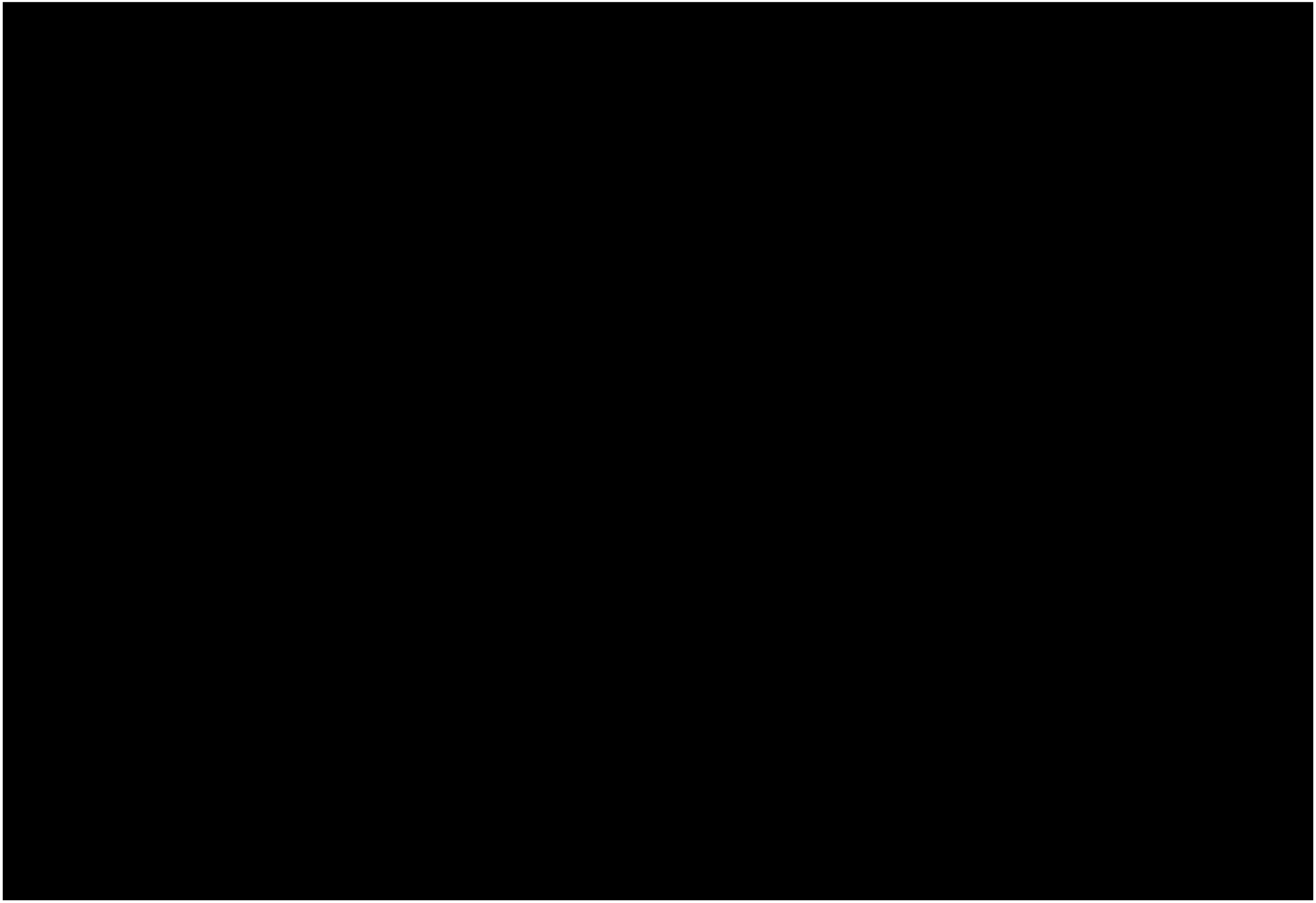


Figure B- 17. BY-128-01.

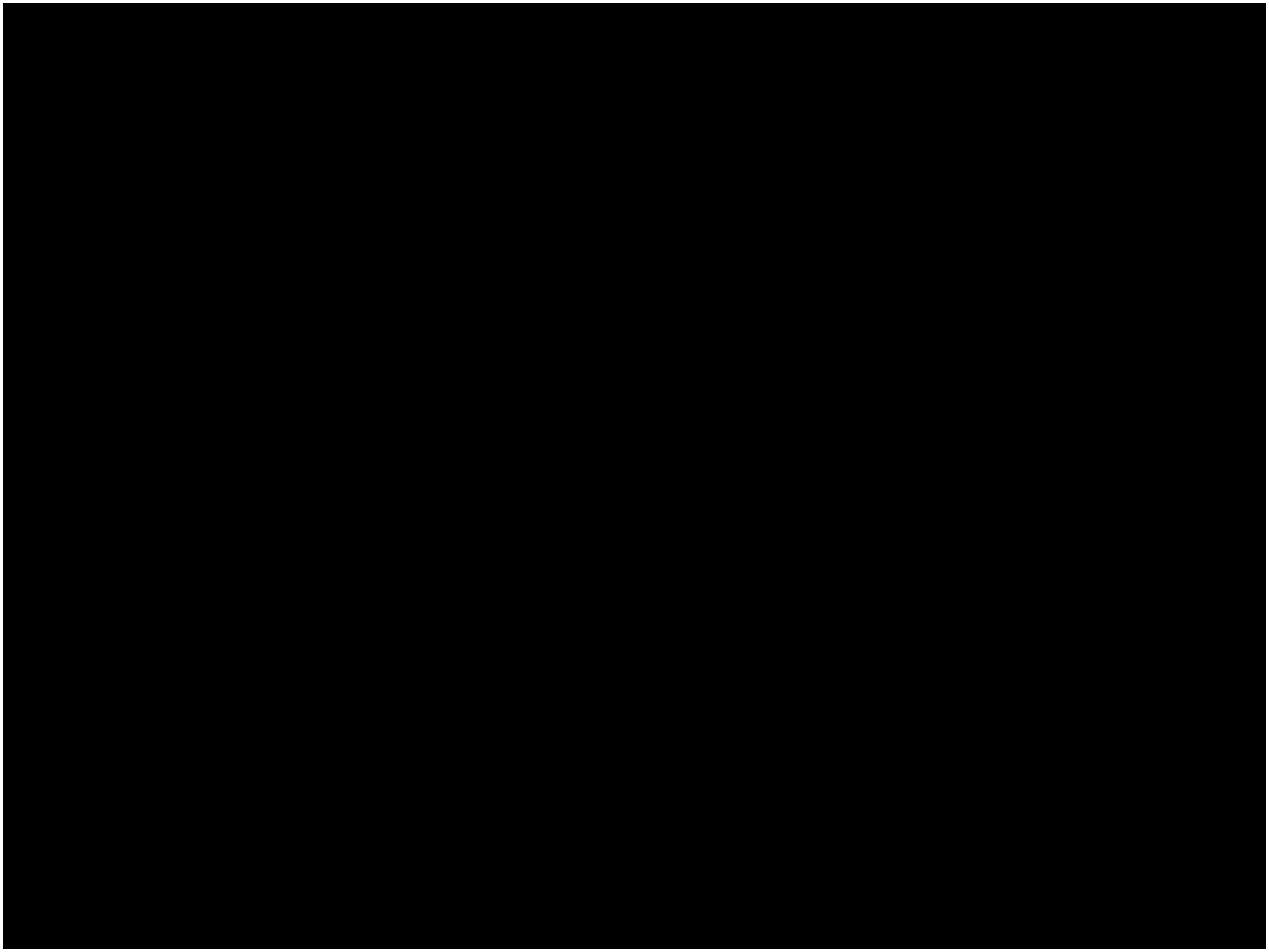


Figure B- 18. Access track AT-174 (BY-111 / BY-113). BY-112-01A and AT-173 not surveyed.

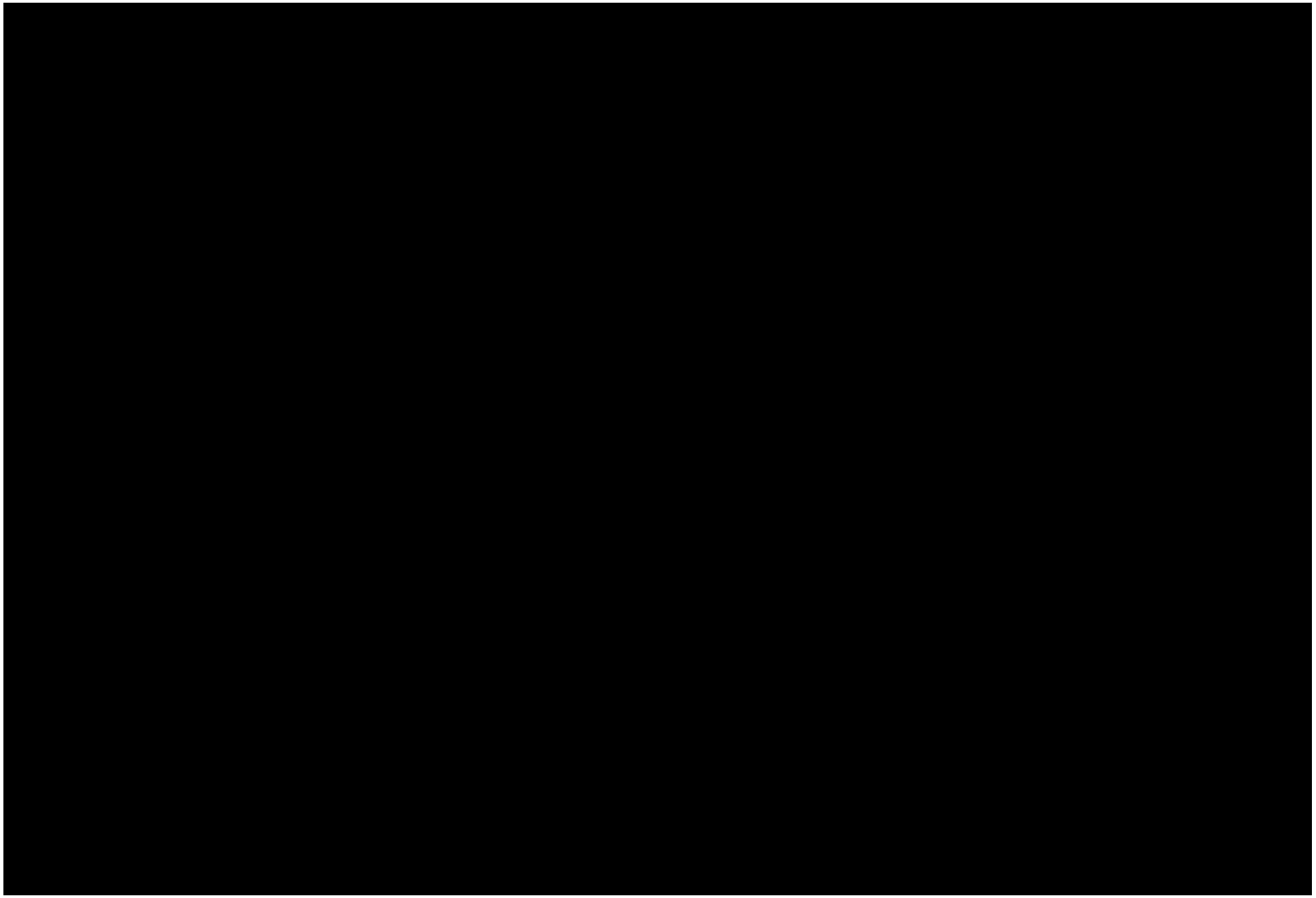


Figure B- 19. BY-108 and BY-109.

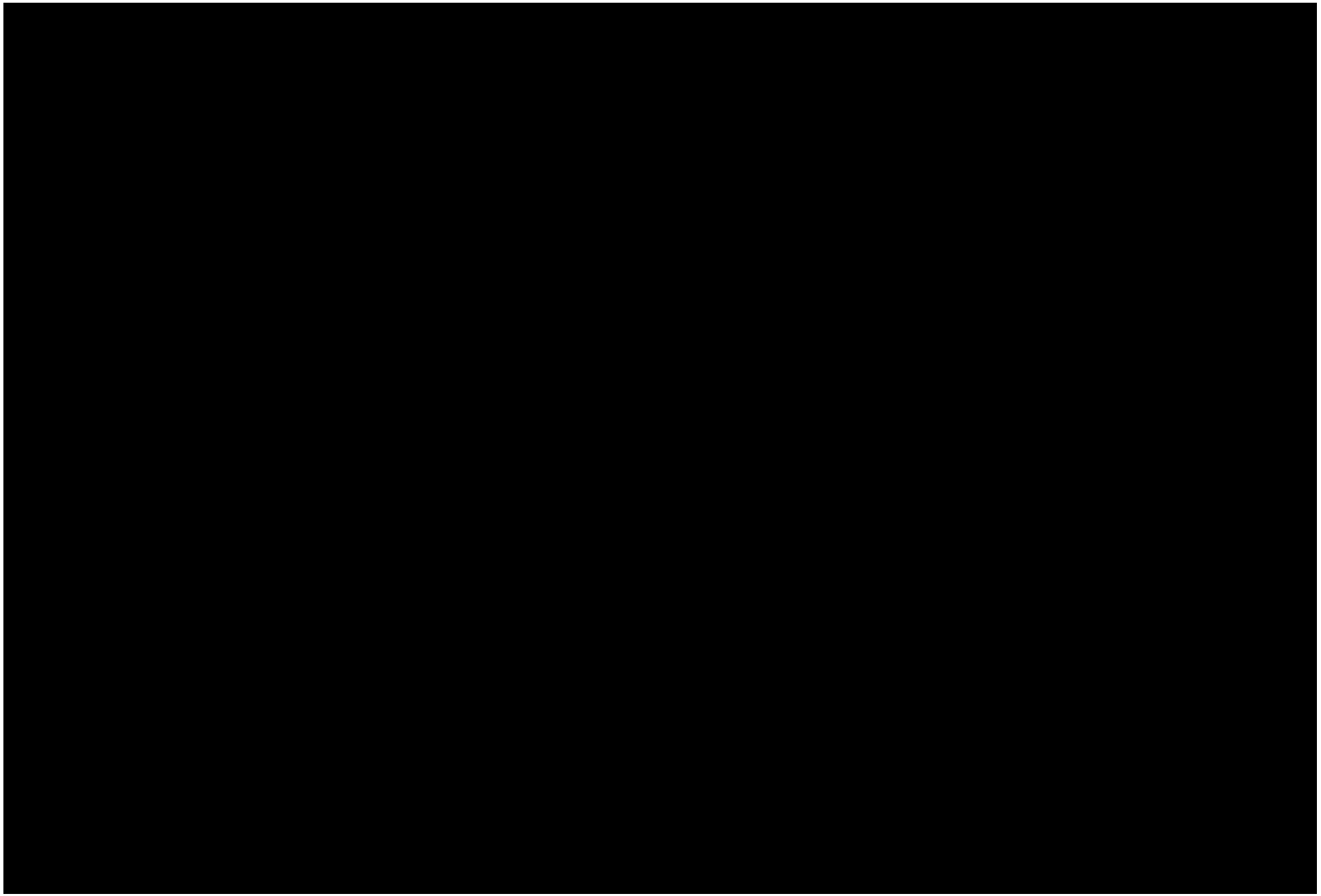


Figure B- 20. BY-107, and access track AT-163.

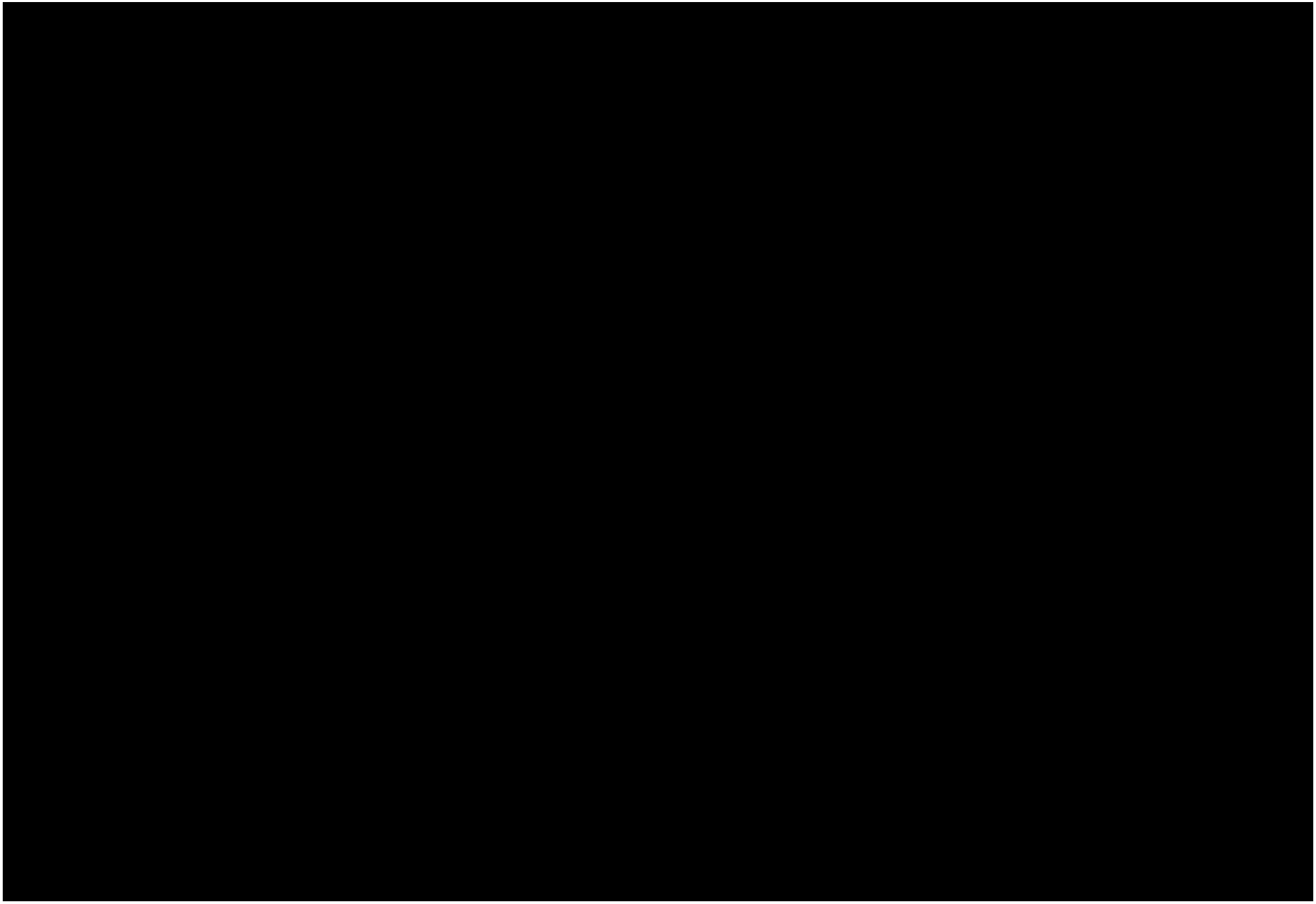


Figure B- 21. BY-097, and access track AT-152 to 152p1.

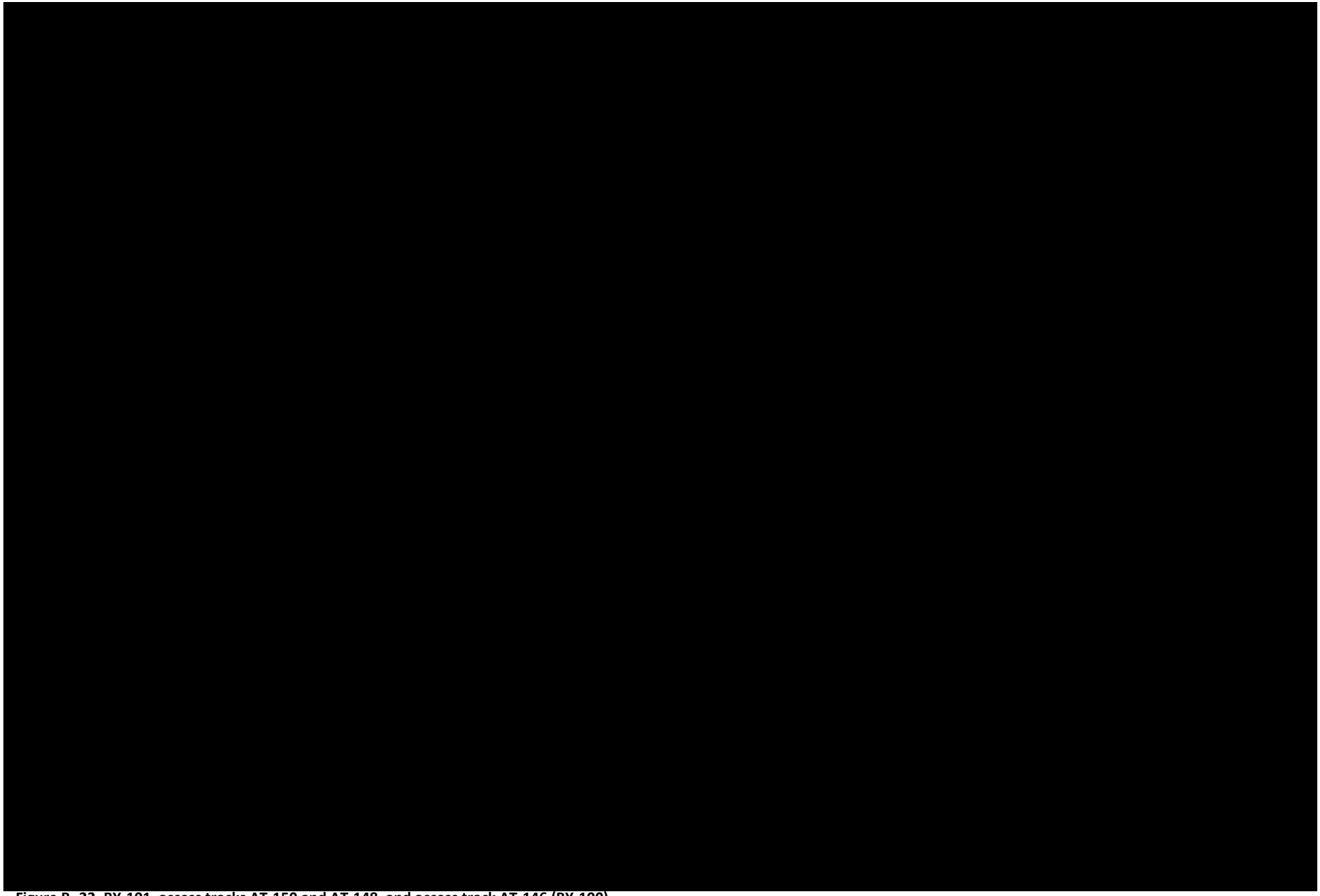


Figure B- 22. BY-101, access tracks AT-150 and AT-148, and access track AT-146 (BY-100).

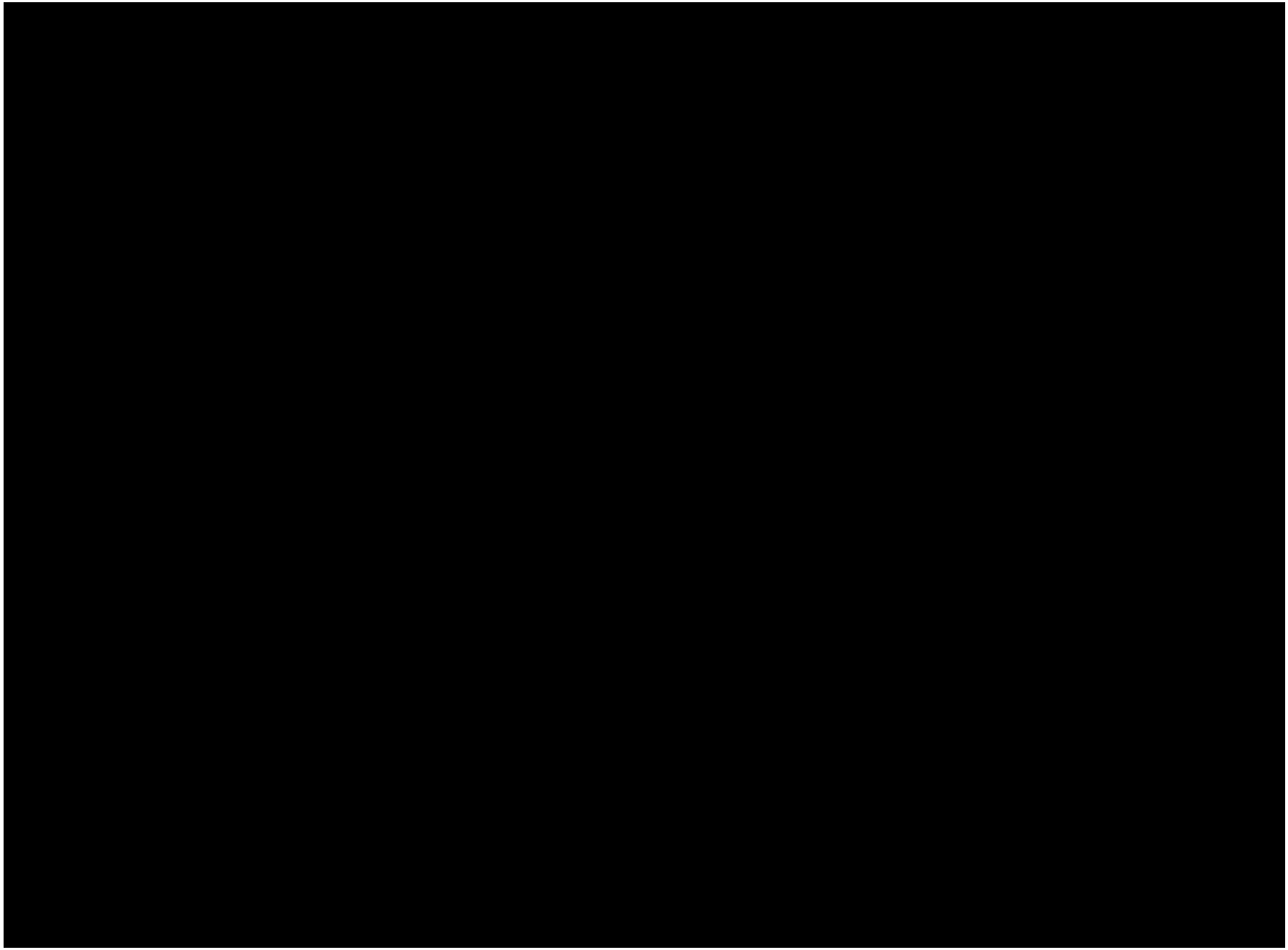


Figure B- 23. BY-090 - not surveyed.

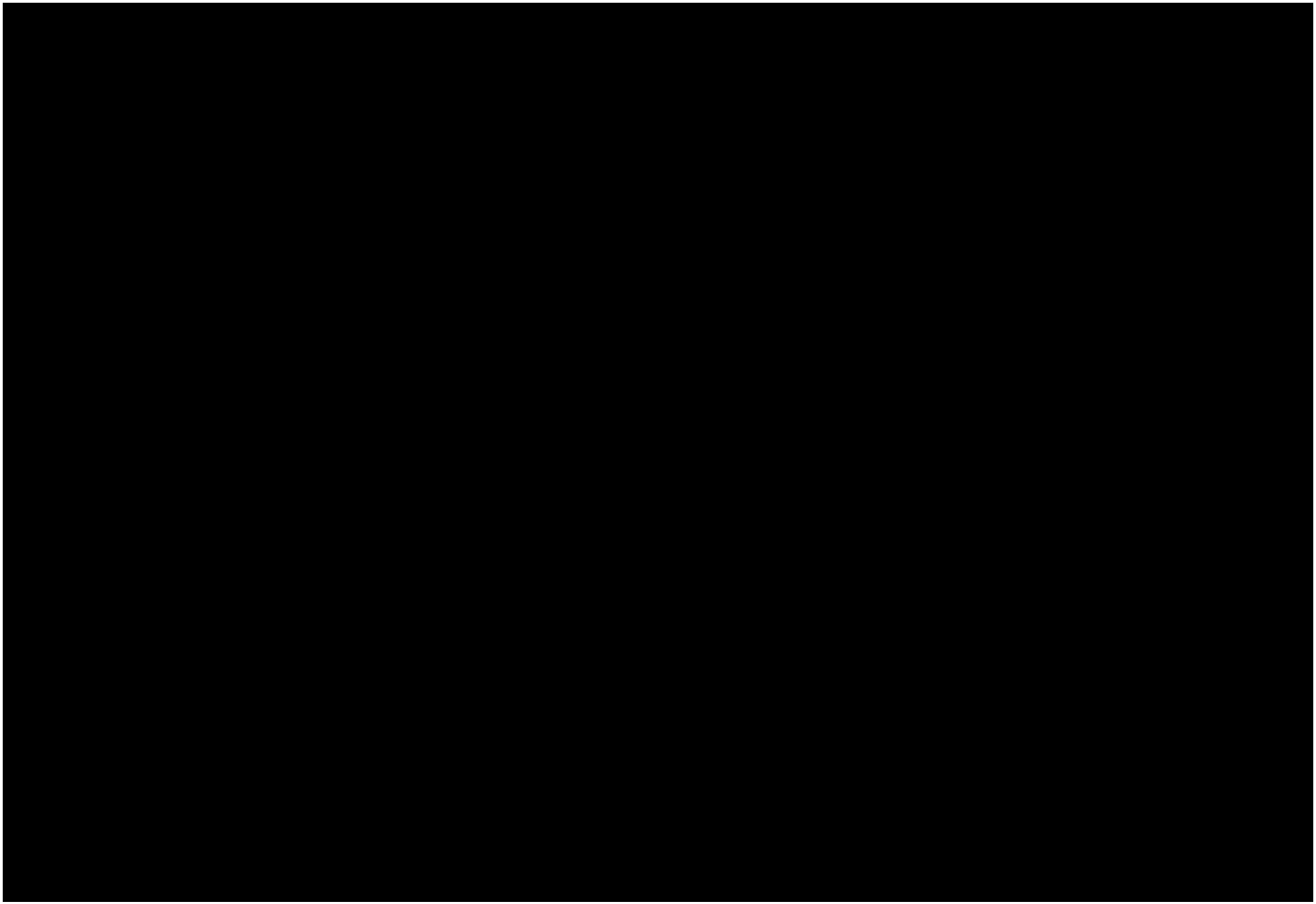


Figure B- 24. BY-074.

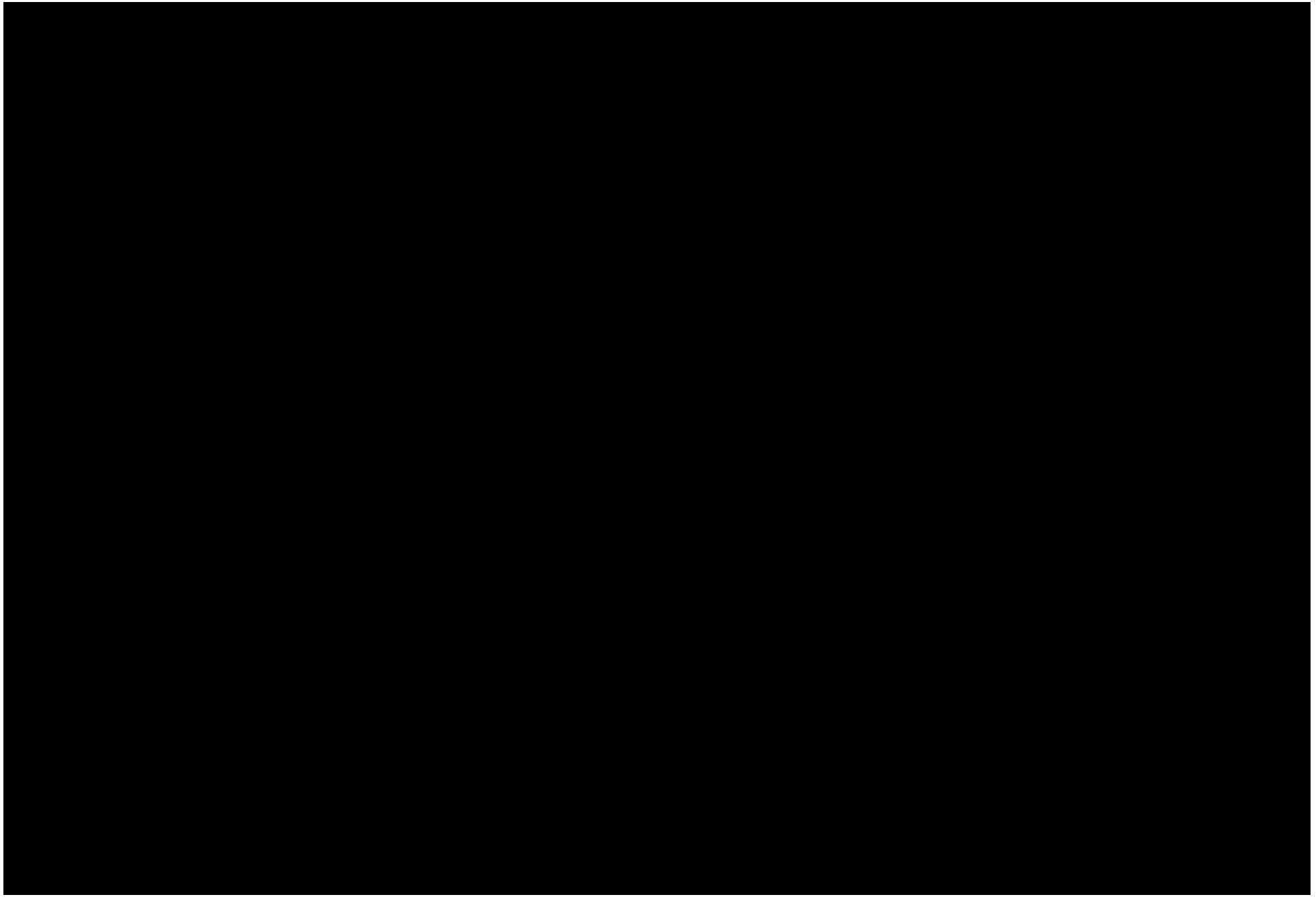


Figure B- 25. BY-072.

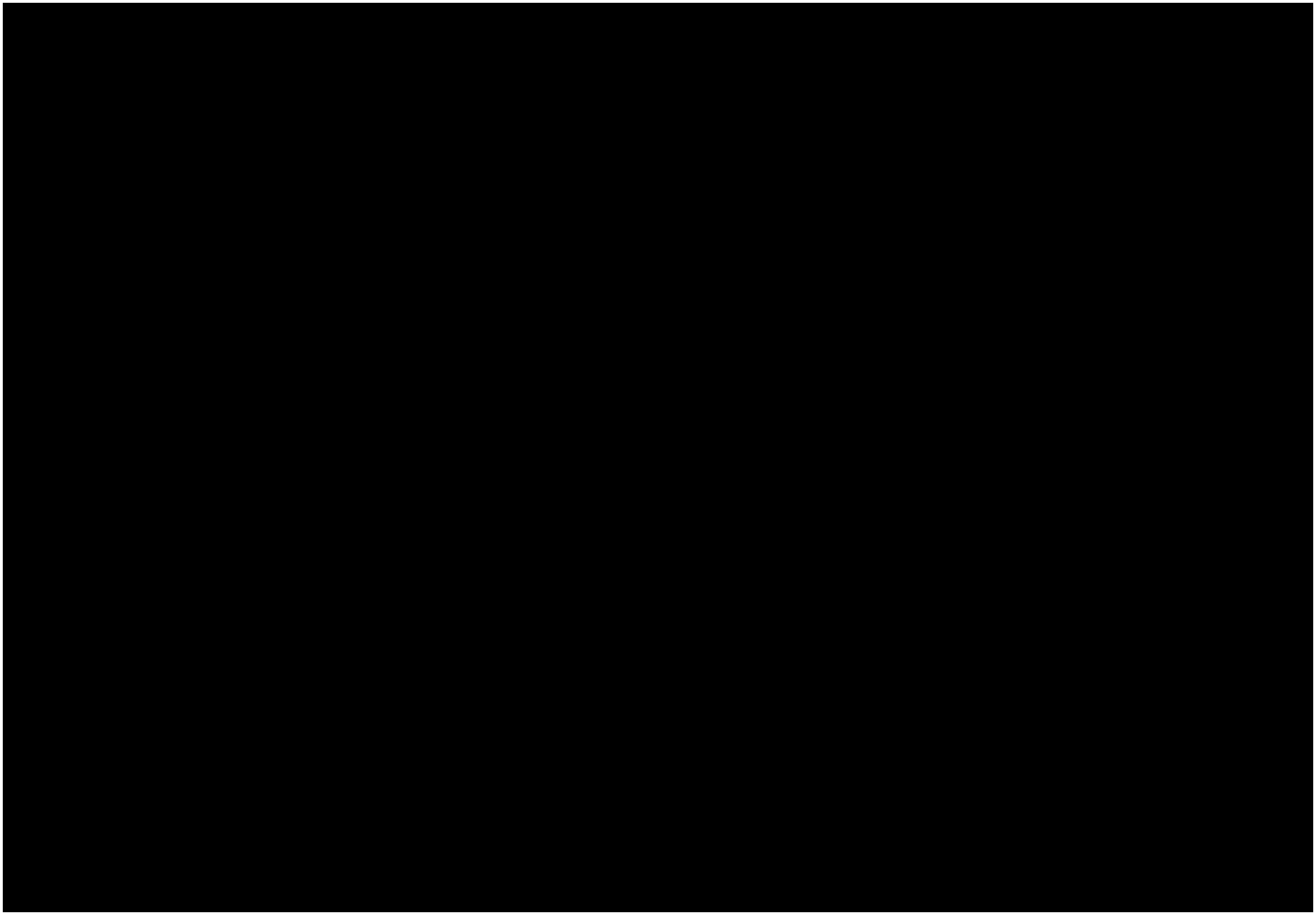


Figure B- 26. BY-070 - not surveyed.

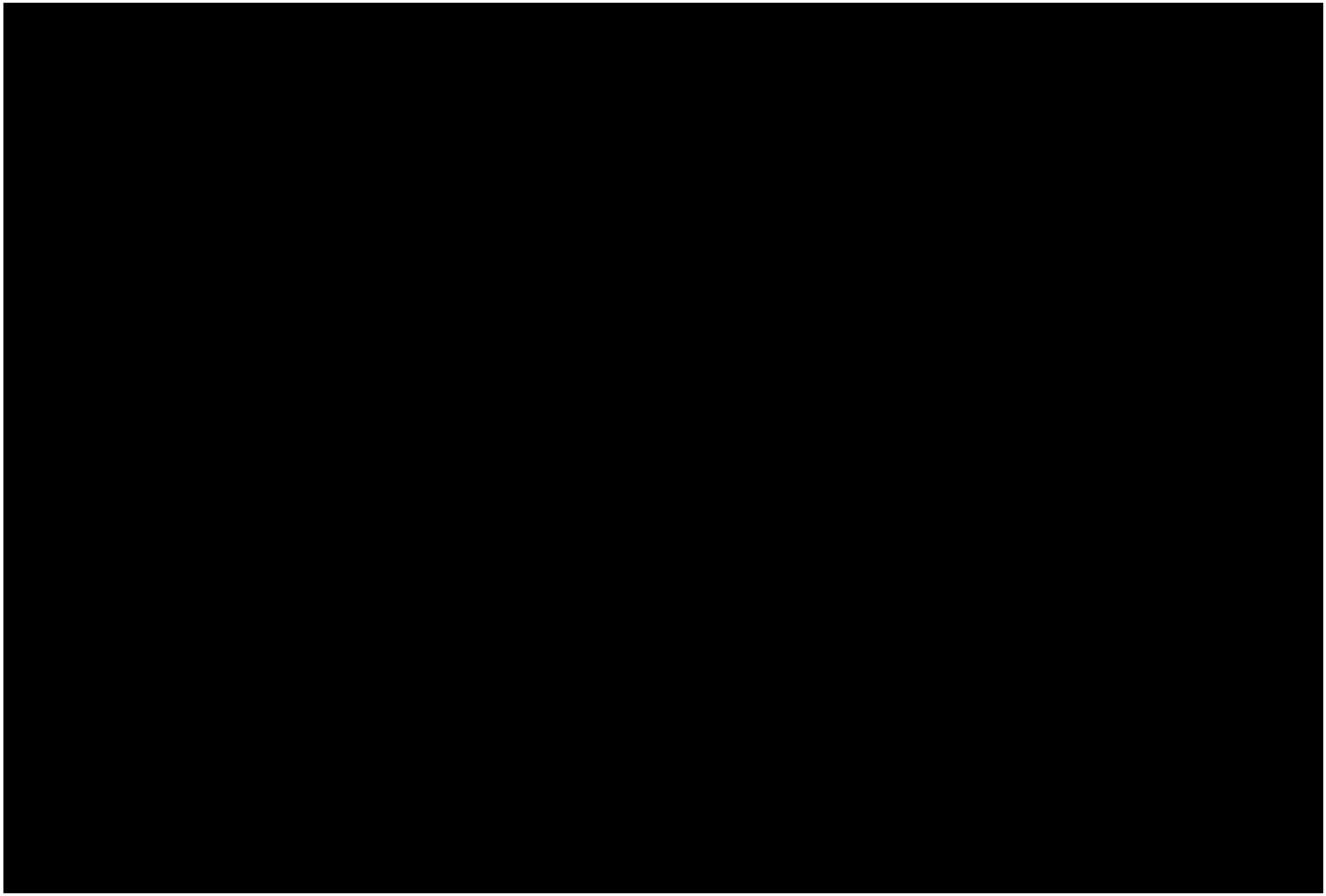


Figure B- 27. BY-046.

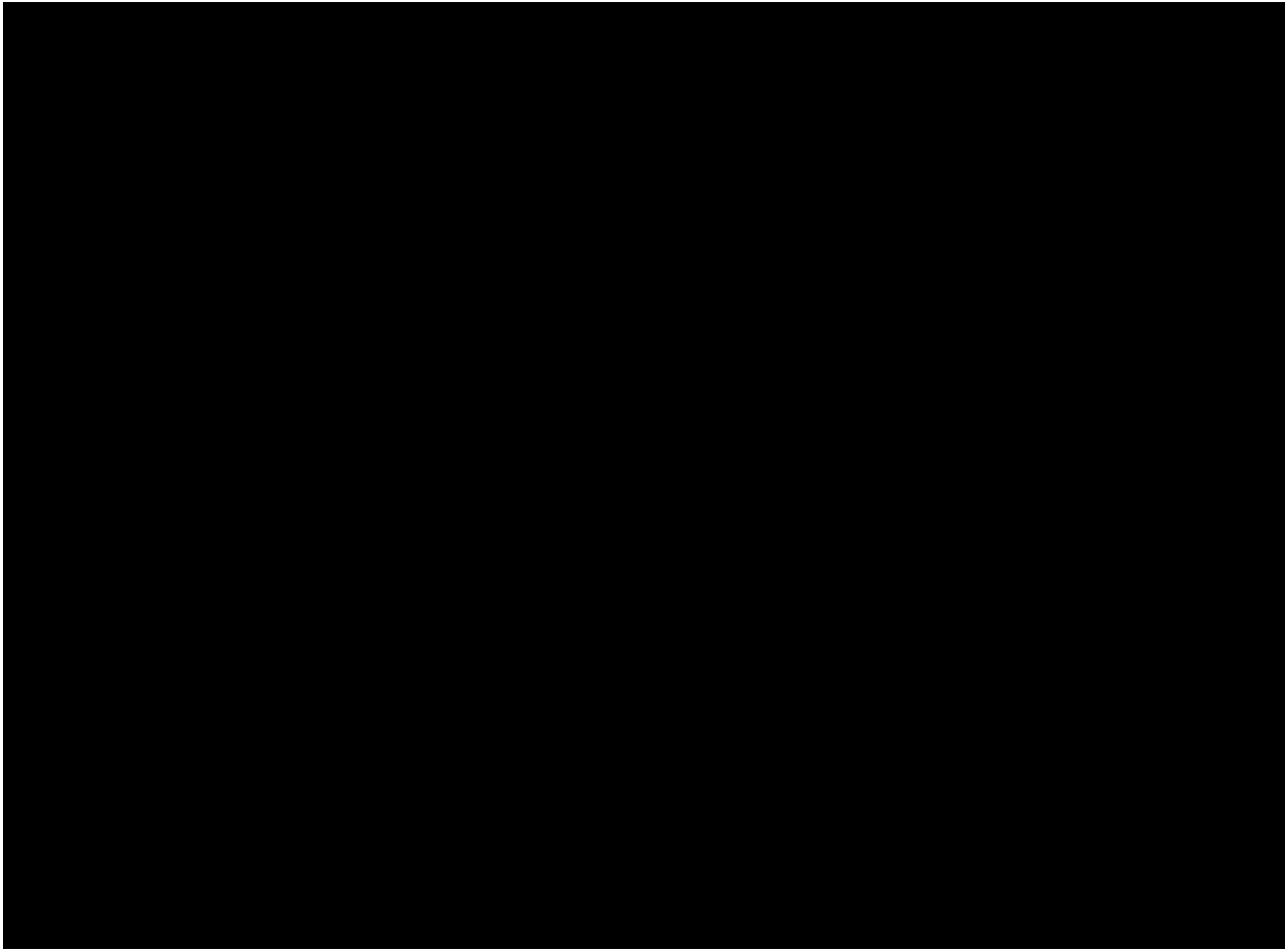


Figure B- 28. BY-006 and unnamed access track. BY-007 not surveyed.

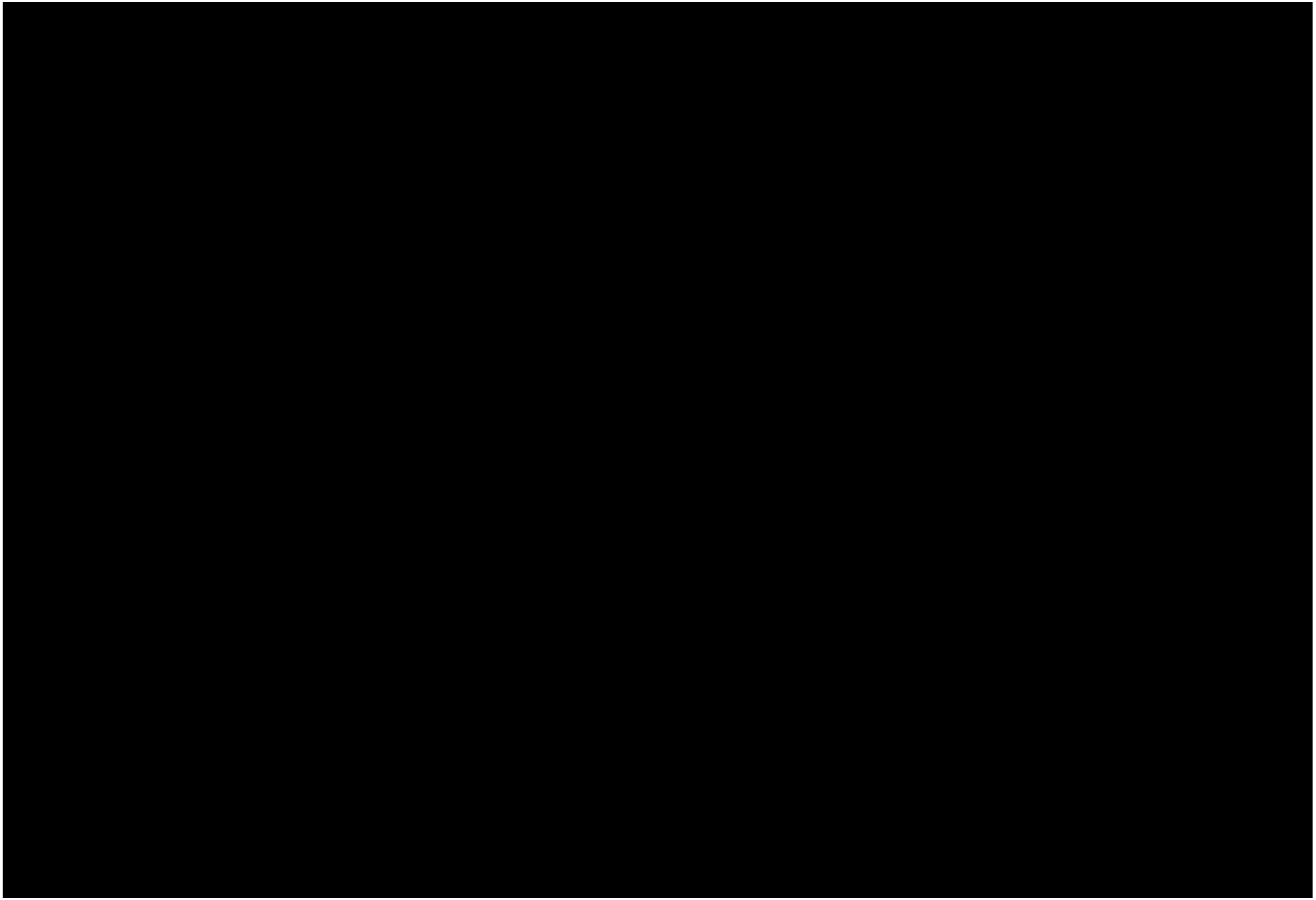


Figure B- 29. BY-003.

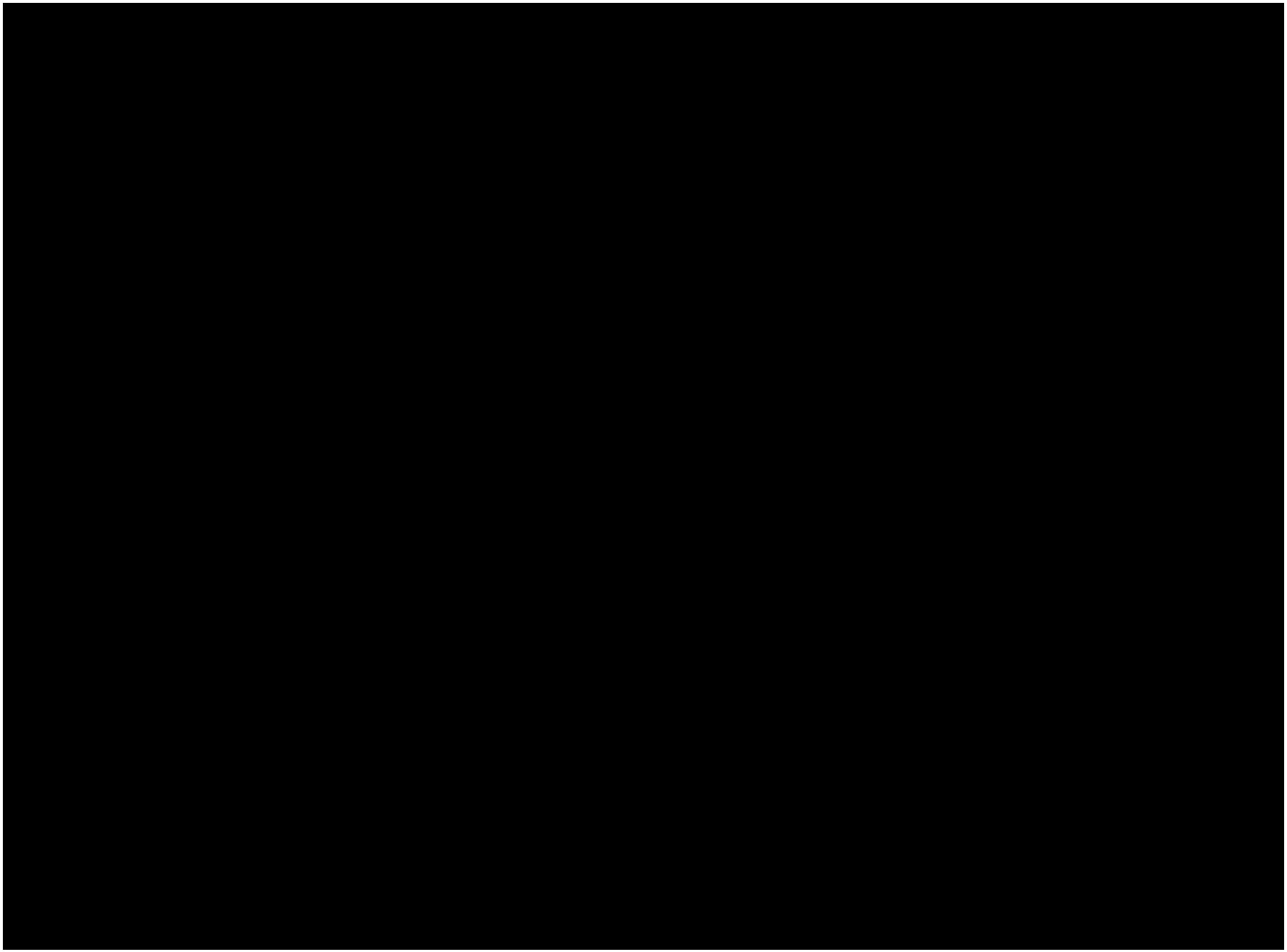


Figure B- 30. AT-449, AT-451, AT-452 (MA-051). AT-451 and AT-450 (MA-054) not surveyed.

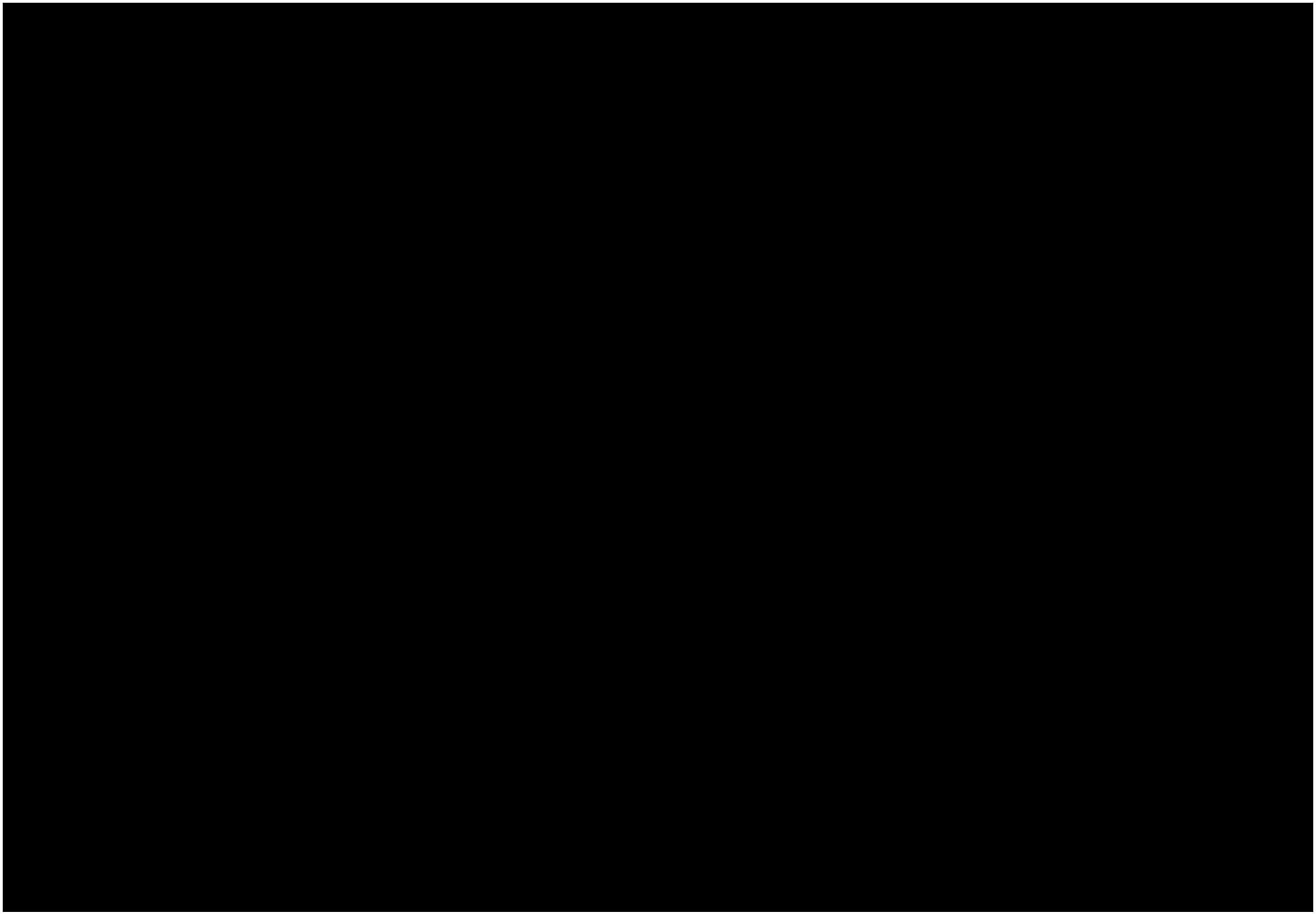


Figure B- 31. Access track AT-443.

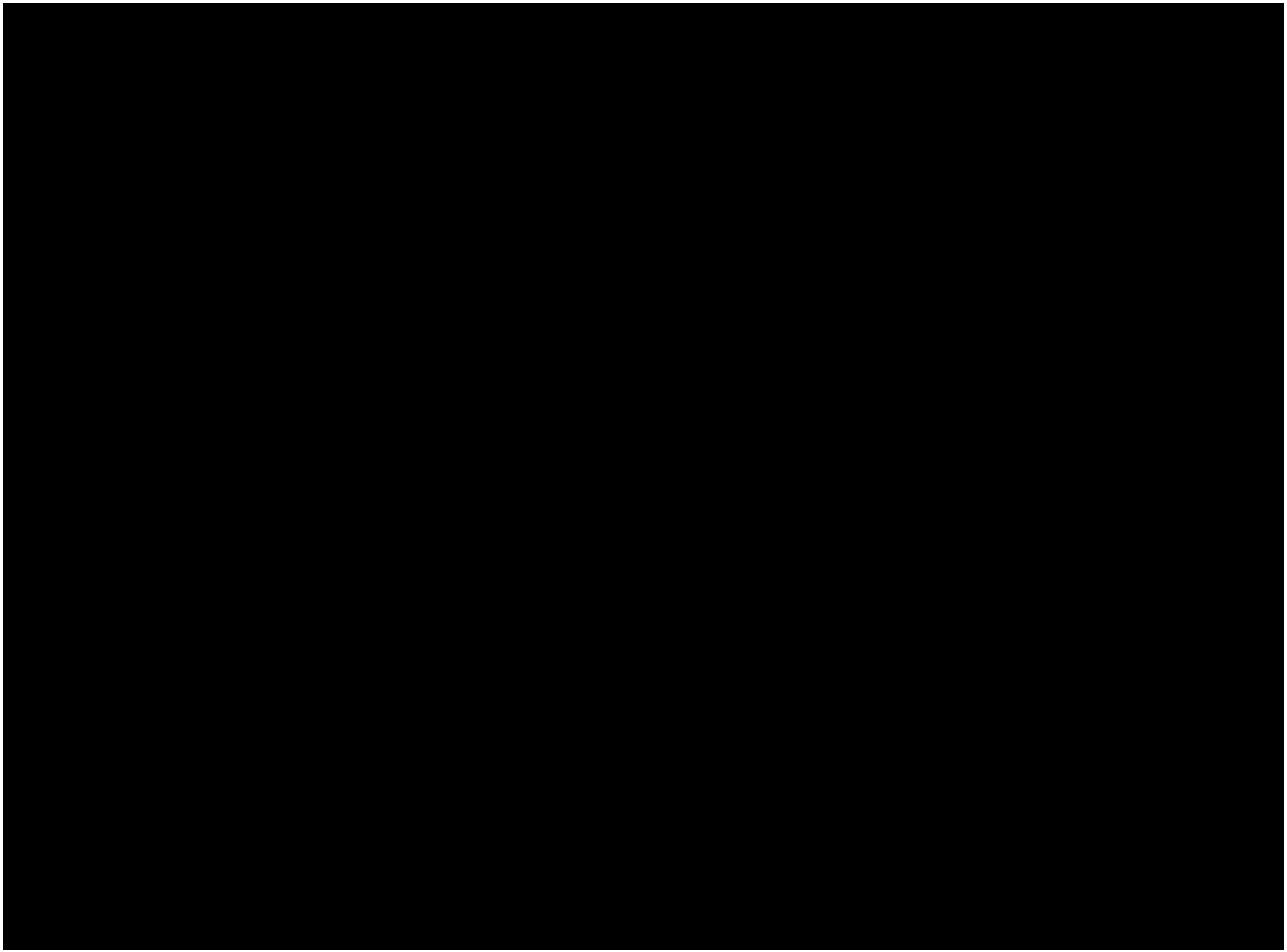


Figure B- 32. Access tracks AT-439, AT-440, AT-441 and AT-442.

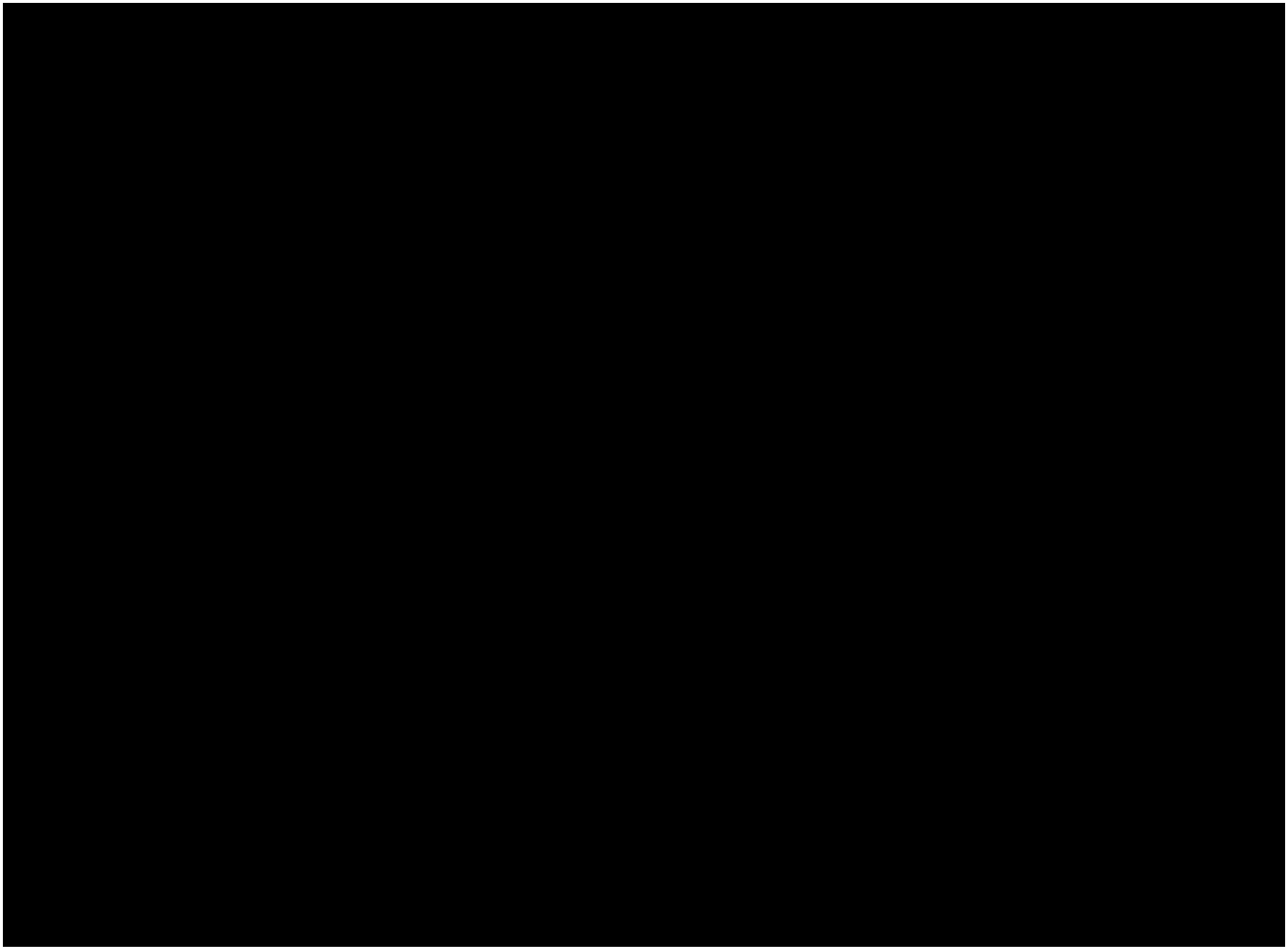


Figure B- 33.Access tracks AT-439, AT-437, unnamed track (MA-059-02). MA-059-01 not surveyed.

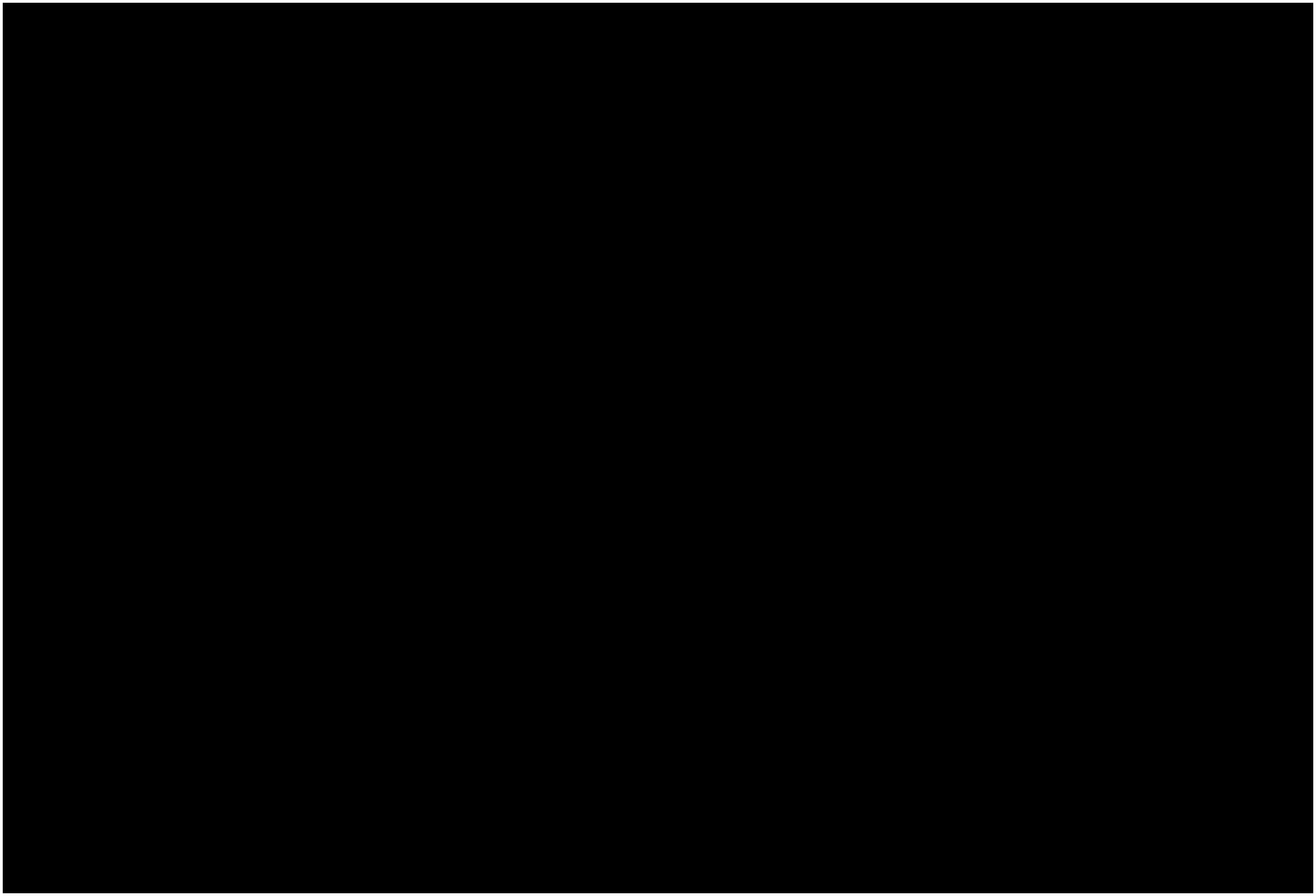


Figure B- 34.Access tracks AT-434 and AT-439.

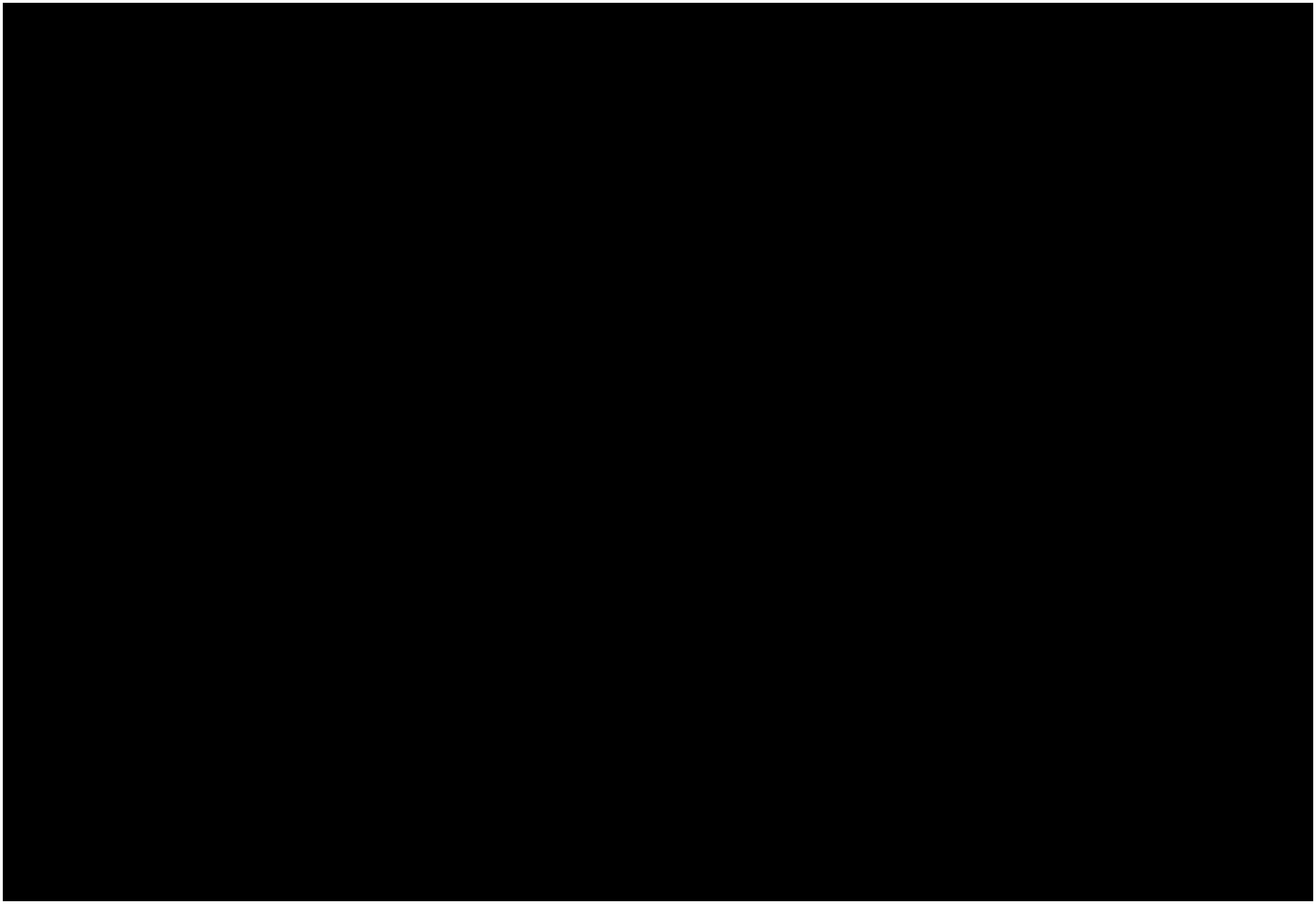


Figure B- 35. Access track AT B W 52.

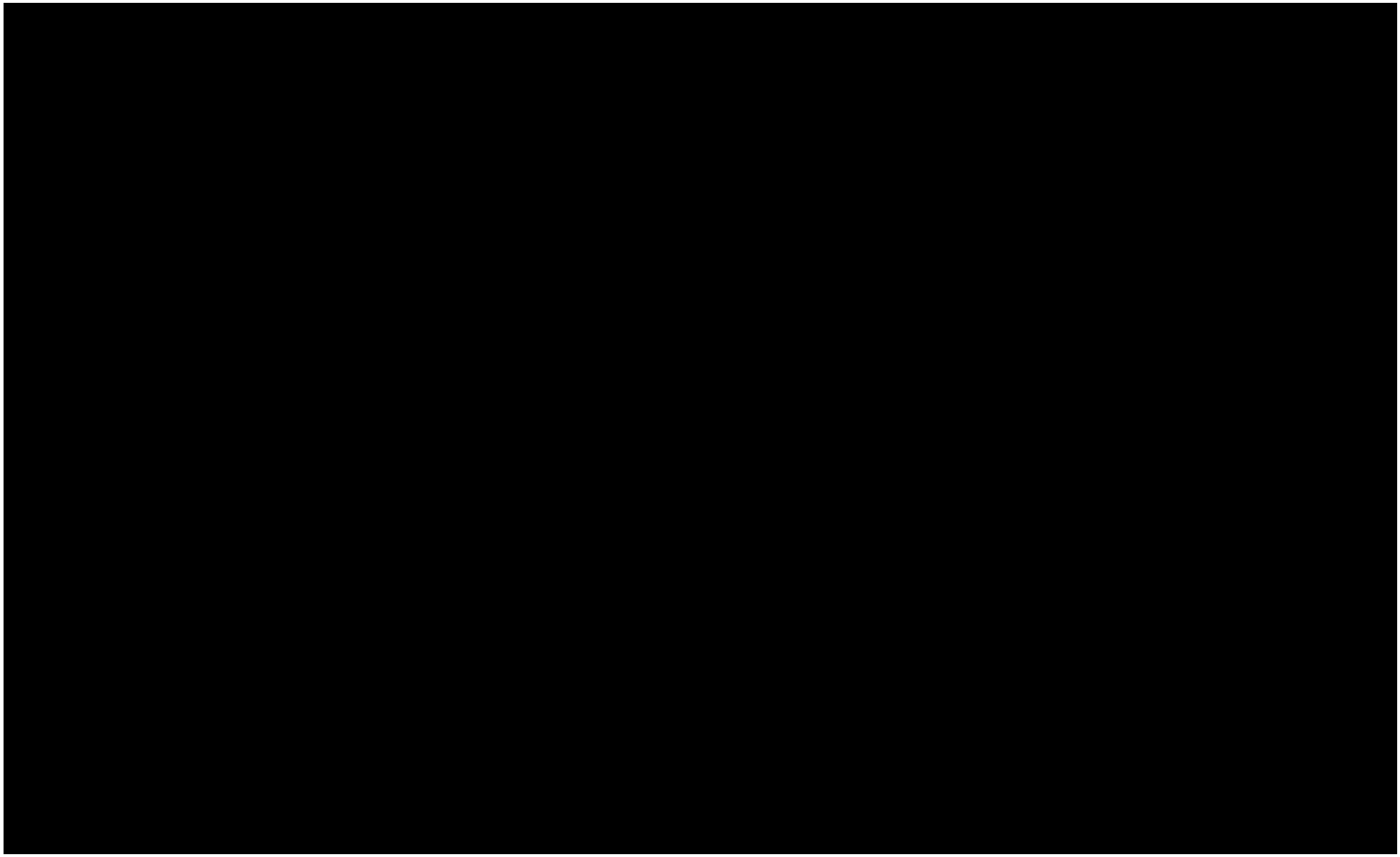


Figure B- 36. Access track AT-290, and unnamed tracks (left image), and AT-288 (right image).

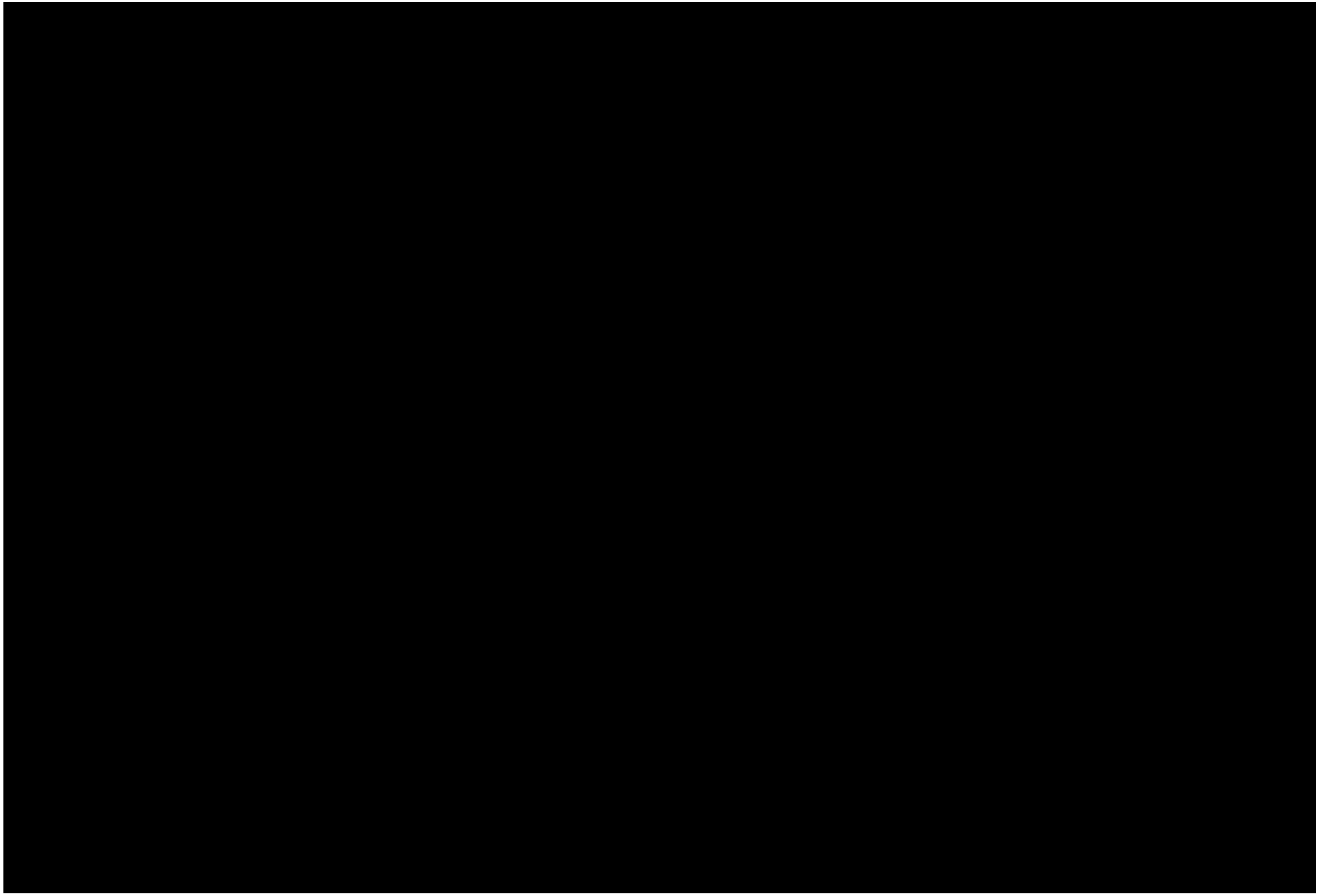


Figure B- 37. Access tracks AT-286 and AT-287.

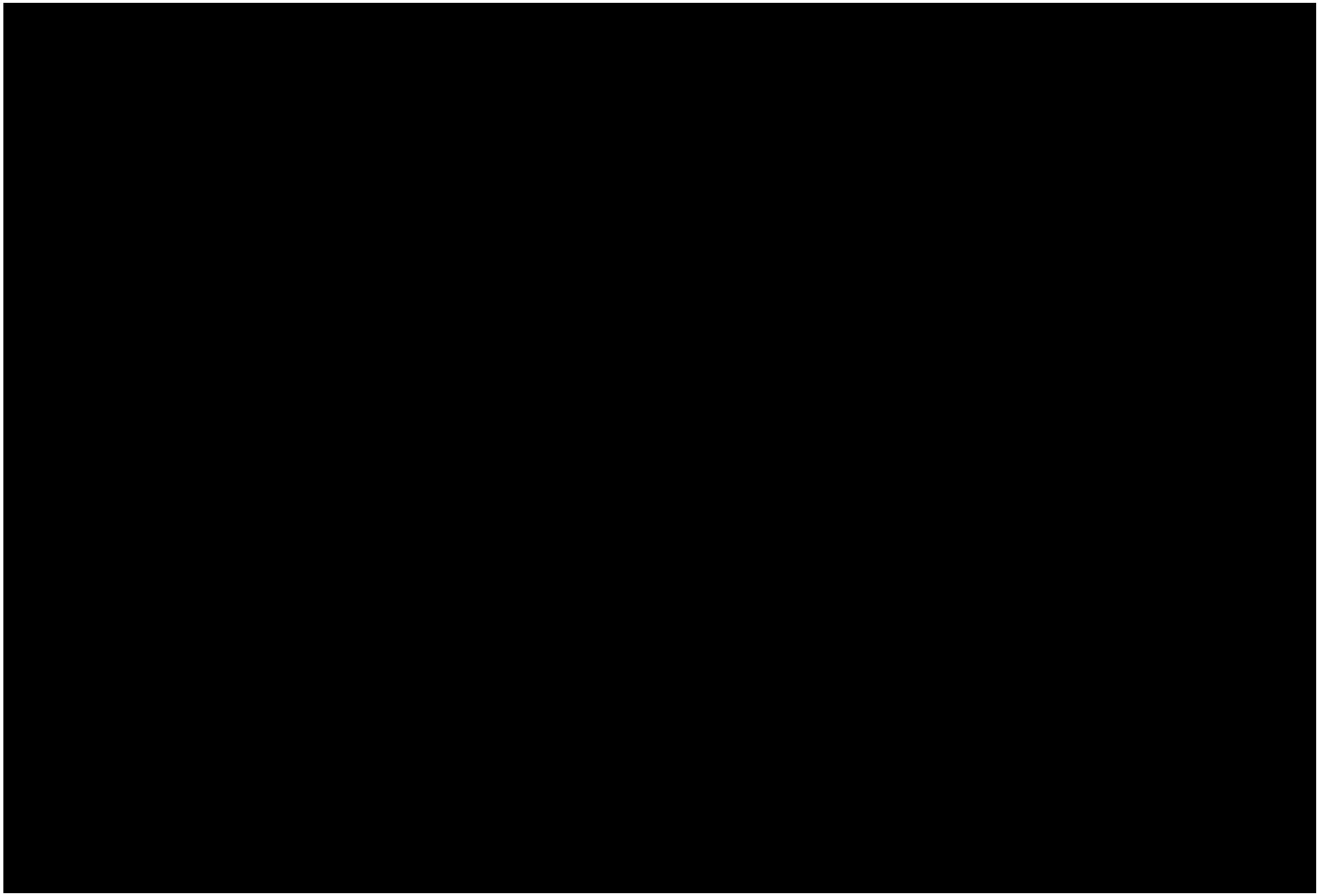


Figure B- 38. Access tracks AT-284 to 286, AT-285, AT-284, AT-283.

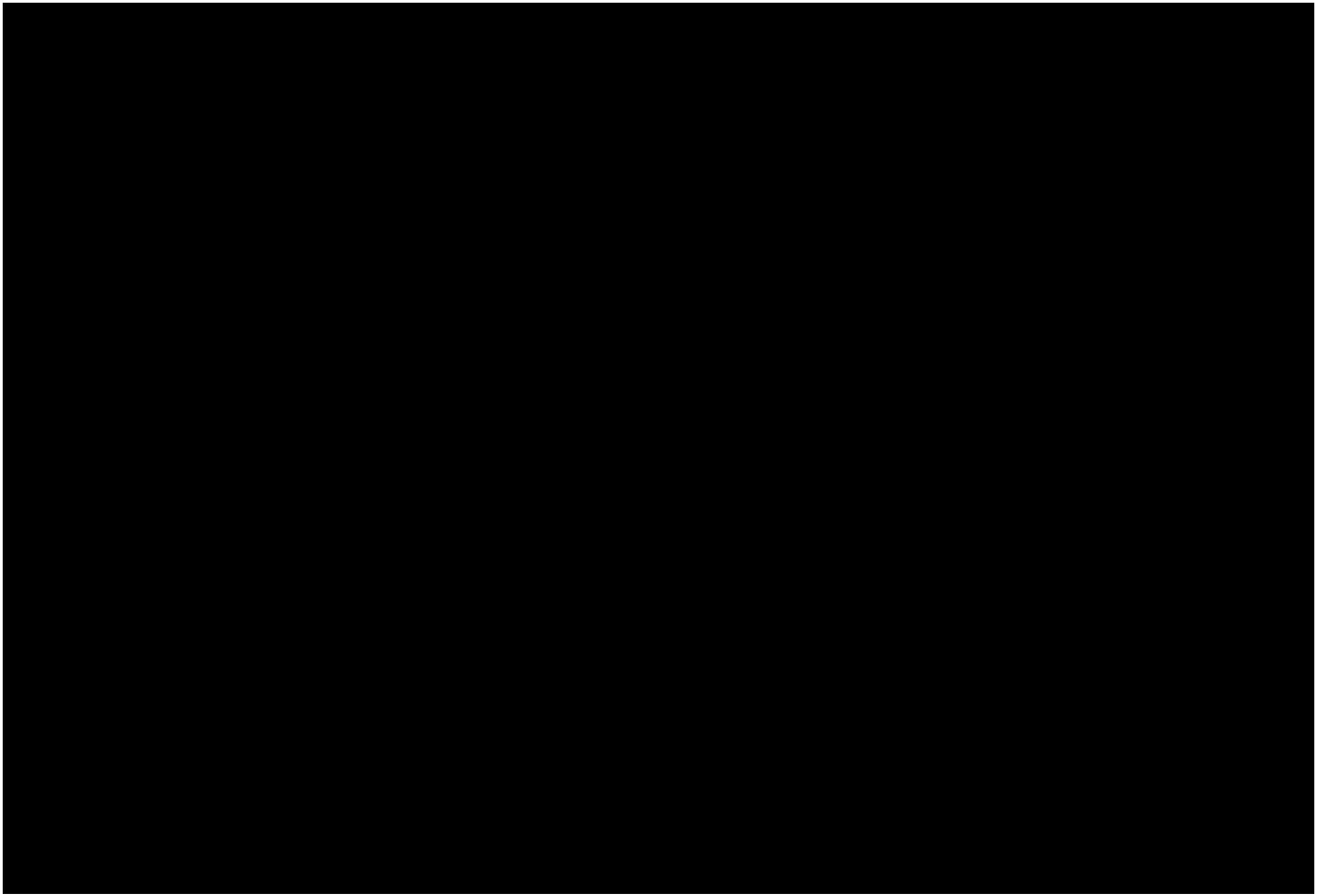


Figure B- 39.Access tracks AT-068 and AT-067 to 068.

Figure B- 40. Access track AT-015.

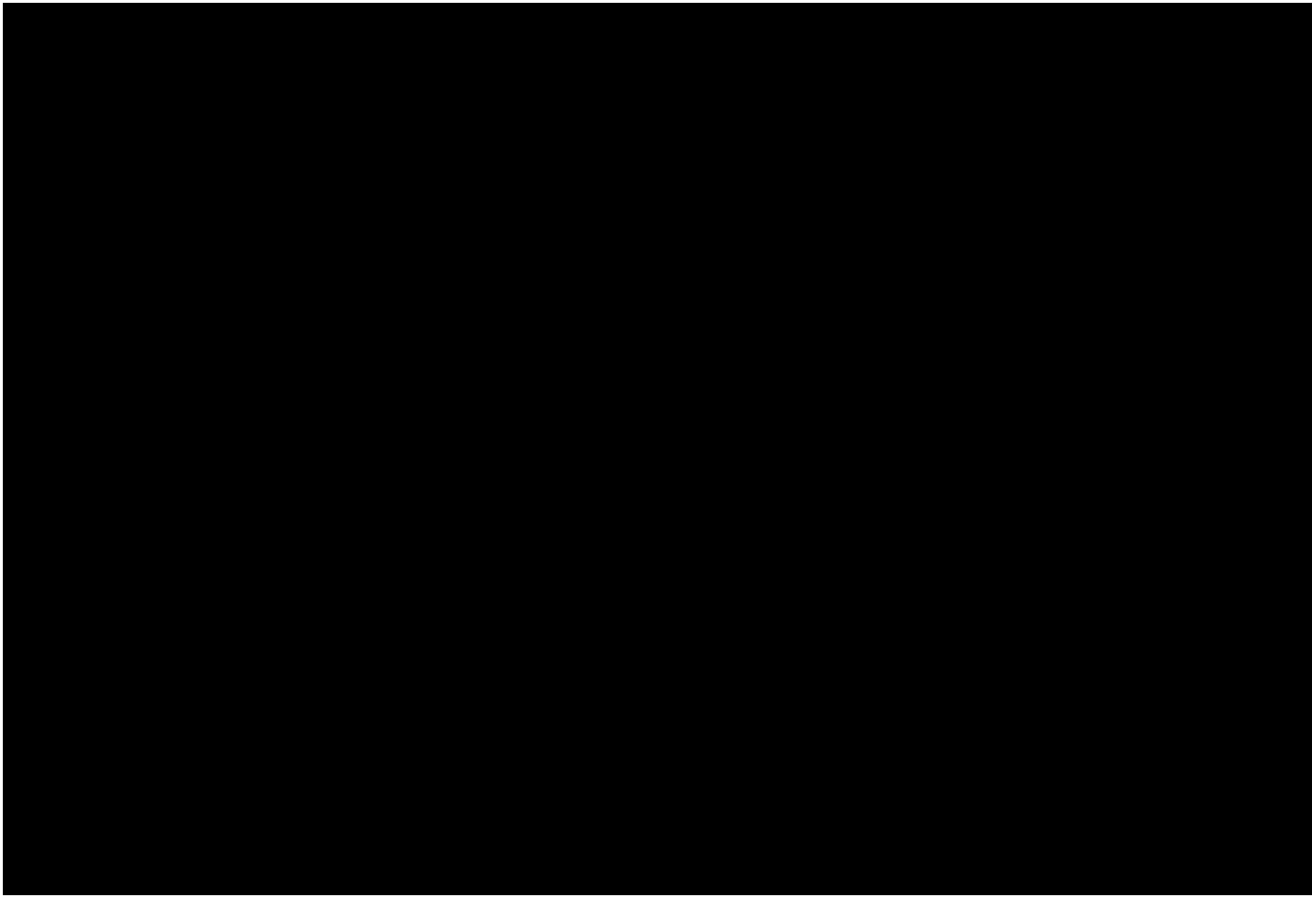


Figure B- 41. Access tracks AT-011 and AT-010.

Appendix C Survey Photographs

Plate C- 1. MA-047 view to south to Windowie Creek tributary

Plate C- 2. MA-047 northern section

Plate C- 3. MA-059-09 view to north from Gocup Road, sloping ground inclined down to the east. Bedrock was seen at the surface here.

Plate C- 4. MA-059-08 view to north east, HLE T PAD 22. Dry former channel in foreground.

Plate C- 5. MA-059-08 view to west. Access track was top dressed and provided no visibility of natural soils.

Plate C- 6. MA-059-08, view to north east of HLE T PAD 8 on elevated ground next to Gocup Creek (to left of trees

Plate C- 7. MA-059-09, HLE T PAD 38 view to southwest

Plate C- 8. MA-059-09 Tumut River floodplain

MA-059-10 view west, steep slopes to Tumut River floodplain

MA-059-10 modified tree 56-3-0337 relocated outside project boundary

MA-059-10 modified tree 56-3-0337 scar 1 view to north west

MA-059-10 modified tree 56-3-0337 scar 2 view to north east

MA-059-13 , view to west AT-423

View to east to Mudjarn Nature Reserve

MA-077 view north east across HLE T PAD 22 to Killimicat Creek gully

MA-077 view to north west

MA-077-01, view to north AT-412

MA-077-01, view to north west to lower slopes of prominent hill, rocky surface

MA-059-13, AT-423. HLE T TRE 1 potential directional/ring tree 1. GPS:612729 6102768.

MA-059-13, view north to MA-059-13A and HLE T PAD 23.

MA-088 view south east

MA-088, HLE T26 artefacts recorded

MA-088, typical rocky exposure on stock track

MA-088, view north west across HLE T26 to Brungle Creek

MA-094 view south along main transmission corridor

MA-094 view north from southern end of survey area along main transmission corridor

MA-094, HLE T27 disturbed findspot, view to west

MA-094, HLE T27 artefacts recorded

MA-094, HLE T28 artefact recorded

MA-094, view north across HLE T28 landform (outside project boundary)

MA-100 view north from southern part of survey area, at Parsons Creek Road

MA-100, AT-353 to 358 view to north towards Cart Road Creek

MA-100, AT-353 to 358 Cart Road Creek crossing

MA-100 view north, main transmission corridor

YG-031 view north east across lower slopes to Oak Creek

YG-031 view west to steep, rocky slopes and crest

BY-156 view to north east to Buggali Road. Geology in the depression is mapped as Quaternary deposit

BY-156 view to north-west. Small rise with bedrock exposure, rabbit burrows, and former paddock raking (typical disturbance)

BY-156 View to north-east. Exposures along northern banks of a first order tributary of Fairy Hole Creek.

BY-156 Steep to moderate slopes on north-west side of rocky hill. Silurian Hawkins Volcanics (Sdh) outcrop at the surface. Patches of sheet erosion showed shallow reddish soils with abundant locally weathered rock fragments.

BY-156 View to east. Access track between tower sites. This transects north facing mid slopes of a hill, a level saddle area, and rocky upper slopes. Sheep trail exposures.

BY-156 View to south-east across low rise. In distance, just outside the project construction corridor, is the confluence of Fairy Hole Creek (left) and a first order tributary (right).

BY-151 view to north east

BY-150 view south towards drainage line and existing transmission

BY-097 view south west, Merrill Creek at left

BY-097, view from BY-101 to west

BY-097 view east to BY-101 beyond fenceline. Existing transmission at right.

BY-07 / BY-101 view to north west

BY-072 view north west

BY-072 view east across heavily ploughed paddock

BY-072 view to south from Range Road

BY-006, Bannaby Creek banks and channel

BY-006 steeper slopes with bedrock outcrop, zero visibility

BY-006 view north east to dam, with gentle rises beyond before Bannaby Creek

BY-006 view to west up steep slopes

BY-003 previously recorded modified tree site HL-65, view to west

BY-003 Facing west, HL-65 is tallest tree situated to the left on the upper slope. Smaller Eucalypt Gums are situated within the lower drainage of Bannaby Creek

BY-003 HL-65 in the background and dam, taken from the upper slopes off the ridgeline, facing west.

BY-003, view north west to crest with previously recorded site Bannaby 1 at existing transmission tower

BY-003 view west of access track to Bannaby 1. Deeply incised creek gully in foreground.

Appendix D Newly recorded site descriptions

Name	HLE T26
Location	MA-088
Landform	Lower slope and gentle rise
Hydrology	Adjacent to Brungle Creek
Site type	Surface artefact site and PAD
Test excavation recommended?	Yes

Site identified on lower slope off knoll to the north east, on Brungle Creek bank, along a narrow, eroded, stock track running south east to north west. Crest of hill located further north east. The site is located 72 metres east from Brungle Creek. One artefact was situated at the base of a rock outcrop. Three artefacts were situated further south east along the stock track at an interval of 16 metres. Site is a cleared livestock paddock with only a lone Eucalyptus gum tree to the south west. The site had good visibility with scattered sedge and low pasture grass.

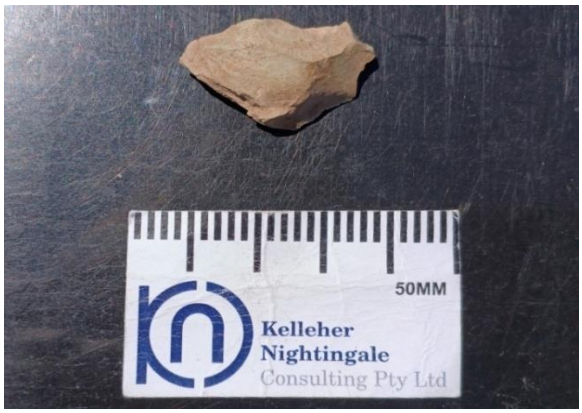
Recorded artefacts included:

- Silcrete Proximal Fragment, 27mm L x 14mm W x 6mm Th, Ridged platform
- FGS Proximal Fragment, 58mm L x 20mm W x 10mm Th, Plain platform.
- FGS Medial Fragment, Retouched Tool, 27mm L x 22m W x 8mm Th, Crenate fractured scarring.
- IMT Distal Fragment, 12mm L x 10mm W x 3mm Th.

Site photos:

HLE T26 view south east

HLE T26 artefacts recorded



HLE T26 detail of retouched tool

Name	HLE T27
Location	MA-094
Landform	Minor spur
Hydrology	Adjacent to Adjungbilly Creek tributary
Site type	Surface artefact site
Test excavation recommended?	No

Site identified on well-formed farm track running roughly east-west along the southern side of Adjungbilly Creek with major cuts, fills and culverts constructed across prominent landforms. Two artefacts were identified upon a 40 x 12m spur cut exposure on the southern side of the track positioned between moderate-sized gullies to the east and west. Deposit was disturbed close to the track and sloping, thin and rocky further north and south along spur.

Recorded artefacts included:

- Chert proximal fragment, grey green 15mm L, plain platform
- Dark grey FGS proximal fragment, 23mm L, plain platform

Site photos:

View west to site location

Artefacts recorded

Name	HLE T28
Location	MA-094
Landform	Minor spur
Hydrology	Adjacent to Adjungbilly Creek
Site type	Surface artefact site
Test excavation recommended?	No

Site identified on well-formed farm track running roughly east-west along the southern side of Adjungbilly Creek with major cuts, fills and culverts constructed across prominent landforms. An FGS flake was identified upon track fill on the northern side of the track between the western-most gully and a broad spur. This artefact was on redeposited material moved downslope during track construction from the spur landform. Site extent likely incorporates far western end on prominent spur, above bend in Adjungbilly Creek and positioned between moderately-sized side gullies to east and west. The southern end of site closer to access track partly impacted by stockyards, farm tracks, quarrying and farms sheds.

Recorded artefact included:

- FGS flake, 549m L x 28mm W x 8 Th, focal platform, 6 dorsal scars, plunging termination

Site photos:

View east from elevated site location

Artefact recorded

Name	HLE Y16
Location	YG-031
Landform	Bench in lower slope
Hydrology	Low order tributary (dammed) to Oak Creek
Site type	Surface artefact site and PAD
Test excavation recommended?	Yes

HLE Y16 comprised a large artefact scatter recorded in disturbed exposures around a dam, on a bench in a lower hillslope above a former (now dammed) tributary to Oak Creek. The site is situated around the lower drainage depression of a former tributary of Oak Creek. The site is 82 metres south of Oak Creek, the closest water source. The exposure along the dam wall to the north of the dam was approximately 52 metres in length and 10 metres wide. Artefacts were also located to the east of the dam wall along an 11 metre wide exposure. The exposure was eroded red-brown clay. The area was cleared of vegetation with only sedge coverage along the dam wall and short pasture grass. Plastic PVC piping and associated disturbance was present.

Artefact raw materials included, pale grey to black cherts, Pale brown IM/Tuff, banded cherts, fine grained siliceous materials and yellow-red silcrete and quartz. Cortex was present on few artefacts at 31-69%. Size ranges were 10-45mm. Artefact types included tools, utilised flakes, distal and proximal flake fragments. Artefacts had predominately hinge and feather terminations and ridged, scarred and plain platforms. Raw material colours ranged from dark grey/black to pale brown and pale pink colours.

Site photos:

View to west of site extent.

View to south. Artefacts were located along this 11 metre wide exposure. Oak creek drainage in the background.

Sample artefacts at HLE Y16

Name	HLE Y17
Location	YG-031
Landform	Crest
Hydrology	Oak Creek
Site type	Surface artefact site and PAD
Test excavation recommended?	Yes

HLE Y17 comprised a surface artefact site recorded on the crest of a hill overlooking Oak Creek creekbank situated on lower bench. Oak Creek is situated approximately 69 metres to the north. A large rock outcrop is situated to the east. The property fence line is situated 12 metres to the west. The artefacts were recorded on a narrow stock track (0.5metres wide).

Recorded artefacts included:

- Good quality grey silcrete proximal fragment, plain platform, two parallel ridges. Utilised flake fragment with a transverse break (20-25mm).
- MGS proximal fragment, cortical platform., cortex 70-99%. Usewear with small edge fractures along the chord and bending fractures along the distal margin.

Site photos:

Artefacts situated at range pole, facing north east towards Childowla Road and the creekbank of Oak Creek

The ventral surface of a proximal flake fragment and the dorsal surface of a MGS containing 70-99% cobble cortex

Name	HLE Y32
Location	BY-156
Landform	Rise on midslope
Hydrology	Fairy Hole Creek
Site type	Surface artefact site and PAD
Test excavation recommended?	Yes

Surface site HLE Y32 was recorded between HLE Y PAD 31 and 32 in a cleared sheep grazing paddock on the eastern side of Wargeila Road. The findspot is on a low rise on gentle mid slopes which run north-east, down to a first order tributary of Fairy Hole Creek. Narrow sheep trails on these slopes exposed pale brown sandy soils, with no other rock inclusions or gravels seen.

The recorded artefact comprised:

- Red-brown fine quartzite or other metamorphic broken cobble, 140mm L x 111mm W x 40 mm, remnant well rounded waterworn margins, two flattish faces, and at least four breaks. Faint percussion marks were seen on one flat face. Possible broken grindstone, pounder, core, or manuport intended for some other use.

Site photos:

Recorded artefact


View to north-east, Fairy Hole Creek in gully at far distant treeline.

Name	HLE G12
Location	BY-074
Landform	Gentle lower slope
Hydrology	Adjacent to Sawpit Creek
Site type	Surface artefact site and PAD
Test excavation recommended?	Yes

Surface artefact scatter HLE G12 was identified across a gentle lower slope landform, bordered to the north by a drainage gully and to the east by the creek proper. Artefacts were identified in a disturbed, eroded drainage cut running perpendicular to Sawpit Creek. Visibility was high on the exposure. Sawpit Creek is located 143 metres to the east.

Recorded artefacts included:

- Red silcrete flake, good quality, 22mm L x 12mm W x 6mm Th, plain platform and feather termination
- Pale brown silcrete flake, good quality, 17mm L x 10mm W x 5mm Th, remnant focal platform and feather termination.

Site photos:

Location of site facing west. Overgrown exposure

Silcrete artefacts recorded at site location

Red-brown exposure where artefacts were located.

Location of site facing south west.

Name	HLE G31
Location	BY-072
Landform	Upper slope
Hydrology	Sawpit Creek and Kialla Creek tributary
Site type	Surface artefact site
Test excavation recommended?	No

Site identified on the upper slopes of a broad ridgeline, between Sawpit Creek and a smaller tributary of Kialla Creek. The smaller tributary of Kialla Creek is located 340 metres north east of the site and Sawpit Creek is located 483 metres to the south. The site location has been completely cultivated and heavily disturbed. The artefact is located on remnant pale red-brown soil. The artefact is located 22 metres south of the property fenceline and the location is entirely cleared with a lone tree to the south of the artefact.

The recorded artefact comprised:

- Milky quartz medial flake fragment, 22mm L x 17mm W x 7mm Th.

Site photos:

Milky quartz artefact


View to south of site location. Existing transmission lines in the background

Name	HLE G30
Location	BY-072
Landform	Mid-slope
Hydrology	Tributary to Kialla Creek
Site type	Surface artefact site
Test excavation recommended?	No

The site was identified adjacent to Range Road located within the property access gateway, on the mid-slope off a crest to the south. The site is located 159 metres east of a tributary of Kialla Creek. The artefact was located four metres to the east of a heavily eroded, four-wheel drive track. The artefact was located on an exposure off the track approximately six metres south of the property fence line. The site had poor to good visibility with large exposures covered with leaf litter, branches and scattered shrubs. Soils presented as being pale brown to red brown. Larger exposures reveal outcrop and a lack of intact soil along the track.

The recorded artefact comprised:

- Milky quartz proximal fragment, 36mm L x 30mm W x 10mm Th, ridged platform.

Site photos:

Northern view facing Range Road.

Milky Quartz artefact.

Name	HLE T TRE 1
Location	AT-423 (MA-059-13)
Landform	Crest
Hydrology	First order drainage, Killimicat Creek c. 1km to east
Site type	Potential modified tree
Test excavation recommended?	No

A potential modified tree was recorded on a ridge crest, part of the steep, elevated ridgeline complex between the Tumut River to the west and Killimicat Creek to the east. The area is mostly cleared with remnant large eucalypts. The tree had a distinctive branch formation recorded as a directional/ring tree. No bark removal or other cultural modification was evident. The landform offers views east to Mudjarn Nature Reserve which has been identified as a very important cultural place, including the landscape around it. The tree is close to the southern margin of the existing farm access track and approximately 10 metres from the current disturbance footprint.

Site photos:

Directional/ring tree HLE T TRE 1, view to west

View west from slopes below crest, HLE T TRE 1 marked

Name	HLE Y21
Location	AT-290 (YG-024)
Landform	Crest
Hydrology	Bogolong Creek tributary
Site type	Surface artefact site
Test excavation recommended?	No

HLE Y21 comprised a small artefact scatter identified around a fence and gate, on a broad crest landform. The site is located 77 metres east of a tributary of Bogolong Creek and was identified in a severely eroded exposure between 5-8 metres wide and 20 metres long, offering excellent visibility. There is abundant rock outcrop towards the north of the site location. The area has been significantly impacted by sheet erosion.

Recorded artefacts included:

- White chert flake, 10-15mm in size, intact finial termination and focal platform, good quality
- Pale brown silcrete medial fragment, 10-15mm in size
- IMT flake, plain platform, feather termination, 31-69% cobble cortex, 20-25mm in size.

Site photos:

View to the east of site location and exposure.

View to the west of the site with artefacts located at the scale.

Recorded artefacts

Exposure offering excellent visibility

Name	HLE Y29
Location	AT-287 (YG-020)
Landform	Creekbank
Hydrology	Burnt Hut Creek headwaters
Site type	Surface artefact site and PAD
Test excavation recommended?	Yes

HLE Y29 was identified in an exposure along the dam wall of a modified tributary of Burnt Hut Creek. The findspot is highly disturbed and the artefact is not considered to be in situ but likely derived from the immediate area. The surrounding area is flat and relatively cleared. The paddock is currently used for livestock grazing. Surrounding gentle slopes to the east, west and south appeared intact and were assessed as having moderate archaeological potential.

The recorded artefact comprised:

- Pink silcrete angular fragment, good quality material, 15-20mm in size. No other diagnostic features.

Site photos:

Silcrete artefact in situ.

A north-eastern view of the site location.

A south western view from the site location.

Artefact findspot, facing west

Name	HLE Y30
Location	AT-286 (YG-020)
Landform	Mid-slope
Hydrology	Burnt Hut Creek tributary
Site type	Surface artefact site and PAD
Test excavation recommended?	Yes

HLE Y30 was identified in a disturbed exposure on the mid-slopes overlooking a tributary of Burnet Hut Creek. Lower slopes towards the creekbank were boggy with water on the surface. The site is approximately 74 metres south of the tributary. The artefact was situated on pale-brown sandy loam, in an area of disturbance from a bulldozer being previously bogged at this location. The artefact was found on the surface near deep tyre ruts, within an intact soil deposit. The site had good visibility at the findspot and was cleared of vegetation and trees. The site landform was assessed as having moderate potential for further subsurface deposit.

The recorded artefact comprised:

- Fine-grained pale grey silcrete core tool, step scars along one margin and negative flake removal scars on dorsal and ventral surfaces. 31-69% smooth cobble cortex, 15-20mm in size. Likely used as pounding or chopping tool (not bifacially flaked).

Site photos:

Core tool within exposure of pale brown soil. GPS used for scale.

Site location facing north

Artefact location. Tyre tracks from bogged excavator reveal an intact soil deposit. Photograph facing north west.

Facing north east. The site location to the right of the photograph. The creekbank in the far background

Appendix E Test Excavation Lithic Database

Site name	ID	Easting	Northing	Square	Spit	Depth (cm)	Material	Heat Affected?	Reduction Type	Tool/Core Type	Backed / Retouched Type	Usewear	Cortex %	Cortex Type	Weight (g)	Size Range mm	Termination	Platform	L mm	W mm	Th mm	Flake Shape	Cores # scars	Core body	Comments
HLE T PAD 8	1	304	201	TS 99	3 (5cm)	10-15	Quartz	No	Distal Fragment			None Observed	0%		0.17	5-10	Feather								
HLE T PAD 24	2	176	907	TS 122	3 (5cm)	10-15	Quartz	No	Medial Fragment			None Observed	0%		0.05	5-10									
HLE T PAD 24	3	176	907	TS 122	3 (5cm)	10-15	Quartz	No	Medial Fragment			None Observed	0%		1.19	20-25			10.42	20.46	5.33				
HLE T PAD 24	4	176	907	TS 122	3 (5cm)	10-15	Quartz	No	Proximal Fragment			None Observed	1-30%	Rough Granular	0.15	10-15		Cortical	10.51	7.32	1.95				
HLE T PAD 24	5	176	907	TS 122	3 (5cm)	10-15	Quartz	No	Proximal Fragment			None Observed	0%		0.13	5-10		Cortical							
HLE T PAD 24	6	176	907	TS 122	3 (5cm)	10-15	Quartz	No	Distal Fragment			None Observed	0%		0.04	5-10	Feather								
HLE T PAD 24	7	176	907	TS 122	3 (5cm)	10-15	MGS	No	Flake			None Observed	0%		1.63	20-25	Feather	Scarred	16.88	21.74	4.39	W>L			
HLE T PAD 24	8	176	907	TS 122	4 (5cm)	15-20	Quartz	No	Core	Multidirectional		None Observed	1-30%	Rough Granular	28.00	50-55			52.63	31.10	20.63		3	Flake Fragment	
HLE T PAD 24	9	176	907	TS 122	5 (5cm)	20-25	IMT	No	Distal Fragment			None Observed	0%		0.06	5-10	Feather								
HLE T PAD 24	10	156	907	TS 124	1	0-10	Quartzite	No	Proximal Fragment			None Observed	1-30%	Rough Granular	0.36	10-15		Focal	11.29	12.36	2.48				
HLE T PAD 24	11	156	907	TS 124	1	0-10	IMT	No	Medial Fragment			None Observed	0%		1.68	15-20			14.90	17.45	6.40				
HLE T PAD 24	12	156	907	TS 124	1	0-10	Quartz	No	Distal Fragment			None Observed	0%		12.06	40-45	Axial		21.70	43.90	11.32				
HLE T PAD 24	13	156	907	TS 124	1	0-10	Quartz	No	Flake			None Observed	0%		0.38	10-15	Crushed	Plain	11.33	7.65	3.57	L>W			
HLE T PAD 24	14	156	907	TS 124	2	10-20	FGS	No	Angular Fragment			None Observed	0%		0.43	15-20									
HLE T PAD 24	15	156	907	TS 124	3	20-30	FGS	No	Proximal Fragment			None Observed	0%		0.06	5-10		Plain							
HLE T PAD 24	16	156	907	TS 124	3	20-30	IMT	No	Flake			Light Usewear	0%		0.51	15-20	Feather	Plain	16.86	11.42	2.75	L>W			Edge damage usewear on distal and left lateral
HLE T PAD 24	17	250	884	TS 126	1	0-10	IMT	No	Split Flake			None Observed	0%		0.18	10-15	Feather	Plain	10.33	7.56	2.32				Right
HLE T PAD 24	18	150	098	TS 128	2	10-20	Quartz	No	Medial Fragment			None Observed	0%		0.01	5-10									Semi transparent
HLE T PAD 24	19	150	098	TS 128	2	10-20	Quartz	No	Flake			Light Usewear	0%		0.51	15-20	Axial	Focal	17.02	10.15	3.52	L>W			Edge damage/chattering on left and right lateral
HLE T PAD 24	20	150	108	TS 129	2	10-20	Quartz	No	Medial Fragment			None Observed	0%		0.10	5-10									
HLE T PAD 24	21	150	108	TS 129	2	10-20	FG Silcrete	Glossy reds/greys	Distal Fragment			None Observed	0%		0.11	5-10	Feather								Fine grained grey/white, same material as ID 22
HLE T PAD 24	22	150	108	TS 129	2	10-20	FG Silcrete	Glossy reds/greys	Flake			None Observed	0%		0.19	5-10	Axial	Plain				L=W			Fine grained grey/white, same material as ID 21
HLE T PAD 24	23	150	128	TS 130	2	10-20	Quartz	No	Distal Fragment			None Observed	0%		0.37	10-15	Crushed		10.67	10.21	4.37				
HLE T PAD 24	24	150	128	TS 130	2	10-20	Quartz	No	Flake			None Observed	0%		0.33	10-15	Axial	Focal	8.40	12.31	2.68	W>L			
HLE T PAD 24	25	150	128	TS 130	2	10-20	IMT	No	Core	Multidirectional		None Observed	1-30%	Plain	4.00	15-20			18.22	15.51	11.13		3	Indeterminate	2 scars flaked bifacially - one elongate 18x6mm.
HLE T PAD 24	26	150	128	TS 130	3	20-30	Quartz	No	Medial Fragment			None Observed	0%		0.28	10-15			8.01	11.43	3.40				
HLE T PAD 24	27	150	128	TS 130	3	20-30	Quartz	No	Proximal Fragment			None Observed	1-30%	Rough Granular	4.69	25-30		Plain	15.16	27.61	13.48				
HLE T PAD 24	28	150	128	TS 130	3	20-30	IMT	No	Proximal Fragment			None Observed	0%		0.42	15-20		Faceted	10.27	17.64	3.27				
HLE T PAD 24	29	150	138	TS 131	2	10-20	Quartz	No	Proximal Fragment	Backed	Bondi Point Whole	None Observed	0%		0.18	10-15		Crushed	12.25	5.97	2.22				Milky, double backing right lateral
HLE T PAD 24	30	150	138	TS 131	3	20-30	FGS	No	Medial Fragment			None Observed	0%		1.00	15-20			17.50	17.88	4.09				
HLE T PAD 24	31	143	133	TS 132	2	10-20	Quartz	No	Proximal Fragment			None Observed	0%		0.41	15-20		Plain	15.73	9.80	2.44				
HLE T PAD 24	32	143	133	TS 132	2	10-20	FGS	No	Distal Fragment			None Observed	0%		0.08	10-15	Hinge		3.81	11.38	1.03				
HLE T PAD 24	33	143	133	TS 132	2	10-20	Silcrete	No	Flake			None Observed	0%		2.25	20-25	Axial	Plain	17.36	24.51	5.33	W>L			
HLE T PAD 24	34	143	133	TS 132	2	10-20	Quartz	No	Bipolar Flake			None Observed	0%		0.16	5-10	Crushed	Crushed				L>W			
HLE T PAD 24	35	143	133	TS 132	2	10-20	Quartz	No	Core	Multidirectional		None Observed	1-30%	Rough Granular	30.47	40-45			40.34	32.72	24.93		4	Indeterminate	
HLE T PAD 24	36	143	133	TS 132	2	10-20	FGS	No	Flake			None Observed	0%		0.16	10-15	Hinge	Focal	10.86	10.76	1.25	L=W			Dark grey with white stripes, same material as ID 37
HLE T PAD 24	37	143	133	TS 132	2	10-20	FGS	No	Core	Asymmetrical Alternating		None Observed	31-69%	Plain	13.53	30-35			33.90	29.16	14.84		12	Indeterminate	Dark grey with white stripes, same material as ID 36
HLE T PAD 24	38	143	133	TS 132	2	10-20	Chalcedony	No	Distal Fragment			None Observed	0%		0.58	20-25	Hinge		8.76	21.49	2.77				Greenish black, translucent
HLE T PAD 24	39	150	150	TS 133	2	10-20	Quartz	No	Medial Fragment			None Observed	0%		1.33	10-15			11.79	14.86	7.46				
HLE T PAD 24	40	150	150	TS 133	2	10-20	Quartz	No	Medial Fragment			None Observed	0%		0.20	5-10									
HLE T PAD 24	41	150	150	TS 133	2	10-20	Quartz	Dull Heat Fracture	Angular Fragment			None Observed	0%		0.14	10-15									
HLE T PAD 24	42	150	150	TS 133	2	10-20	Quartz	Dull Heat Fracture	Proximal Fragment			None Observed	0%		0.50	15-20		Plain	13.63	16.56	3.47				
HLE T PAD 24	43	150	150	TS 133	2	10-20	Quartz	No	Distal Fragment			None Observed	0%		0.54	10-15	Axial		10.20	10.24	6.21				
HLE T PAD 24	44	150	150	TS 133	2	10-20	Quartz	No	Proximal Fragment			None Observed	0%		0.13	5-10		Scarred							
HLE T PAD 24	45	150	150	TS 133	2	10-20	Quartz	No	Distal Fragment			None Observed	0%		0.05	5-10	Feather								
HLE T PAD 24	46	150	150	TS 133	2	10-20	Quartz	No	Flake			None Observed	0%		0.20	5-10	Feather	Plain				W>L			
HLE T PAD 24	47	150	150	TS 133	2	10-20	Quartz	No	Flake			None Observed	0%		0.98	15-20	Axial	Plain	17.36	18.44	4.30	W>L			
HLE T PAD 24	48	150	150	TS 133	2	10-20	Quartz	No	Flake			None Observed	0%		1.33	20-25	Axial	Plain	20.12	13.05	4.53	L>W			
HLE T PAD 24	49	150	150	TS 133	2	10-20	Quartz	No	Flake			None Observed	0%		0.16	15-20	Feather	Focal	15.49	6.19	2.38	Elongate			
HLE T PAD 24	50	150	150	TS 133	2	10-20	Quartz	No	Flake			None Observed	0%		0.08	5-10	Feather	Crushed				L>W			
HLE T PAD 24	51	150	150	TS 133	2	10-20	Quartz	No	Core	Unifacial		None Observed	0%		1.20	15-20			15.41	14.13	6.42		1	Angular Fragment	
HLE T PAD 24	52	150	150	TS 133	2	10-20	Quartz	No	Medial Fragment			None Observed	0%		1.07	15-20			12.66	15.39	6.33				
HLE T PAD 24	53	150	150	TS 133	2	10-20	Quartz	No	Core	Multidirectional		None Observed	0%		22.00	40-45			41.54	34.99	15.48		5	Indeterminate	
HLE T PAD 24	54	150	150	TS 133	2	10-20	Quartz	No	Medial Fragment	Backed	Undiagnostic	None Observed	0%		0.18	10-15			10.76	9.07	1.89				Partial single backing (discontinued)
HLE T PAD 24	55	150	150	TS 133	2	10-20	Silcrete	No	Flake			None Observed	0%		0.50	15-20	Hinge	Scarred	17.78	10.35	3.09	L>W			Dark grey, same material for ID 55-67
HLE T PAD 24	56	150	150	TS 133	2	10-20	Silcrete	No	Flake			None Observed	0%		0.13	10-15	Axial	Focal	10.22	7.95	1.98	L>W			Dark grey, same material for ID 55-67
HLE T PAD 24	57	150	150	TS 133	2	10-20	Silcrete	No	Flake			None Observed	0%		4.30	40-45	Axial	Ridged	40.16	19.81	4.43	Elongate			Dark grey, same material for ID 55-67, pointed flake
HLE T PAD 24	58	150	150	TS 133	3	20-30	Quartz	No	Angular Fragment			None Observed	0%		0.04	5-10									
HLE T PAD 24	59	150	150	TS 133	3	20-30	Quartz	No	Distal Fragment			None Observed	0%		0.49	10-15	Crushed		10.14	11.43	4.31				
HLE T PAD 24	60	150	150	TS 133	3	20-30	Quartz	No	Flake			None Observed	0%		0.96	15-20	Feather	Crushed	19.59	17.88	3.75	L>W			
HLE T PAD 24	61	150	150	TS 133	3	20-30	Quartz	Dull Heat Fracture	Flake			None Observed	0%		0.99	20-25	Crushed	Scarred	12.44	20.08	3.13	W>L			
HLE T PAD 24	62	150	150	TS 133	3	20-30	Quartz	No	Flake			None Observed	0%		0.23	15-20	Feather	Crushed	15.47	5.40	2.86	Elongate			
HLE T PAD 24	63	150	150	TS 133	3	20-30	Quartz	No	Flake			None Observed	0%		0.10	5-10	Feather	Crushed				L>W			
HLE T PAD 24	64	150	158	TS 134	1	0-10	MGS	No	Flake			None Observed	0%		5.43	25-30	Plunging	Plain	22.19	26.52	9.56	W>L			
HLE T PAD 24	65	150	158	TS 134	2	10-20	Quartz	No	Medial Fragment			None Observed	0%		0.05	5-10									
HLE T PAD 24	66	150	158	TS 134	2	10-20	FGS	No	Medial Fragment			None Observed	0%		0.31	10-15			12.41	9.77	3.20				
HLE T PAD 24	67	150	158	TS 134	2	10-20	FGS	No	Medial Fragment			None Observed	0%		0.48	20-25			22.18	9.00	2.30				Blade frag
HLE T PAD 24	68	150	158	TS 134	2	10-20	IMT	No	Medial Fragment			None Observed	0%		1.72	15-20			18.34	16.65	9.05				
HLE T PAD 24	69	150	158	TS 134	2	10-20	Chert	No	Medial Fragment			None Observed	0%		2.47	20-25			18.82	23.75	6.62				Quartz vein
HLE T PAD 24	70	150	158	TS 134	2	10-20	Silcrete	No	Proximal Fragment			None Observed	0%		0.91	15-20		Scarred	16.35	12.85	4.04				Quartz vein
HLE T PAD 24	71	150	158	TS 134	2	10-20	MGS	No	Proximal Fragment			None Observed	0%		0.44	10-15		Scarred	14.41	8.47	2.99				
HLE T PAD 24	72	150	158	TS 134	2	10-20	Quartz	No	Distal Fragment			None Observed	0%		0.11	5-10	Feather								
HLE T PAD 24	73	150	158	TS 134	2	10-20	Quartz	No	Distal Fragment			None Observed	0%		0.09	5-10	Feather								
HLE T PAD 24	74	150	158	TS 134	2	10-20	FGS	No	Flake			None Observed	0%		0.21	5-10	Axial	Focal				W>L			
HLE T PAD 24	75	150	158	TS 134	2	10-20	FGS	No	Flake			None Observed	0%		0.42	10-15	Axial	Plain	13.94	10.25	3.12	L>W			
HLE T PAD 24	76	150	158	TS 134	2	10-20	FGS	No	Split Flake			None Observed	0%		0.16	10-15	Feather	Plain	12.96	8.73	2.12				Left
HLE T PAD 24	77	150	158	TS 134	2	10-20	FGS	No	Flake			None Observed	0%		0.16	5-10	Feather	Plain				L>W			Black
HLE T PAD 24	78	150	158	TS 134	2	10-20	Quartz	No	Flake			None Observed	0%		0.10	5-10	Feather	Plain				W>L			
HLE T PAD 24	79	150	158	TS 134	2	10-20	Silcrete	No	Core	Multidirectional		None Observed	0%		1.44	15-20			18.12	14.05	7.30		2	Indeterminate	
HLE T PAD 24	80	150	158	TS 134	2	10-20	Chalcedony	No	Proximal Fragment			None Observed	0%		0.01	5-10		Plain							
HLE T PAD 24	81	150	158	TS 134	2	10-20	Chalcedony	No	Flake			None Observed	0%		0.10	5-10	Feather	Focal				W>L			
HLE T PAD 24	82	150	158	TS 134	3	20-30	Silcrete	Dull Heat Fracture	Core Fragment			None Observed	1-30%	Cobble Cortex	7.72	35-40			38.83	24.50	9.97				
HLE T PAD 24	83	150	158	TS 134	3	20-30	FG Silcrete	No	Medial Fragment			None Observed	0%		0.18	10-15			7.07	10.72	2.10				Fine grained black, broken flake conjoin with ID 84
HLE T PAD 24	84	150	158	TS 134	3	20-30	FG Silcrete	No	Medial Fragment			None Observed	0%		0.06	5-10									Fine grained black, broken flake conjoin with ID 83
HLE T PAD 24	85	150	158	TS 134	3	20-30	Quartz	No	Angular Fragment			None Observed	0%		0.03	5-10									
HLE T PAD 24	86	150	158	TS 134	3	20-30	Quartz	No	Angular Fragment			None Observed	1-30%	Rough Granular	0.77	10-15									
HLE T PAD 24	87	160	178	TS 135	1	0-10	Chert	No	Medial Fragment			None Observed	0%		0.27	5-10									
HLE T PAD 24	88	160	178	TS 135	1	0-10	Quartzite	No	Medial Fragment			None Observed	0%		0.21	10-15			8.05	11.67	2.13				
HLE T PAD 24	89	160	178	TS 135	1	0-10	Chert	No	Flake			Light Usewear	1-30%	Rough Granular	0.33	10-15	Axial	Plain	14.73	6.47	2.48	Elongate			Edge damage usewear on left and right lateral

Site name	ID	Easting	Northing	Square	Spit	Depth (cm)	Material	Heat Affected?	Reduction Type	Tool/Core Type	Backed / Retouched Type	Usewear	Cortex %	Cortex Type	Weight (g)	Size Range mm	Termination	Platform	L mm	W mm	Th mm	Flake Shape	Cores # scars	Core body	Comments
HLE T PAD 24	90	160	178	TS 135	1	0-10	Quartz	No	Proximal Fragment			None Observed	0%		0.34	10-15		Plain	10.52	8.06	3.36				
HLE T PAD 24	91	160	178	TS 135	1	0-10	Quartz	No	Bipolar Flake			None Observed	0%		0.68	10-15	Crushed	Crushed	13.79	10.06	5.20	L>W			
HLE T PAD 24	92	160	168	TS 136	1	0-10	Quartz	No	Distal Fragment			None Observed	0%		0.14	10-15	Feather		4.97	10.50	2.35				
HLE T PAD 24	93	160	168	TS 136	2	10-20	Quartz	No	Flake			None Observed	0%		0.06	5-10	Feather	Crushed				W>L			
HLE T PAD 24	94	160	168	TS 136	2	10-20	Quartz	No	Flake			None Observed	0%		3.73	25-30	Feather	Plain	26.93	22.58	6.27	L>W			
HLE T PAD 24	95	160	168	TS 136	2	10-20	FG Silcrete	No	Distal Fragment	Retouched	Undiagnostic	Light Usewear	0%		16.07	35-40	Feather		29.82	38.12	12.10				Step and scalar scars along right lateral, single notch on left lateral
HLE T PAD 24	96	150	168	TS 137	3	20-30	Quartz	No	Angular Fragment			None Observed	0%		0.18	10-15									
HLE T PAD 24	97	150	168	TS 137	3	20-30	Silcrete	No	Medial Fragment			None Observed	0%		0.49	10-15			12.60	14.43	2.29				
HLE T PAD 24	98	150	168	TS 137	3	20-30	Quartz	No	Medial Fragment			None Observed	0%		0.85	10-15			11.10	14.16	4.90				
HLE T PAD 24	99	150	168	TS 137	3	20-30	Quartz	No	Distal Fragment			None Observed	0%		5.20	30-35	Crushed		34.14	20.12	8.82				
HLE T PAD 24	100	150	168	TS 137	3	20-30	Quartz	No	Distal Fragment			None Observed	0%		0.60	20-25	Crushed		20.88	6.56	4.20				
HLE T PAD 24	101	150	168	TS 137	3	20-30	Quartz	No	Flake			None Observed	0%		1.80	25-30	Axial	Plain	25.01	8.84	9.42	Elongate			
HLE T PAD 24	102	150	178	TS 138	2	10-20	IMT	No	Flake			None Observed	0%		1.00	15-20	Hinge	Plain	16.76	12.13	4.85	L>W			
HLE T PAD 24	103	150	178	TS 138	2	10-20	IMT	No	Medial Fragment	Retouched	Convex Scraper Fragment	None Observed	0%		2.15	15-20			15.56	18.10	7.83				Unifacial ventral step/scalar retouch around distal. Prox snapped.
HLE T PAD 24	104	440	681	TS 139	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		0.11	5-10									
HLE T PAD 24	105	440	681	TS 139	1	0-10	Quartz	No	Distal Fragment			None Observed	0%		0.71	10-15	Axial		11.04	13.25	3.87				
HLE T PAD 24	106	440	681	TS 139	2	10-20	Igneous - possibly andesite	No	Flake			None Observed	0%		2.00	20-25	Feather	Plain	24.33	21.56	4.83	L>W			
HLE T PAD 24	107	430	681	TS 140	1	0-10	IMT	No	Medial Fragment			None Observed	31-69%	Rough Granular	0.14	5-10									
HLE T PAD 24	108	430	681	TS 140	1	0-10	Silcrete	No	Distal Fragment			None Observed	0%		0.23	5-10	Feather								
HLE T PAD 24	109	430	681	TS 140	1	0-10	IMT	No	Distal Fragment			None Observed	0%		0.08	5-10	Feather								
HLE T PAD 24	110	430	681	TS 140	1	0-10	IMT	No	Distal Fragment			None Observed	0%		0.03	5-10	Feather								
HLE T PAD 24	111	430	681	TS 140	1	0-10	IMT	No	Flake			None Observed	1-30%	Rough Granular	0.16	5-10	Axial	Plain				W>L			
HLE T PAD 24	112	430	681	TS 140	1	0-10	IMT	No	Flake			None Observed	0%		0.14	10-15	Feather	Plain	10.84	8.16	1.80	L>W			
HLE T PAD 24	113	430	681	TS 140	1	0-10	Chert	No	Flake			None Observed	31-69%	Plain	0.52	15-20	Axial	Ridged	16.13	9.19	4.74	L>W			
HLE T PAD 24	114	420	681	TS 141	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		0.22	5-10									
HLE T PAD 24	115	420	681	TS 141	1	0-10	Chert	No	Distal Fragment			None Observed	1-30%	Plain	1.81	20-25	Feather		21.23	13.82	5.35				
HLE T PAD 24	116	420	681	TS 141	1	0-10	IMT	No	Distal Fragment			None Observed	0%		0.16	10-15	Feather		12.23	6.90	2.11				
HLE T PAD 24	117	420	681	TS 141	1	0-10	IMT	No	Flake			None Observed	0%		0.27	15-20	Feather	Focal	18.51	9.08	1.67	Elongate			
HLE T PAD 24	118	420	681	TS 141	2	10-20	IMT	No	Medial Fragment			None Observed	0%		3.28	20-25			21.14	21.00	6.70				Left
HLE T PAD 24	119	410	681	TS 142	1	0-10	Quartzite	No	Proximal Fragment			None Observed	0%		1.10	20-25		Focal	23.91	10.47	3.06				
HLE T PAD 24	120	410	681	TS 142	1	0-10	IMT	No	Flake			None Observed	0%		6.78	30-35	Plunging	Plain	32.51	27.29	6.81	L>W			
HLE T PAD 24	121	410	681	TS 142	1	0-10	FGS	No	Flake			None Observed	0%		0.45	15-20	Hinge	Faceted	18.19	6.60	3.94	Elongate			
HLE T PAD 24	122	410	681	TS 142	2	10-20	Quartz	No	Proximal Fragment			None Observed	0%		0.16	5-10		Crushed							
HLE T PAD 24	123	410	681	TS 142	2	10-20	Quartz	No	Core	Unifacial		None Observed	0%		0.82	15-20			17.03	9.55	4.92		2	Flake	
HLE T PAD 24	124	420	691	TS 144	1	0-10	Igneous - possibly andesite	No	Proximal Fragment			None Observed	0%		2.23	15-20		Plain	18.92	15.95	8.65				Black
HLE T PAD 24	125	420	691	TS 144	1	0-10	Igneous - possibly andesite	No	Flake			None Observed	0%		2.37	25-30	Plunging	Scarred	29.82	14.59	6.59	Elongate			
HLE T PAD 24	126	420	691	TS 144	1	0-10	IMT	No	Flake			None Observed	0%		3.86	25-30	Feather	Scarred	27.56	23.03	10.13	L>W			
HLE T PAD 24	127	420	691	TS 144	2	10-20	Quartz	No	Angular Fragment			None Observed	0%		0.09	5-10									
HLE T PAD 24	128	420	691	TS 144	2	10-20	Quartz	No	Proximal Fragment			None Observed	0%		0.05	5-10		Focal							
HLE T PAD 24	129	420	691	TS 144	2	10-20	Silcrete	No	Flake			None Observed	31-69%	Cobble Cortex	42.93	60-65	Hinge	Plain	64.60	39.12	19.56	L>W			
HLE T PAD 24	130	420	691	TS 144	3	20-30	Quartz	No	Flake			None Observed	0%		0.77	15-20	Axial	Focal	9.10	16.51	6.10	W>L			
HLE T PAD 24	131	430	666	TS 145	1	0-10	FGS	No	Distal Fragment			None Observed	0%		3.28	25-30	Feather		26.00	24.40	9.63				
HLE T PAD 24	132	430	666	TS 145	1	0-10	Quartz	No	Distal Fragment			None Observed	0%		0.43	5-10	Axial								
HLE T PAD 24	133	430	666	TS 145	2	10-20	Quartz	No	Core	Unifacial Rotated		None Observed	0%		1.26	10-15			13.84	12.68	9.02		5	Indeterminate	
HLE T PAD 24	134	420	666	TS 146	1	0-10	IMT	No	Flake			None Observed	0%		1.81	25-30	Feather	Faceted	28.14	16.92	4.68	L>W			
HLE T PAD 24	135	420	666	TS 146	1	0-10	IMT	No	Flake			None Observed	0%		2.24	25-30	Hinge	Focal	27.60	18.61	4.30	L>W			
HLE T PAD 24	136	420	666	TS 146	2	10-20	Quartz	No	Flake			None Observed	0%		0.76	15-20	Feather	Plain	10.06	17.84	4.83	W>L			
HLE T PAD 24	137	160	138	TS 147	1	0-10	Quartz	No	Proximal Fragment			None Observed	0%		0.19	10-15		Crushed	12.71	5.05	3.14				
HLE T PAD 24	138	160	138	TS 147	1	0-10	FG Silcrete	No	Split Flake			Light Usewear	0%		2.78	25-30	Feather	Plain	28.68	29.97	4.88				Right, edge damage usewear on distal, same material as ID 141
HLE T PAD 24	139	160	138	TS 147	1	0-10	FGS	No	Flake			None Observed	0%		0.54	15-20	Feather	Plain	17.29	7.87	4.48	Elongate			Black
HLE T PAD 24	140	160	138	TS 147	2	10-20	Quartz	No	Distal Fragment			None Observed	0%		3.35	25-30	Axial		17.37	28.00	7.27				
HLE T PAD 24	141	160	138	TS 147	2	10-20	FG Silcrete	No	Flake			None Observed	0%		2.65	25-30	Axial	Plain	29.20	20.11	4.74	L>W			Same material as ID 138
HLE T PAD 24	142	160	138	TS 147	3	20-30	Silcrete	Glossy reds/greys	Medial Fragment			None Observed	0%		0.10	5-10									
HLE T PAD 24	143	160	138	TS 147	3	20-30	FGS	No	Distal Fragment			None Observed	0%		0.03	5-10	Feather								
HLE T PAD 24	144	160	138	TS 147	3	20-30	FGS	No	Flake			None Observed	0%		0.12	10-15	Axial	Focal	11.36	6.93	1.22	L>W			Black
HLE T PAD 24	145	160	138	TS 147	3	20-30	Quartz	No	Flake			None Observed	0%		3.63	20-25	Axial	Plain	21.18	16.66	13.65	L>W			
HLE T PAD 24	146	160	138	TS 147	3	20-30	Quartz	No	Flake			None Observed	0%		0.07	5-10	Feather	Focal				L>W			
HLE T PAD 24	147	160	148	TS 148	1	0-10	FGS	No	Medial Fragment			None Observed	0%		0.28	10-15			5.88	14.87	3.60				
HLE T PAD 24	148	160	148	TS 148	2	10-20	Silcrete	No	Medial Fragment			None Observed	0%		0.51	15-20			19.28	8.64	2.84				
HLE T PAD 24	149	160	148	TS 148	2	10-20	IMT	No	Flake			None Observed	0%		0.42	10-15	Feather	Plain	11.10	14.48	2.86	W>L			
HLE T PAD 24	150	160	148	TS 148	3	20-30	Quartz	No	Core Fragment			None Observed	0%		5.30	25-30			26.05	22.58	13.10				
HLE T PAD 24	151	160	158	TS 149	1	0-10	IMT	No	Angular Fragment			None Observed	0%		7.66	25-30									
HLE T PAD 24	152	160	158	TS 149	3	20-30	Quartz	No	Core	Multidirectional		None Observed	0%		2.60	20-25			20.63	14.21	8.30		6	Indeterminate	
HLE T PAD 24	153	180	178	TS 150	1	0-10	Quartz	No	Angular Fragment			None Observed	0%		0.14	5-10									
HLE T PAD 24	154	180	178	TS 150	1	0-10	Quartz	No	Angular Fragment			None Observed	0%		1.14	10-15									
HLE T PAD 24	155	180	178	TS 150	1	0-10	Quartz	No	Angular Fragment			None Observed	0%		1.31	10-15									
HLE T PAD 24	156	180	178	TS 150	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		0.78	15-20			12.41	15.44	4.98				
HLE T PAD 24	157	180	178	TS 150	1	0-10	Quartz	No	Split Flake			None Observed	0%		0.84	10-15	Feather	Plain	13.51	11.75	5.92				Left
HLE T PAD 24	158	180	178	TS 150	2	10-20	Quartz	No	Angular Fragment			None Observed	0%		0.21	5-10									
HLE T PAD 24	159	180	178	TS 150	2	10-20	Quartz	No	Angular Fragment			None Observed	0%		0.42	10-15									
HLE T PAD 24	160	180	178	TS 150	2	10-20	Quartz	No	Medial Fragment			None Observed	0%		0.15	5-10									
HLE T PAD 24	161	180	178	TS 150	2	10-20	Quartz	No	Medial Fragment			None Observed	0%		0.44	10-15			12.19	12.52	2.74				
HLE T PAD 24	162	180	178	TS 150	2	10-20	IMT	No	Medial Fragment			None Observed	0%		0.77	15-20			13.12	16.09	3.55				
HLE T PAD 24	163	180	178	TS 150	2	10-20	IMT	No	Distal Fragment			None Observed	0%		0.06	10-15	Feather		5.00	12.15	1.56				
HLE T PAD 24	164	180	178	TS 150	2	10-20	Quartz	No	Flake			None Observed	0%		1.95	15-20	Axial	Plain	14.90	18.21	9.41	W>L			
HLE T PAD 24	165	180	178	TS 150	2	10-20	Quartz	No	Flake			None Observed	0%		2.89	20-25	Axial	Crushed	21.20	17.20	6.28	L>W			
HLE T PAD 24	166	180	178	TS 150	2	10-20	Quartz	No	Flake			None Observed	0%		0.32	5-10	Feather	Plain				L=W			
HLE T PAD 24	167	180	178	TS 150	2	10-20	Silcrete	No	Flake			None Observed	31-69%	Rough Granular	0.97	20-25	Axial	Focal	12.67	20.09	4.59	W>L			
HLE T PAD 24	168	180	178	TS 150	2	10-20	IMT	No	Flake			None Observed	1-30%	Rough Granular	1.21	20-25	Hinge	Plain	20.35	16.56	4.33	L>W			
HLE T PAD 24	169	180	178	TS 150	2	10-20	Igneous - possibly andesite	No	Proximal Fragment			None Observed	0%		1.94	15-20		Scarred	17.98	15.15	6.03				Black with white inclusions, same material for ID 169-175
HLE T PAD 24	170	180	178	TS 150	2	10-20	Igneous - possibly andesite	No	Distal Fragment			None Observed	0%		3.00	25-30	Axial		11.98	29.81	8.57				Black with white inclusions, same material for ID 169-175
HLE T PAD 24	171	180	178	TS 150	2	10-20	Igneous - possibly andesite	No	Distal Fragment			None Observed	0%		0.61	20-25	Axial		6.30	24.42	4.75				Black with white inclusions, same material for ID 169-175
HLE T PAD 24	172	180	178	TS 150	2	10-20	Igneous - possibly andesite	No	Flake			None Observed	0%		2.61	25-30	Feather	Plain	29.94	18.63	5.09	L>W			Black with white inclusions, same material for ID 169-175
HLE T PAD 24	173	180	178	TS 150	2	10-20	Igneous - possibly andesite	No	Flake			None Observed	0%		2.82	25-30	Axial	Plain	28.83	17.75	7.04	L>W			Black with white inclusions, same material for ID 169-175
HLE T PAD 24	174	180	178	TS 150	2	10-20	Igneous - possibly andesite	No	Flake			None Observed	0%		0.25	5-10	Feather	Plain				L>W			Black with white inclusions, same material for ID 169-175
HLE T PAD 24	175	180	178	TS 150	3	20-30	Igneous - possibly andesite	No	Proximal Fragment			None Observed	0%		1.55	20-25		Scarred	21.13	18.30	5.40				Black with white inclusions, same material for ID 169-175
HLE T PAD 24	176	180	178	TS 150	3	20-30	Quartz	No	Distal Fragment			None Observed	0%		0.42	10-15	Axial		12.46	13.96	2.58				
HLE T PAD 24	177	180	178	TS 150	3	20-30	Quartz	No	Flake			None Observed	0%		3.52	25-30	Plunging	Focal	29.48	18.83	7.39	L>W			
HLE T PAD 24	178	180	178	TS 150	4	30-40	Chert	No	Proximal Fragment			None Observed	0%		3.36	25-30		Plain	25.77	19.42	6.92				

Site name	ID	Easting	Northing	Square	Spit	Depth (cm)	Material	Heat Affected?	Reduction Type	Tool/Core Type	Backed / Retouched Type	Usewear	Cortex %	Cortex Type	Weight (g)	Size Range mm	Termination	Platform	L mm	W mm	Th mm	Flake Shape	Cores # scars	Core body	Comments
HLE T PAD 24	179	180	168	TS 151	2	10-20	Quartz	No	Distal Fragment			None Observed	0%		0.43	10-15	Axial		12.49	10.86	4.90				
HLE T PAD 24	180	180	168	TS 151	2	10-20	Quartz	No	Distal Fragment			None Observed	0%		1.11	20-25	Axial		8.39	21.74	5.28				
HLE T PAD 24	181	180	168	TS 151	3	20-30	Quartz	No	Flake			None Observed	0%		0.60	15-20	Axial	Plain	16.37	13.10	4.14	L>W			
HLE Y PAD 6	182	966	995	TS 39	3 (5cm)	10-15	Chert	Dull Heat Fracture	Proximal Fragment			None Observed	0%		2.18	20-25		Plain	15.00	22.84	5.20				
HLE Y PAD 6	183	966	995	TS 39	3 (5cm)	10-15	Quartz	No	Core	Multidirectional		None Observed	0%		4.75	15-20			19.50	19.99	10.97		4	Indeterminate	
HLE Y PAD 6	184	966	995	TS 39	4 (5cm)	15-20	Quartz	No	Distal Fragment			None Observed	0%		0.26	5-10	Feather								
HLE Y PAD 6	185	966	995	TS 39	5 (5cm)	20-25	Quartz	No	Angular Fragment			None Observed	0%		0.19	10-15									
HLE Y PAD 6	186	023	973	TS 45	1	0-10	Quartz	No	Distal Fragment			None Observed	0%		0.75	15-20	Feather		16.38	7.52	5.62				
HLE Y PAD 6	187	033	973	TS 46	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		0.18	5-10									
HLE Y PAD 6	188	033	973	TS 46	3	20-30	IMT	No	Core	Multidirectional		None Observed	0%		729.00	140-145			130.14	140.14	33.18		14	Flake	Very large, heavy flake used as a core. Flakes removed from distal, right and left lateral and platform.
HLE Y PAD 6	189	043	973	TS 51	1	0-10	Quartz	No	Flake			None Observed	0%		0.28	10-15	Feather	Plain	11.72	8.98	2.81	L>W			
HLE Y PAD 6	190	043	973	TS 51	2	10-20	Quartz	No	Distal Fragment			None Observed	0%		0.15	5-10	Feather								
HLE Y PAD 6	191	043	973	TS 51	2	10-20	Quartz	No	Flake			None Observed	0%		3.12	25-30	Feather	Plain	21.75	28.49	6.50	W>L			
HLE G12	192	420	060	TS 158	1 (5cm)	0-5	Quartz	No	Core	Unifacial		None Observed	0%		2.73	15-20			19.24	18.76	7.85		1	Flake Fragment	Semi transparent
HLE G12	193	420	060	TS 158	2 (5cm)	5-10	Quartz	No	Medial Fragment			None Observed	0%		0.10	5-10									
HLE G12	194	420	060	TS 158	2 (5cm)	5-10	Quartz	No	Core	Multidirectional		None Observed	0%		10.36	30-35			30.43	26.29	14.66		2	Indeterminate	
HLE G12	195	420	060	TS 158	3 (5cm)	10-15	Quartz	No	Medial Fragment			None Observed	0%		1.31	15-20			17.07	12.15	6.67				
HLE G12	196	420	060	TS 158	6 (5cm)	25-30	Quartz	No	Distal Fragment			None Observed	0%		0.47	10-15	Axial		13.41	11.52	3.12				
HLE G12	197	420	060	TS 158	6 (5cm)	25-30	Quartz	No	Distal Fragment			None Observed	0%		1.37	20-25	Feather		13.54	20.70	5.83				
HLE G12	198	430	060	TS 159	1	0-10	Silcrete	Glossy reds/greys	Proximal Fragment			None Observed	0%		1.11	15-20		Faceted	17.60	14.62	4.19				
HLE G12	199	430	060	TS 159	1	0-10	Quartz	No	Flake			None Observed	1-30%	Rough Granular	0.18	5-10	Axial	Focal				L>W			
HLE G12	200	430	060	TS 159	1	0-10	Quartz	No	Core	Unifacial Rotated		None Observed	0%		18.66	35-40			38.54	27.18	25.11		2	Angular Fragment	
HLE G12	201	430	060	TS 159	2	10-20	Quartz	No	Medial Fragment			None Observed	0%		0.11	5-10									
HLE G12	202	430	060	TS 159	2	10-20	Quartz	No	Proximal Fragment			None Observed	0%		1.23	15-20		Plain	13.71	15.02	6.42				
HLE G12	203	430	060	TS 159	2	10-20	Silcrete	Glossy reds/greys	Distal Fragment			None Observed	0%		0.18	10-15	Feather		7.03	11.25	2.83				
HLE G12	204	430	060	TS 159	2	10-20	Chert	No	Distal Fragment			None Observed	0%		0.03	5-10	Feather								
HLE G12	205	430	060	TS 159	3	20-30	Quartz	No	Medial Fragment			None Observed	0%		0.08	5-10									
HLE G12	206	440	060	TS 160	1	0-10	Quartz	No	Angular Fragment			None Observed	0%		0.36	10-15									
HLE G12	207	440	060	TS 160	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		0.46	10-15			11.80	11.96	2.16				
HLE G12	208	440	060	TS 160	1	0-10	Quartz	No	Proximal Fragment			None Observed	0%		0.99	10-15		Plain	14.28	13.04	4.45				
HLE G12	209	440	060	TS 160	1	0-10	Quartz	Dull Heat Fracture	Distal Fragment			None Observed	0%		4.08	25-30	Axial		15.13	27.39	9.38				
HLE G12	210	460	065	TS 161	1	0-10	Quartz	No	Proximal Fragment			None Observed	0%		0.25	5-10		Plain							
HLE G12	211	460	065	TS 161	2	10-20	Quartz	No	Angular Fragment			None Observed	0%		0.28	5-10									
HLE G12	212	460	065	TS 161	2	10-20	Quartz	No	Proximal Fragment			None Observed	0%		0.18	10-15		Plain	12.56	6.94	1.87				
HLE G12	213	460	065	TS 161	2	10-20	Quartz	No	Distal Fragment			None Observed	0%		1.58	15-20	Axial		12.42	15.56	9.79				
HLE G12	214	460	065	TS 161	2	10-20	Chert	No	Distal Fragment			None Observed	31-69%	Rough Granular	0.66	20-25	Crushed		21.71	8.42	4.40				Black
HLE G12	215	460	065	TS 161	2	10-20	FG Silcrete	No	Flake			None Observed	0%		4.70	30-35	Axial	Plain	32.58	19.82	7.59	L>W			Grey/white
HLE G12	216	460	065	TS 161	2	10-20	Quartz	No	Flake			None Observed	0%		0.67	10-15	Axial	Plain	12.38	11.37	4.19	L>W			
HLE G12	217	460	065	TS 161	2	10-20	Quartz	No	Angular Fragment			None Observed	0%		2.82	15-20									
HLE G12	218	460	065	TS 161	3	20-30	FG Silcrete	Dull Heat Fracture	Angular Fragment			None Observed	0%		1.00	20-25									
HLE G12	219	460	065	TS 161	3	20-30	Quartz	No	Flake			None Observed	0%		4.90	25-30	Crushed	Plain	24.06	29.36	7.71	W>L			
HLE G12	220	460	065	TS 161	3	20-30	Quartz	No	Bipolar Flake			None Observed	0%		0.71	10-15	Crushed	Crushed	11.74	11.36	5.00	L=W			
HLE G12	221	460	065	TS 161	3	20-30	Quartz	No	Core	Unifacial		None Observed	0%		5.85	35-40			37.32	14.98	12.20		1	Angular Fragment	
HLE G12	222	470	065	TS 162	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		0.17	10-15			5.71	11.66	2.53				
HLE G12	223	470	065	TS 162	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		1.00	15-20			10.04	15.30	4.91				
HLE G12	224	470	065	TS 162	1	0-10	Quartz	No	Proximal Fragment			None Observed	0%		0.76	15-20		Crushed	15.82	9.41	4.77				
HLE G12	225	470	065	TS 162	1	0-10	Quartz	No	Flake			None Observed	0%		0.80	15-20	Axial	Crushed	16.63	9.59	3.85	L>W			
HLE G12	226	470	065	TS 162	1	0-10	Quartz	No	Flake			None Observed	0%		0.06	5-10	Feather	Focal				W>L			
HLE G12	227	420	070	TS 163	1	0-10	Chert	No	Medial Fragment			None Observed	0%		1.22	15-20			12.13	17.51	6.86				
HLE G12	228	420	070	TS 163	1	0-10	Chert	No	Medial Fragment			Light Usewear	1-30%	Plain	3.57	20-25			17.82	22.26	13.18				
HLE G12	229	420	070	TS 163	1	0-10	FG Silcrete	Glossy reds/greys	Flake			None Observed	0%		1.09	25-30	Feather	Faceted	25.39	12.65	4.07	Elongate			
HLE G12	230	430	070	TS 164	1	0-10	Silcrete	No	Flake			None Observed	0%		0.11	5-10	Feather	Plain				W>L			
HLE G12	231	430	070	TS 164	1	0-10	Chert	No	Core	Multidirectional		None Observed	31-69%	Rough Granular	7.08	30-35			31.55	17.60	17.44		4	Indeterminate	
HLE G12	232	430	070	TS 164	2	10-20	Quartz	No	Angular Fragment			None Observed	0%		0.43	10-15									
HLE G12	233	420	045	TS 165	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		0.38	10-15			11.32	8.89	3.34				
HLE G12	234	420	045	TS 165	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		1.00	15-20			19.19	9.18	6.55				
HLE G12	235	420	045	TS 165	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		0.43	10-15			13.06	7.88	3.82				
HLE G12	236	420	045	TS 165	1	0-10	FG Silcrete	No	Medial Fragment	Retouched	Undiagnostic	Light Usewear	0%		0.63	15-20			15.85	9.53	3.79				Unifacial ventral scalar retouch on distal
HLE G12	237	420	045	TS 165	2	10-20	Quartz	No	Angular Fragment			None Observed	0%		4.19	30-35									
HLE G12	238	420	035	TS 166	2	10-20	Quartz	No	Flake			None Observed	0%		1.70	20-25	Feather	Plain	22.45	16.87	4.29	L>W			
HLE G12	239	420	035	TS 166	2	10-20	Quartz	No	Flake			None Observed	0%		0.58	15-20	Feather	Scarred	16.30	7.91	5.16	Elongate			
HLE G12	240	420	025	TS 167	1	0-10	Quartz	No	Medial Fragment			None Observed	1-30%	Rough Granular	1.41	15-20			14.42	17.47	5.71				
HLE G12	241	420	015	TS 168	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		0.53	10-15			12.70	9.87	3.35				
HLE G12	242	420	015	TS 168	1	0-10	FG Silcrete	No	Distal Fragment			None Observed	0%		0.42	10-15	Axial		14.03	10.53	2.89				Grey/white
HLE G12	243	420	015	TS 168	1	0-10	FG Silcrete	No	Distal Fragment			None Observed	0%		0.47	5-10	Axial								
HLE G12	244	420	015	TS 168	1	0-10	Quartz	No	Flake			None Observed	0%		0.20	5-10	Feather	Crushed				L>W			
HLE G12	245	420	015	TS 168	1	0-10	Quartz	No	Flake			None Observed	0%		0.52	15-20	Axial	Plain	15.36	10.32	2.94	L>W			Semi transparent
HLE G12	246	420	015	TS 168	1	0-10	Quartz	No	Flake			None Observed	31-69%	Rough Granular	13.50	30-35	Axial	Scarred	32.42	28.93	12.29	L>W			
HLE G12	247	417	960	TS 169	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		0.76	15-20			10.02	17.61	3.333				
HLE G12	248	417	960	TS 169	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		0.31	10-15			11.84	11.43	2.22				
HLE G12	249	417	960	TS 169	1	0-10	Quartz	No	Distal Fragment			None Observed	0%		2.29	20-25	Feather		20.25	13.14	8.25				
HLE G12	250	417	960	TS 169	1	0-10	Quartz	No	Flake			None Observed	0%		0.24	5-10	Axial	Plain				W>L			
HLE G12	251	417	960	TS 169	2	10-20	Quartz	No	Angular Fragment			None Observed	0%		0.77	15-20									
HLE G12	252	417	960	TS 169	2	10-20	Quartz	No	Proximal Fragment			None Observed	0%		0.14	5-10		Plain							
HLE G12	253	417	960	TS 169	2	10-20	Quartz	No	Distal Fragment			None Observed	0%		1.25	20-25	Feather		10.13	21.29	5.60				
HLE G12	254	417	960	TS 169	2	10-20	Chert	No	Proximal Fragment	Retouched	Undiagnostic	Light Usewear	1-30%	Rough Granular	2.64	20-25		Ridged	20.70	21.77	5.60				Black, three unifacial ventral retouch scars on right lateral, edge damage/chattering along left lateral.
HLE G12	255	407	960	TS 170	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		2.40	20-25			18.05	23.63	6.87				
HLE G12	256	407	960	TS 170	2	10-20	Quartz	No	Flake			None Observed	0%		1.25	15-20	Feather	Plain	15.19	18.60	6.01	W>L			Semi transparent
HLE G12	257	397	960	TS 171	2	10-20	Silcrete	Dull Heat Fracture	Medial Fragment			None Observed	0%		0.64	15-20			10.57	18.55	4.31				
HLE G12	258	397	960	TS 171	2	10-20	Quartz	No	Proximal Fragment			None Observed	0%		1.43	15-20		Plain	11.54	15.42	7.31				
HLE G12	259	397	960	TS 171	2	10-20	Quartz	No	Flake			None Observed	0%		0.07	5-10	Feather	Crushed				L>W			
HLE G12	260	387	960	TS 172	1	0-10	Quartz	No	Angular Fragment			None Observed	0%		0.11	5-10									
HLE G12	261	387	960	TS 172	1	0-10	FG Silcrete	Glossy reds/greys	Medial Fragment			None Observed	0%		0.36	10-15			12.39	13.02	1.98				
HLE G12	262	387	960	TS 172	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		0.64	10-15			8.41	11.91	5.19				
HLE G12	263	387	960	TS 172	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		0.18	10-15			7.20	13.04	1.68				
HLE G12	264	387	960	TS 172	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		0.17	5-10									
HLE G12	265	387	960	TS 172	1	0-10	FG Silcrete	Glossy reds/greys	Proximal Fragment			None Observed	0%		0.13	5-10		Faceted							
HLE G12	266	387	960	TS 172	1	0-10	Quartz	No	Distal Fragment			None Observed	1-30%	Rough Granular	0.58	10-15	Feather		8.68	14.68	6.16				
HLE G12	267	387	960	TS 172	1	0-10	Quartz	No	Distal Fragment			None Observed	0%		0.32	10-15	Feather		8.46	13.04	3.17				

Site name	ID	Easting	Northing	Square	Spit	Depth (cm)	Material	Heat Affected?	Reduction Type	Tool/Core Type	Backed / Retouched Type	Usewear	Cortex %	Cortex Type	Weight (g)	Size Range mm	Termination	Platform	L mm	W mm	Th mm	Flake Shape	Cores # scars	Core body	Comments
HLE G12	268	387	960	TS 172	1	0-10	Quartz	No	Distal Fragment			None Observed	0%		0.79	10-15	Feather		14.75	14.90	3.44				
HLE G12	269	387	960	TS 172	1	0-10	Quartz	No	Proximal Fragment			None Observed	0%		9.57	25-30		Plain	29.06	23.69	13.78				
HLE G12	270	387	960	TS 172	1	0-10	Quartz	No	Proximal Fragment			None Observed	0%		0.11	5-10		Plain							
HLE G PAD 14	271	053	072	TS 173	3 (5cm)	10-15	FG Silcrete	Glossy reds/greys	Flake			None Observed	0%		0.27	10-15	Feather	Scarred	11.20	13.23	2.42	W>L			
HLE G PAD 14	272	053	092	TS 175	2	10-20	Chert	No	Proximal Fragment			None Observed	0%		0.28	10-15		Plain	11.46	8.23	2.38				
HLE G PAD 14	273	053	092	TS 175	2	10-20	Chert	No	Distal Fragment			None Observed	0%		1.52	15-20	Feather		17.85	15.53	9.20				
HLE G PAD 14	274	053	092	TS 175	2	10-20	FG Silcrete	Glossy reds/greys	Distal Fragment			Light Usewear	0%		3.09	20-25	Feather		23.89	23.87	5.56				
HLE G PAD 14	275	053	092	TS 175	2	10-20	Chert	No	Core	Multidirectional		None Observed	0%		3.74	15-20			19.35	17.92	8.90		10	Indeterminate	
HLE G PAD 14	276	053	092	TS 175	3	20-30	FG Silcrete	Dull Heat Fracture	Flake			None Observed	0%		1.16	20-25	Axial	Faceted	21.46	14.19	4.96	L>W			
HLE G PAD 14	277	053	122	TS 178	1	0-10	FGS	No	Proximal Fragment			None Observed	0%		0.80	15-20		Plain	15.07	17.11	2.98				
HLE G PAD 14	278	053	122	TS 178	1	0-10	Quartz	No	Flake			None Observed	0%		0.22	5-10	Axial	Plain				L>W			
HLE G PAD 15	279	263	212	TS 179	8 (5cm)	35-40	Quartz	No	Flake			None Observed	0%		5.78	30-35	Axial	Plain	30.69	18.97	12.75	L>W			
HLE G PAD 15	280	263	212	TS 179	11 (5cm)	50-55	Quartz	No	Distal Fragment			None Observed	0%		0.47	10-15	Feather		12.93	12.54	3.15				
HLE G PAD 15	281	253	212	TS 180	3	20-30	FG Silcrete	Glossy reds/greys	Distal Fragment			None Observed	31-69%	Rough Granular	0.94	15-20	Feather		10.07	17.02	5.49				
HLE G PAD 15	282	253	212	TS 180	4	30-40	Quartz	No	Angular Fragment			None Observed	0%		0.47	10-15									
HLE G PAD 15	283	243	212	TS 181	4	30-40	Quartz	No	Medial Fragment			None Observed	0%		0.39	15-20			10.34	15.52	1.96				
HLE G PAD 15	284	268	199	TS 182	2	10-20	Quartz	No	Angular Fragment			None Observed	0%		0.08	5-10									
HLE G PAD 15	285	268	199	TS 182	2	10-20	Quartz	No	Distal Fragment			None Observed	0%		0.04	5-10	Feather								
HLE G PAD 15	286	268	199	TS 182	3	20-30	Quartz	No	Angular Fragment			None Observed	0%		0.38	15-20									
HLE G PAD 15	287	268	199	TS 182	3	20-30	Quartz	No	Angular Fragment			None Observed	0%		0.67	10-15									
HLE G PAD 15	288	268	199	TS 182	3	20-30	Quartz	No	Angular Fragment			None Observed	0%		1.15	20-25									
HLE G PAD 15	289	268	199	TS 182	3	20-30	Quartz	No	Medial Fragment			None Observed	0%		3.76	20-25			23.43	23.10	8.93				
HLE G PAD 15	290	268	199	TS 182	3	20-30	Quartz	No	Medial Fragment			None Observed	0%		0.16	10-15			6.42	12.59	1.70				
HLE G PAD 15	291	268	199	TS 182	3	20-30	Quartz	No	Medial Fragment			None Observed	0%		0.11	10-15			8.54	11.80	1.37				
HLE G PAD 15	292	268	199	TS 182	3	20-30	Quartz	No	Medial Fragment			None Observed	0%		0.07	5-10									
HLE G PAD 15	293	268	199	TS 182	3	20-30	Quartz	No	Proximal Fragment			None Observed	0%		0.46	15-20		Scarred	15.17	11.27	3.24				
HLE G PAD 15	294	268	199	TS 182	3	20-30	Quartz	No	Distal Fragment			None Observed	0%		0.72	15-20	Feather		10.25	15.58	4.60				
HLE G PAD 15	295	268	199	TS 182	3	20-30	Quartz	No	Distal Fragment			None Observed	0%		0.59	15-20	Feather		17.26	12.59	2.72				
HLE G PAD 15	296	268	199	TS 182	3	20-30	Quartz	No	Distal Fragment			None Observed	0%		0.14	5-10	Feather								
HLE G PAD 15	297	268	199	TS 182	3	20-30	Quartz	No	Flake			None Observed	0%		0.17	10-15	Feather	Plain	12.22	7.55	6.72	L>W			
HLE G PAD 15	298	268	199	TS 182	3	20-30	Quartz	No	Flake			None Observed	0%		0.82	10-15	Axial	Crushed	14.70	10.91	5.99	L>W			
HLE G PAD 15	299	268	199	TS 182	3	20-30	Quartz	No	Flake			None Observed	0%		0.12	15-20	Feather	Plain	5.66	15.12	1.19	W>L			
HLE G PAD 15	300	268	199	TS 182	3	20-30	Quartz	No	Bipolar Flake			None Observed	0%		0.09	5-10	Crushed	Crushed				W>L			
HLE G PAD 15	301	268	199	TS 182	3	20-30	Quartz	No	Bipolar Flake			None Observed	0%		0.06	5-10	Crushed	Crushed				L=W			
HLE G PAD 15	302	268	199	TS 182	3	20-30	Quartz	No	Medial Fragment	Retouched	Undiagnostic	None Observed	0%		2.28	15-20			17.44	16.72	8.07				Partial unifacial ventral step/scalar retouch
HLE G PAD 15	303	268	199	TS 182	4	30-40	Quartz	No	Medial Fragment			None Observed	0%		0.12	5-10									
HLE G PAD 15	304	268	199	TS 182	4	30-40	Quartz	No	Distal Fragment			None Observed	0%		0.12	5-10	Crushed								
HLE G PAD 15	305	268	199	TS 182	4	30-40	Quartz	No	Flake			None Observed	0%		0.18	5-10	Feather	Plain				L=W			
HLE G PAD 15	306	268	199	TS 182	4	30-40	Quartz	No	Flake			None Observed	0%		0.29	15-20	Feather	Plain	16.59	6.94	3.31	Elongate			
HLE G PAD 15	307	258	199	TS 183	1	0-10	Quartz	No	Angular Fragment			None Observed	0%		0.07	5-10									
HLE G PAD 15	308	258	199	TS 183	2	10-20	Quartz	No	Angular Fragment			None Observed	0%		0.11	5-10									
HLE G PAD 15	309	258	199	TS 183	3	20-30	FGS	No	Distal Fragment			None Observed	0%		1.15	15-20	Feather		12.38	17.28	5.73				
HLE G PAD 15	310	258	199	TS 183	3	20-30	Quartz	No	Core	Multidirectional		None Observed	0%		2.10	15-20			17.38	14.01	11.00		3	Indeterminate	
HLE G PAD 15	311	258	199	TS 183	4	30-40	Quartz	No	Angular Fragment			None Observed	0%		0.42	10-15									
HLE G PAD 15	312	258	199	TS 183	4	30-40	Quartz	No	Medial Fragment			None Observed	0%		0.42	5-10									
HLE G PAD 15	313	258	199	TS 183	4	30-40	Quartz	No	Medial Fragment			None Observed	0%		1.31	10-15			13.52	14.52	6.02				
HLE G PAD 15	314	258	199	TS 183	4	30-40	Silcrete	No	Proximal Fragment			None Observed	0%		8.18	35-40		Crushed	38.82	28.10	7.62				
HLE G PAD 15	315	258	199	TS 183	5	40-50	Quartz	No	Medial Fragment			None Observed	0%		1.17	15-20			7.39	17.09	7.87				
HLE G PAD 15	316	258	199	TS 183	5	40-50	Quartz	No	Flake			None Observed	0%		0.03	5-10	Feather	Focal				L>W			
HLE G PAD 15	317	215	153	TS 184	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		0.47	10-15			13.49	11.72	3.46				
HLE G PAD 15	318	215	153	TS 184	1	0-10	Quartz	No	Distal Fragment			None Observed	0%		0.29	10-15	Feather		12.07	10.09	2.29				
HLE G PAD 15	319	215	153	TS 184	1	0-10	Quartz	No	Distal Fragment			None Observed	0%		0.13	5-10	Feather								
HLE G PAD 15	320	215	153	TS 184	3	20-30	Quartz	No	Bipolar Flake			None Observed	0%		0.19	10-15	Crushed	Crushed	10.82	7.43	2.90	L>W			
HLE G PAD 15	321	268	189	TS 186	3	20-30	Quartzite	No	Medial Fragment			None Observed	0%		1.00	20-25			12.29	21.75	4.80				
HLE G PAD 15	322	258	189	TS 187	4	30-40	Quartz	No	Proximal Fragment			None Observed	0%		0.16	5-10		Plain							
HLE T PAD 39	323	955	707	TS 562	1 (5cm)	0-5	Quartz	No	Flake			None Observed	1-30%	Rough Granular	0.37	5-10	Axial	Cortical				W>L			
HLE T PAD 39	324	955	707	TS 562	1 (5cm)	0-5	Quartz	No	Core	Multidirectional		None Observed	1-30%	Rough Granular	13.45	30-35			32.49	20.57	14.87		2	Angular Fragment	
HLE T PAD 39	325	955	707	TS 562	1 (5cm)	0-5	Chert	No	Proximal Fragment			Light Usewear	0%		17.32	35-40		Plain	39.51	29.47	16.73				Edge damage usewear on right lateral
HLE T PAD 39	326	945	707	TS 563	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		0.77	10-15			11.52	13.54	5.05				
HLE T PAD 39	327	945	707	TS 563	1	0-10	IMT	No	Medial Fragment			Light Usewear	0%		4.22	25-30			25.91	17.18	8.88				Grey, edge damage usewear on right lateral
HLE T PAD 39	328	945	707	TS 563	1	0-10	IMT	No	Distal Fragment			Light Usewear	0%		0.45	15-20	Hinge		6.99	15.17	3.26				Buff, edge damage usewear on right lateral
HLE T PAD 39	329	935	707	TS 564	1	0-10	Quartz	No	Distal Fragment	Backed	Undiagnostic	None Observed	0%		0.20	5-10	Feather								Partial single backing
HLE T PAD 39	330	935	707	TS 564	1	0-10	Silcrete	No	Core	Multidirectional		None Observed	1-30%	Rough Granular	12.90	25-30			28.91	24.35	19.41		9	Indeterminate	
HLE T PAD 39	331	935	707	TS 564	1	0-10	Igneous - possibly andesite	No	Proximal Fragment			None Observed	0%		2.40	20-25		Plain	21.95	17.89	6.22				Black with white inclusions, same material present at HLE T PAD 24
HLE T PAD 39	332	925	707	TS 565	1	0-10	Quartz	No	Distal Fragment			None Observed	0%		1.23	20-25	Feather		12.10	21.13	8.51				
HLE T PAD 39	333	925	707	TS 565	1	0-10	FGS	No	Medial Fragment			None Observed	0%		0.67	5-10									
HLE T PAD 39	334	945	701	TS 567	1	0-10	FGS	No	Proximal Fragment			None Observed	0%		3.09	20-25		Faceted	16.21	21.88	10.32				
HLE T PAD 39	335	945	701	TS 567	1	0-10	FGS	No	Core Fragment			None Observed	0%		1.35	15-20			17.70	9.10	9.61				
HLE T PAD 39	336	945	701	TS 567	1	0-10	Chert	No	Medial Fragment			None Observed	0%		1.11	15-20			17.41	18.50	5.48				
HLE T PAD 39	337	945	701	TS 567	1	0-10	Quartz	No	Core	Bipolar		None Observed	0%		3.58	15-20			18.57	18.37	8.81		7	Indeterminate	
HLE T PAD 39	338	936	701	TS 568	2	10-20	Quartz	No	Core	Multidirectional		None Observed	0%		4.66	20-25			22.84	20.49	10.43		8	Indeterminate	
HLE T PAD 39	339	787	537	TS 573	1	0-10	FGS	No	Flake			None Observed	0%		3.09	20-25	Axial	Plain	21.29	15.23	9.26	L>W			
HLE T PAD 39	340	747	537	TS 575	2	10-20	Quartz	No	Medial Fragment			None Observed	0%		0.27	5-10									
HLE T PAD 39	341	747	537	TS 575	3	20-30	Quartz	No	Medial Fragment			None Observed	0%		0.41	10-15			12.96	8.20	4.26				
HLE T PAD 39	342	747	537	TS 575	3	20-30	Quartz	No	Bipolar Flake			Light Usewear	0%		2.43	20-25	Crushed	Crushed	24.67	17.42	6.03	L>W			Edge damage usewear on right and left lateral
HLE T PAD 40	343	703	230	TS 576	1	0-10	IMT	No	Distal Fragment			Light Usewear	0%		2.53	25-30	Axial		27.73	16.28	4.96				Edge damage usewear on right lateral
HLE T PAD 40	344	703	230	TS 576	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		3.00	20-25			24.15	21.80	8.71				
HLE T PAD 40	345	703	230	TS 576	2	10-20	Quartz	No	Angular Fragment			None Observed	0%		0.14	5-10									
HLE T PAD 40	346	703	230	TS 576	2	10-20	Quartz	No	Proximal Fragment			None Observed	0%		0.16	5-10		Plain							
HLE T PAD 40	347	703	230	TS 576	2	10-20	Quartz	No	Distal Fragment			None Observed	0%		2.29	15-20	Axial		18.41	16.48	7.75				
HLE T PAD 40	348	703	230	TS 576	2	10-20	Quartz	No	Flake			None Observed	0%		0.18	5-10	Axial	Plain				L=W			
HLE T PAD 40	349	703	230	TS 576	2	10-20	Igneous - possibly andesite	No	Distal Fragment			None Observed	0%		0.34	10-15	Feather		8.63	11.54	3.98				
HLE T PAD 40	350	703	230	TS 576	2	10-20	Chert	No	Flake			None Observed	0%		0.17	5-10	Feather	Plain				L=W			
HLE T PAD 40	351	703	230	TS 576	2	10-20	IMT	No	Medial Fragment			None Observed	0%		0.10	5-10									
HLE T PAD 40	352	703	230	TS 576	3	20-30	Chert	No	Proximal Fragment			None Observed	0%		0.13	5-10		Plain							
HLE T PAD 40	353	703	230	TS 576	3	20-30	Chert	No	Distal Fragment			None Observed	0%		0.06	5-10	Feather								
HLE T PAD 40	354	703	230	TS 576	3	20-30	Chert	No	Medial Fragment	Backed	Geometric Whole	None Observed	0%		0.27	10-15			6.89	6.88	4.97				Geometric, one half single backed
HLE T PAD 40	355	703	230	TS 576	3	20-30	Quartz	No	Flake			None Observed	0%		0.91	15-20	Axial	Focal	15.36	12.90	4.97	L>W			
HLE T PAD 40	356	703	230	TS 576	3	20-30	Quartz	No	Flake			Light Usewear	0%		2.60	20-25	Feather	Scarred	15.78	24.23	5.89	W>L			Edge damage usewear along distal edge

Site name	ID	Easting	Northing	Square	Spit	Depth (cm)	Material	Heat Affected?	Reduction Type	Tool/Core Type	Backed / Retouched Type	Usewear	Cortex %	Cortex Type	Weight (g)	Size Range mm	Termination	Platform	L mm	W mm	Th mm	Flake Shape	Cores # scars	Core body	Comments
HLE T PAD 40	357	693	301	TS 577	2	10-20	Quartz	No	Medial Fragment			None Observed	0%		0.50	10-15			10.16	10.68	4.07				
HLE T PAD 40	358	693	301	TS 577	2	10-20	Quartz	No	Proximal Fragment			None Observed	0%		0.11	5-10		Crushed							
HLE T PAD 40	359	693	301	TS 577	2	10-20	Quartz	No	Distal Fragment			None Observed	0%		0.15	5-10	Crushed								
HLE T PAD 40	360	693	301	TS 577	2	10-20	Quartz	No	Distal Fragment			None Observed	0%		0.23	10-15	Feather		5.76	12.52	3.14				
HLE T PAD 40	361	693	301	TS 577	2	10-20	Quartz	No	Distal Fragment			None Observed	0%		0.49	10-15	Axial		6.52	13.34	4.62				
HLE T PAD 40	362	693	301	TS 577	2	10-20	IMT	No	Medial Fragment			Light Usewear	0%		0.39	15-20			7.67	16.92	2.98				
HLE T PAD 40	363	693	301	TS 577	2	10-20	Chert	No	Proximal Fragment			None Observed	0%		0.68	10-15		Scarred	12.76	10.54	6.08				
HLE T PAD 40	364	693	301	TS 577	2	10-20	FGS	No	Distal Fragment			None Observed	0%		8.16	30-35	Feather		34.49	27.22	9.78				
HLE T PAD 40	365	693	301	TS 577	2	10-20	Chert	No	Flake			None Observed	0%		0.28	5-10	Feather	Plain				L>W			
HLE T PAD 40	366	693	301	TS 577	2	10-20	Silcrete	No	Flake			None Observed	0%		2.90	30-35	Plunging	Plain	32.80	17.52	5.26	L>W			Pointed Flake
HLE T PAD 40	368	693	301	TS 577	3	20-30	Quartz	No	Medial Fragment			None Observed	0%		0.97	15-20			8.52	18.40	4.65				
HLE T PAD 40	369	693	301	TS 577	3	20-30	Quartz	No	Distal Fragment			None Observed	0%		0.13	5-10	Feather								
HLE T PAD 40	370	693	291	TS 578	1	0-10	Igneous - possibly andesite	No	Medial Fragment			None Observed	0%		0.92	10-15			11.45	14.61	5.11				
HLE T PAD 40	371	693	291	TS 578	1	0-10	Chert	No	Proximal Fragment			None Observed	0%		1.14	15-20		Plain	16.20	11.16	4.87				
HLE T PAD 40	372	693	291	TS 578	1	0-10	Quartz	No	Proximal Fragment			None Observed	0%		0.18	5-10		Crushed							
HLE T PAD 40	373	693	291	TS 578	1	0-10	Quartz	No	Distal Fragment			None Observed	0%		0.85	15-20	Crushed		10.03	15.59	5.92				
HLE T PAD 40	374	693	291	TS 578	1	0-10	FGS	No	Flake			None Observed	0%		0.31	10-15	Axial	Focal	12.19	11.95	1.87	L=W			
HLE T PAD 40	375	693	291	TS 578	2	10-20	Silcrete	No	Medial Fragment			None Observed	0%		0.55	10-15			12.11	13.15	4.40				
HLE T PAD 40	376	693	291	TS 578	2	10-20	Quartz	No	Medial Fragment			None Observed	0%		0.40	10-15			9.83	10.83	3.24				
HLE T PAD 40	377	693	291	TS 578	2	10-20	Quartz	No	Distal Fragment			None Observed	0%		0.81	10-15	Crushed		13.50	10.07	5.89				
HLE T PAD 40	378	693	291	TS 578	3	20-30	Quartz	No	Medial Fragment			None Observed	0%		0.27	10-15			6.28	12.40	3.18				
HLE T PAD 40	379	693	291	TS 578	3	20-30	IMT	No	Medial Fragment			Light Usewear	0%		0.62	10-15			10.69	13.25	3.38				
HLE T PAD 40	380	703	311	TS 579	3	20-30	Quartz	No	Distal Fragment			None Observed	0%		1.15	10-15	Crushed		11.67	10.09	7.54				
HLE T PAD 40	381	703	311	TS 579	3	20-30	Quartz	No	Flake			None Observed	0%		0.35	10-15	Feather	Crushed	12.60	5.73	4.87	Elongate			
HLE T PAD 40	382	688	306	TS 580	1	0-10	IMT	No	Proximal Fragment			Light Usewear	0%		0.74	15-20		Plain	16.57	14.68	3.55				
HLE T PAD 40	383	688	306	TS 580	1	0-10	IMT	No	Distal Fragment			None Observed	0%		0.76	15-20	Feather		11.12	15.64	4.45				
HLE T PAD 40	384	688	306	TS 580	1	0-10	Igneous - possibly andesite	No	Distal Fragment			None Observed	0%		0.30	15-20	Feather		6.91	16.02	3.06				
HLE T PAD 40	385	688	306	TS 580	1	0-10	Quartz	No	Distal Fragment			None Observed	0%		0.10	5-10	Feather								
HLE T PAD 40	386	688	306	TS 580	1	0-10	Igneous - possibly andesite	No	Flake			None Observed	0%		0.92	20-25	Axial	Plain	20.05	12.38	4.20	L>W			
HLE T PAD 40	387	688	306	TS 580	1	0-10	Chert	No	Flake			None Observed	0%		0.42	10-15	Axial	Ridged	14.64	10.34	3.06	L>W			
HLE T PAD 40	388	688	306	TS 580	1	0-10	Silcrete	No	Medial Fragment	Retouched	Undiagnostic	None Observed	0%		1.95	20-25			22.02	15.65	4.81				Partial unifacial ventral scalar retouch on left lateral
HLE T PAD 40	389	688	306	TS 580	2	10-20	Quartz	No	Medial Fragment			None Observed	0%		0.17	10-15			6.35	9.79	1.91				
HLE T PAD 40	390	688	306	TS 580	2	10-20	Quartz	No	Proximal Fragment			None Observed	0%		0.11	5-10		Plain							
HLE T PAD 40	391	688	306	TS 580	2	10-20	Quartz	No	Medial Fragment			None Observed	0%		0.17	5-10									
HLE T PAD 40	392	688	306	TS 580	2	10-20	Quartz	No	Flake			None Observed	0%		0.15	10-15	Feather	Focal	10.95	6.73	2.35	L>W			
HLE T PAD 40	393	688	306	TS 580	2	10-20	Chert	No	Flake			None Observed	0%		0.23	10-15	Axial	Focal	7.14	10.15	3.58	W>L			
HLE T PAD 40	394	688	306	TS 580	2	10-20	IMT	No	Core Fragment			None Observed	0%		2.89	20-25			20.77	17.50	8.02				
HLE T PAD 40	395	688	306	TS 580	3	20-30	Quartz	No	Medial Fragment			None Observed	0%		0.26	5-10									
HLE T PAD 40	396	688	306	TS 580	3	20-30	Chert	No	Medial Fragment			None Observed	0%		0.15	5-10									
HLE T PAD 40	397	693	306	TS 581	1	0-10	IMT	Dull Heat Fracture	Angular Fragment			None Observed	0%		0.26	5-10									
HLE T PAD 40	398	693	306	TS 581	1	0-10	IMT	Dull Heat Fracture	Angular Fragment			None Observed	0%		0.50	10-15									
HLE T PAD 40	399	693	306	TS 581	1	0-10	IMT	No	Angular Fragment			None Observed	0%		1.10	15-20									
HLE T PAD 40	400	693	306	TS 581	1	0-10	IMT	No	Angular Fragment			None Observed	0%		1.52	15-20									
HLE T PAD 40	401	693	306	TS 581	1	0-10	IMT	No	Medial Fragment			None Observed	0%		0.21	5-10									
HLE T PAD 40	402	693	306	TS 581	1	0-10	IMT	No	Medial Fragment			None Observed	0%		0.25	10-15			7.29	11.91	2.65				
HLE T PAD 40	403	693	306	TS 581	1	0-10	IMT	No	Medial Fragment			None Observed	0%		0.27	10-15			8.92	10.79	3.24				
HLE T PAD 40	404	693	306	TS 581	1	0-10	IMT	No	Medial Fragment			None Observed	0%		2.54	25-30			19.84	26.16	5.25				
HLE T PAD 40	405	693	306	TS 581	1	0-10	IMT	No	Medial Fragment			None Observed	0%		1.49	15-20			14.33	17.03	5.13				
HLE T PAD 40	406	693	306	TS 581	1	0-10	IMT	No	Medial Fragment			None Observed	0%		0.56	15-20			10.65	15.19	3.82				
HLE T PAD 40	407	693	306	TS 581	1	0-10	IMT	No	Medial Fragment			None Observed	0%		0.81	15-20			11.02	16.51	3.90				
HLE T PAD 40	408	693	306	TS 581	1	0-10	IMT	No	Medial Fragment			None Observed	0%		0.75	15-20			9.79	18.06	4.27				
HLE T PAD 40	409	693	306	TS 581	1	0-10	IMT	No	Medial Fragment			None Observed	0%		0.35	10-15			11.40	11.58	3.40				
HLE T PAD 40	410	693	306	TS 581	1	0-10	IMT	No	Proximal Fragment			None Observed	0%		0.49	10-15		Plain	7.97	14.71	5.81				
HLE T PAD 40	411	693	306	TS 581	1	0-10	IMT	No	Proximal Fragment			None Observed	0%		0.49	10-15		Plain	14.63	12.11	3.04				
HLE T PAD 40	412	693	306	TS 581	1	0-10	IMT	No	Proximal Fragment			None Observed	0%		0.64	15-20		Ridged	12.33	15.13	3.25				
HLE T PAD 40	413	693	306	TS 581	1	0-10	IMT	No	Proximal Fragment			None Observed	0%		0.40	10-15		Ridged	6.02	13.59	4.68				
HLE T PAD 40	414	693	306	TS 581	1	0-10	IMT	No	Proximal Fragment			None Observed	0%		1.74	20-25		Plain	17.00	20.53	6.74				
HLE T PAD 40	415	693	306	TS 581	1	0-10	IMT	No	Distal Fragment			None Observed	0%		0.20	10-15	Feather		6.54	14.83	3.12				
HLE T PAD 40	416	693	306	TS 581	1	0-10	IMT	No	Split Flake			Light Usewear	0%		1.87	20-25	Feather	Scarred	23.32	17.15	4.70				Left
HLE T PAD 40	417	693	306	TS 581	1	0-10	IMT	No	Flake			None Observed	0%		2.21	20-25	Feather	Plain	23.06	16.31	5.20	L>W			
HLE T PAD 40	418	693	306	TS 581	1	0-10	IMT	No	Flake			Light Usewear	0%		0.93	15-20	Axial	Plain	15.82	16.66	4.40	W>L			
HLE T PAD 40	419	693	306	TS 581	1	0-10	IMT	No	Flake			None Observed	0%		7.00	25-30	Axial	Faceted	27.82	22.52	8.10	L>W			
HLE T PAD 40	420	693	306	TS 581	1	0-10	IMT	No	Flake			None Observed	0%		8.50	35-40	Axial	Plain	39.38	25.29	9.52	L>W			
HLE T PAD 40	421	693	306	TS 581	1	0-10	IMT	No	Flake			None Observed	0%		9.18	30-35	Feather	Plain	30.82	28.03	11.83	L>W			
HLE T PAD 40	422	693	306	TS 581	1	0-10	IMT	No	Flake			None Observed	0%		2.29	20-25	Hinge	Plain	20.10	16.56	10.82	L>W			
HLE T PAD 40	423	693	306	TS 581	1	0-10	IMT	No	Flake			None Observed	0%		0.84	15-20	Axial	Plain	12.73	16.03	4.27	W>L			
HLE T PAD 40	424	693	306	TS 581	1	0-10	IMT	No	Flake			None Observed	0%		0.60	15-20	Hinge	Plain	17.33	9.63	3.65	L>W			
HLE T PAD 40	425	693	306	TS 581	1	0-10	IMT	Dull Heat Fracture	Flake			None Observed	0%		0.61	15-20	Axial	Focal	15.34	19.08	2.73	W>L			
HLE T PAD 40	426	693	306	TS 581	1	0-10	IMT	No	Flake			None Observed	0%		1.20	15-20	Feather	Plain	18.81	19.55	6.83	L=W			
HLE T PAD 40	427	693	306	TS 581	1	0-10	IMT	No	Flake			None Observed	0%		0.81	15-20	Feather	Plain	16.68	14.46	3.02	L>W			
HLE T PAD 40	428	693	306	TS 581	1	0-10	IMT	No	Flake			None Observed	0%		0.21	5-10	Feather	Crushed				W>L			
HLE T PAD 40	429	693	306	TS 581	1	0-10	IMT	No	Flake			None Observed	0%		0.19	20-25	Feather	Crushed				L>W			
HLE T PAD 40	430	693	306	TS 581	1	0-10	IMT	No	Flake			None Observed	0%		0.14	5-10	Feather	Crushed				L=W			
HLE T PAD 40	431	693	306	TS 581	1	0-10	Chert	No	Angular Fragment			None Observed	0%		0.17	5-10									
HLE T PAD 40	432	693	306	TS 581	1	0-10	Chert	No	Angular Fragment			None Observed	0%		0.53	10-15									
HLE T PAD 40	433	693	306	TS 581	1	0-10	Chert	No	Angular Fragment			None Observed	0%		0.29	10-15									
HLE T PAD 40	434	693	306	TS 581	1	0-10	Chert	No	Medial Fragment			None Observed	0%		0.12	5-10									
HLE T PAD 40	435	693	306	TS 581	1	0-10	Chert	No	Proximal Fragment			None Observed	0%		0.20	5-10		Crushed							
HLE T PAD 40	436	693	306	TS 581	1	0-10	Chert	No	Proximal Fragment			None Observed	0%		0.60	15-20		Plain	16.51	11.06	3.01				
HLE T PAD 40	437	693	306	TS 581	1	0-10	Chert	No	Proximal Fragment			None Observed	1-30%	Plain	1.21	20-25		Faceted	20.28	11.20	6.29				
HLE T PAD 40	438	693	306	TS 581	1	0-10	Chert	No	Distal Fragment			None Observed	0%		0.82	20-25	Feather		22.12	12.67	3.38				
HLE T PAD 40	439	693	306	TS 581	1	0-10	Chert	No	Flake			None Observed	0%		5.56	35-40	Axial	Scarred	36.22	20.73	8.46	L>W			
HLE T PAD 40	440	693	306	TS 581	1	0-10	Chert	No	Flake			None Observed	0%		0.41	15-20	Feather	Focal	13.88	15.44	3.22	W>L			
HLE T PAD 40	441	693	306	TS 581	1	0-10	Chert	No	Flake			Light Usewear	0%		0.56	15-20	Axial	Plain	17.92	10.15	2.68	L>W			
HLE T PAD 40	442	693	306	TS 581	1	0-10	Chert	No	Flake			None Observed	0%		0.33	10-15	Feather	Plain	14.15	9.55	2.30	L>W			
HLE T PAD 40	443	693	306	TS 581	1	0-10	Chert	No	Flake			Light Usewear	0%		0.44	10-15	Plunging	Focal	13.02	12.99	3.58	L=W			
HLE T PAD 40	444	693	306	TS 581	1	0-10	Quartzite	No	Angular Fragment			None Observed	0%		0.53	10-15									
HLE T PAD 40	445	693	306	TS 581	1	0-10	Quartzite	No	Proximal Fragment			None Observed	0%		0.65	10-15		Plain	10.83	9.56	4.94				
HLE T PAD 40	446	693	306	TS 581	1	0-10	Quartzite	No	Proximal Fragment			None Observed	31-69%	Cobble Cortex	1.32	15-20		Plain	17.48	11.81	6.44				

Site name	ID	Easting	Northing	Square	Spit	Depth (cm)	Material	Heat Affected?	Reduction Type	Tool/Core Type	Backed / Retouched Type	Usewear	Cortex %	Cortex Type	Weight (g)	Size Range mm	Termination	Platform	L mm	W mm	Th mm	Flake Shape	Cores # scars	Core body	Comments
HLE T PAD 40	447	693	306	TS 581	1	0-10	Quartzite	No	Distal Fragment			None Observed	0%		2.38	25-30	Axial		29.56	19.43	5.74				
HLE T PAD 40	448	693	306	TS 581	1	0-10	Quartzite	No	Distal Fragment			None Observed	0%		4.92	25-30	Axial		20.04	25.10	12.18				
HLE T PAD 40	449	693	306	TS 581	1	0-10	Quartzite	No	Flake			None Observed	0%		0.88	15-20	Feather	Plain	15.08	19.04	2.57	W>L			
HLE T PAD 40	450	693	306	TS 581	1	0-10	FG Silcrete	No	Flake			None Observed	0%		2.04	20-25	Axial	Ridged	18.69	23.49	5.92	W>L			
HLE T PAD 40	451	693	306	TS 581	1	0-10	FG Silcrete	No	Flake			None Observed	0%		0.59	15-20	Axial	Scarred	19.09	9.44	3.26	Elongate			
HLE T PAD 40	452	693	306	TS 581	1	0-10	FG Silcrete	No	Flake			None Observed	31-69%	Cobble Cortex	0.42	20-25	Feather	Scarred	23.75	5.08	2.81	Elongate			
HLE T PAD 40	453	693	306	TS 581	1	0-10	FGS	No	Medial Fragment			None Observed	0%		0.37	5-10									
HLE T PAD 40	454	693	306	TS 581	1	0-10	FG Silcrete	No	Flake			None Observed	0%		1.83	20-25	Axial	Ridged	16.53	20.04	5.56	W>L			
HLE T PAD 40	455	693	306	TS 581	1	0-10	MGS	No	Flake			None Observed	0%		1.19	20-25	Feather	Ridged	10.53	21.98	6.76	W>L			
HLE T PAD 40	456	693	306	TS 581	1	0-10	Igneous - possibly andesite	No	Medial Fragment			None Observed	0%		0.41	15-20			16.43	6.78	2.57				Black with white inclusions, same material present at HLE T PAD 24
HLE T PAD 40	457	693	306	TS 581	1	0-10	Quartz	No	Angular Fragment			None Observed	0%		0.17	5-10									
HLE T PAD 40	458	693	306	TS 581	1	0-10	Quartz	No	Angular Fragment			None Observed	0%		0.33	10-15									
HLE T PAD 40	459	693	306	TS 581	1	0-10	Quartz	No	Angular Fragment			None Observed	0%		0.30	15-20									
HLE T PAD 40	460	693	306	TS 581	1	0-10	Quartz	No	Angular Fragment			None Observed	0%		1.69	20-25									
HLE T PAD 40	461	693	306	TS 581	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		0.24	5-10									
HLE T PAD 40	462	693	306	TS 581	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		0.57	5-10									
HLE T PAD 40	463	693	306	TS 581	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		1.30	10-15			9.54	14.98	7.84				
HLE T PAD 40	464	693	306	TS 581	1	0-10	Quartz	No	Proximal Fragment			None Observed	0%		0.93	15-20		Scarred	13.62	16.03	4.05				
HLE T PAD 40	465	693	306	TS 581	1	0-10	Quartz	No	Proximal Fragment			None Observed	0%		0.96	10-15		Plain	13.62	9.83	6.76				
HLE T PAD 40	466	693	306	TS 581	1	0-10	Quartz	No	Proximal Fragment			None Observed	0%		0.20	10-15		Crushed	8.66	10.59	2.13				Smoky
HLE T PAD 40	467	693	306	TS 581	1	0-10	Quartz	No	Distal Fragment			None Observed	0%		1.07	10-15	Axial		14.63	12.56	5.81				
HLE T PAD 40	468	693	306	TS 581	1	0-10	Quartz	No	Distal Fragment			None Observed	0%		0.55	10-15	Feather		9.98	13.69	4.73				
HLE T PAD 40	469	693	306	TS 581	1	0-10	Quartz	No	Distal Fragment			None Observed	0%		0.17	5-10	Feather								
HLE T PAD 40	470	693	306	TS 581	1	0-10	Quartz	No	Flake			None Observed	0%		0.66	10-15	Feather	Plain	13.20	11.77	5.32	L>W			
HLE T PAD 40	471	693	306	TS 581	1	0-10	Quartz	No	Flake			None Observed	0%		0.69	10-15	Hinge	Plain	14.44	11.85	3.66	L>W			
HLE T PAD 40	472	693	306	TS 581	1	0-10	Quartz	No	Flake			None Observed	0%		0.41	10-15	Axial	Scarred	11.51	12.42	9.89	L>W			
HLE T PAD 40	473	693	306	TS 581	1	0-10	Quartz	No	Flake			None Observed	0%		0.33	10-15	Axial	Scarred	11.38	8.88	3.18	L>W			Crystal quartz - transparent
HLE T PAD 40	474	693	306	TS 581	1	0-10	Quartzite	No	Proximal Fragment			None Observed	1-30%	Cobble Cortex	9.57	30-35		Cortical	25.82	32.02	8.85				
HLE T PAD 40	475	693	306	TS 581	1	0-10	Chert	No	Core	Unifacial Rotated		None Observed	1-30%	Plain	4.33	25-30			28.10	17.54	9.07		8	Indeterminate	Microblade core - largest scar 27x9mm
HLE T PAD 40	476	693	306	TS 581	1	0-10	Chert	No	Medial Fragment	Retouched	Undiagnostic	None Observed	0%		0.86	10-15			13.89	13.92	4.15				Black, steep unifacial ventral scalar retouch stright across prox end.
HLE T PAD 40	477	693	306	TS 581	1	0-10	Quartz	No	Flake	Backed	Backed Blade Whole	None Observed	0%		0.80	15-20	Feather	Plain	19.58	10.50	4.22	L>W			Single backing left lateral
HLE T PAD 40	478	693	306	TS 581	1	0-10	IMT	No	Medial Fragment	Backed	Bondi Point Whole	None Observed	0%		0.68	20-25			22.10	7.44	5.15				Double backing left lateral
HLE T PAD 40	479	693	306	TS 581	2	10-20	IMT	No	Medial Fragment			None Observed	0%		0.71	10-15			9.48	12.59	5.20				
HLE T PAD 40	480	693	306	TS 581	2	10-20	Quartz	No	Medial Fragment			None Observed	0%		0.26	10-15			8.43	13.40	2.40				
HLE T PAD 40	481	693	306	TS 581	2	10-20	Quartz	No	Distal Fragment			None Observed	0%		0.38	5-10	Axial								
HLE T PAD 40	482	693	306	TS 581	2	10-20	Quartz	No	Distal Fragment			None Observed	0%		0.11	5-10	Feather								
HLE T PAD 40	483	693	306	TS 581	2	10-20	IMT	No	Distal Fragment			None Observed	0%		0.89	15-20	Hinge		12.82	17.60	3.77				
HLE T PAD 40	484	693	306	TS 581	2	10-20	FG Silcrete	No	Distal Fragment			None Observed	0%		0.21	5-10	Hinge								
HLE T PAD 40	485	693	306	TS 581	2	10-20	IMT	Dull Heat Fracture	Angular Fragment			None Observed	0%		3.52	25-30									
HLE T PAD 40	486	693	306	TS 581	2	10-20	IMT	No	Flake			None Observed	0%		0.70	15-20	Axial	Plain	12.59	18.27	3.10	W>L			
HLE T PAD 40	487	693	306	TS 581	2	10-20	IMT	No	Split Flake			Light Usewear	0%		3.00	25-30	Axial	Plain	29.67	19.64	6.25				Left
HLE T PAD 40	488	693	306	TS 581	2	10-20	FG Silcrete	No	Flake			None Observed	0%		0.51	15-20	Feather	Plain	18.12	7.56	3.68	Elongate			
HLE T PAD 40	489	693	306	TS 581	2	10-20	FG Silcrete	No	Flake			None Observed	0%		0.85	20-25	Plunging	Focal	20.09	10.67	4.28	L>W			
HLE T PAD 40	490	693	306	TS 581	2	10-20	Quartz	No	Flake			None Observed	0%		0.59	15-20	Plunging	Focal	18.28	9.83	3.65	L>W			
HLE T PAD 40	491	693	306	TS 581	2	10-20	Quartz	No	Flake			None Observed	0%		0.13	5-10	Feather	Focal				L>W			
HLE T PAD 40	492	693	306	TS 581	2	10-20	Igneous - possibly andesite	No	Medial Fragment			None Observed	0%		0.61	10-15			10.15	12.97	4.96				
HLE T PAD 40	493	693	306	TS 581	2	10-20	Igneous - possibly andesite	No	Proximal Fragment			None Observed	0%		0.65	15-20		Plain	8.27	15.41	4.20				
HLE T PAD 40	494	693	306	TS 581	2	10-20	Igneous - possibly andesite	No	Flake			None Observed	0%		0.11	5-10	Feather	Plain				W>L			
HLE T PAD 40	495	698	306	TS 582	1	0-10	IMT	No	Angular Fragment			None Observed	0%		2.00	15-20									
HLE T PAD 40	496	698	306	TS 582	1	0-10	IMT	No	Medial Fragment			None Observed	0%		0.31	10-15			12.26	6.65	3.52				
HLE T PAD 40	497	698	306	TS 582	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		0.21	10-15			8.31	12.42	2.82				
HLE T PAD 40	498	698	306	TS 582	1	0-10	Chert	No	Proximal Fragment			None Observed	0%		0.08	5-10		Crushed							
HLE T PAD 40	499	698	306	TS 582	1	0-10	Quartz	No	Distal Fragment			None Observed	0%		0.15	5-10	Feather								
HLE T PAD 40	500	698	306	TS 582	1	0-10	Chert	No	Distal Fragment			None Observed	31-69%	Plain	0.11	10-15	Feather		13.97	3.15	2.57				
HLE T PAD 40	501	698	306	TS 582	1	0-10	FG Silcrete	No	Flake			None Observed	0%		1.06	15-20	Feather	Ridged	18.07	19.27	3.60	W>L			
HLE T PAD 40	502	698	306	TS 582	1	0-10	Chert	No	Flake			None Observed	0%		0.15	5-10	Feather	Plain				L=W			
HLE T PAD 40	503	698	306	TS 582	1	0-10	FGS	No	Flake			None Observed	0%		2.57	25-30	Axial	Plain	26.55	15.28	6.90	L>W			
HLE T PAD 40	504	698	306	TS 582	1	0-10	FGS	No	Flake			None Observed	0%		0.54	15-20	Feather	Focal	14.45	15.07	3.36	L=W			
HLE T PAD 40	505	698	306	TS 582	1	0-10	Quartz	No	Flake			None Observed	0%		0.49	15-20	Feather	Plain	15.39	8.10	4.34	L>W			
HLE T PAD 40	506	698	306	TS 582	1	0-10	Quartzite	No	Proximal Fragment			None Observed	0%		0.73	10-15		Plain	9.13	13.75	4.91				Broken flake conjoin with ID 507
HLE T PAD 40	507	698	306	TS 582	1	0-10	Quartzite	No	Distal Fragment			None Observed	0%		0.55	10-15	Feather		12.22	14.18	3.52				Broken flake conjoin with ID 506
HLE T PAD 40	508	698	306	TS 582	1	0-10	Quartz	No	Core	Bipolar		None Observed	0%		0.75	15-20			17.23	11.38	4.00		4	Indeterminate	
HLE T PAD 40	509	698	306	TS 582	1	0-10	IMT	No	Core	Multidirectional		None Observed	1-30%	Plain	29.30	35-40			37.63	33.58	20.36		9	Indeterminate	
HLE T PAD 40	510	698	306	TS 582	2	10-20	FGS	No	Angular Fragment			None Observed	0%		0.81	15-20									
HLE T PAD 40	511	698	306	TS 582	2	10-20	IMT	No	Angular Fragment			None Observed	0%		0.24	10-15									
HLE T PAD 40	512	698	306	TS 582	2	10-20	IMT	No	Medial Fragment			None Observed	0%		0.29	10-15			12.11	11.54	1.83				
HLE T PAD 40	513	698	306	TS 582	2	10-20	Chert	No	Medial Fragment			None Observed	0%		0.17	5-10									
HLE T PAD 40	514	698	306	TS 582	2	10-20	Quartzite	No	Medial Fragment			None Observed	0%		2.73	20-25			16.93	24.30	6.17				
HLE T PAD 40	515	698	306	TS 582	2	10-20	Quartzite	No	Medial Fragment			None Observed	0%		0.30	10-15			11.06	12.87	2.49				
HLE T PAD 40	516	698	306	TS 582	2	10-20	Chert	No	Proximal Fragment			None Observed	0%		0.09	5-10		Crushed							
HLE T PAD 40	517	698	306	TS 582	2	10-20	Chert	No	Proximal Fragment			None Observed	0%		0.08	5-10		Plain							
HLE T PAD 40	518	698	306	TS 582	2	10-20	Chert	No	Proximal Fragment			None Observed	0%		0.32	10-15		Plain	9.56	10.23	2.65				
HLE T PAD 40	519	698	306	TS 582	2	10-20	Chert	No	Proximal Fragment			None Observed	0%		1.39	20-25		Focal	23.89	19.36	2.65				
HLE T PAD 40	520	698	306	TS 582	2	10-20	Silcrete	No	Proximal Fragment			None Observed	0%		0.23	10-15		Ridged	14.52	7.09	1.73				
HLE T PAD 40	521	698	306	TS 582	2	10-20	Quartz	No	Proximal Fragment			None Observed	0%		0.36	10-15		Plain	8.93	11.45	2.45				
HLE T PAD 40	522	698	306	TS 582	2	10-20	MGS	No	Proximal Fragment			None Observed	0%		0.65	10-15		Plain	13.03	14.56	3.66				
HLE T PAD 40	523	698	306	TS 582	2	10-20	Chert	No	Distal Fragment			None Observed	0%		0.73	15-20	Axial		16.15	16.06	3.50				
HLE T PAD 40	524	698	306	TS 582	2	10-20	Silcrete	No	Distal Fragment			None Observed	0%		0.19	5-10	Feather								
HLE T PAD 40	525	698	306	TS 582	2	10-20	Chert	No	Flake			None Observed	0%		0.25	10-15	Feather	Plain	10.35	11.22	2.21	L=W			
HLE T PAD 40	526	698	306	TS 582	2	10-20	FGS	No	Flake			Light Usewear	1-30%	Cobble Cortex	2.59	25-30	Feather	Plain	24.84	29.75	4.17	W>L			
HLE T PAD 40	527	698	306	TS 582	2	10-20	FG Silcrete	No	Split Flake			None Observed	0%		1.36	15-20	Feather	Scarred	16.72	15.04	4.45				
HLE T PAD 40	528	698	306	TS 582	2	10-20	FG Silcrete	No	Flake			None Observed	0%		0.50	10-15	Hinge	Plain	11.66	14.39	2.69	W>L			
HLE T PAD 40	529	698	306	TS 582	2	10-20	FG Silcrete	No	Flake			None Observed	0%		0.67	15-20	Feather	Faceted	17.31	15.56	2.81	L>W			
HLE T PAD 40	530	698	306	TS 582	2	10-20	Quartzite	No	Flake			None Observed	0%		0.23	5-10	Axial	Plain				L=W			
HLE T PAD 40	531	698	306	TS 582	2	10-20	Quartz	No	Flake			None Observed	0%		0.35	10-15	Axial	Focal	14.09	7.18	3.44	L>W			
HLE T PAD 40	532	713	306	TS 583	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		3.19	15-20			16.40	19.34	9.68				
HLE T PAD 40	533	713	306	TS 583	1	0-10	Quartz	No	Distal Fragment			None Observed	1-30%	Cobble Cortex	1.43	20-25	Crushed		24.62	9.68	7.02				
HLE T PAD 40	534	713	306	TS 583	1	0-10	Quartz	No	Flake			None Observed	0%		0.12	5-10	Feather	Focal				L>W			
HLE T PAD 40	535	713	306	TS 583	2	10-20	IMT	No	Medial Fragment			None Observed	0%		0.48	10-15			11.00	14.31	2.77				

Site name	ID	Easting	Northing	Square	Spit	Depth (cm)	Material	Heat Affected?	Reduction Type	Tool/Core Type	Backed / Retouched Type	Usewear	Cortex %	Cortex Type	Weight (g)	Size Range mm	Termination	Platform	L mm	W mm	Th mm	Flake Shape	Cores # scars	Core body	Comments
HLE T PAD 40	536	713	306	TS 583	2	10-20	Quartz	No	Medial Fragment			None Observed	0%		0.49	10-15			12.18	12.33	4.45				
HLE T PAD 40	537	713	306	TS 583	2	10-20	Quartz	No	Medial Fragment			None Observed	0%		0.30	10-15			7.95	11.36	3.58				
HLE T PAD 40	538	713	306	TS 583	2	10-20	Quartz	No	Proximal Fragment			None Observed	0%		0.29	10-15		Crushed	7.53	12.80	2.38				
HLE T PAD 40	539	713	306	TS 583	2	10-20	Quartz	No	Distal Fragment			None Observed	0%		0.14	5-10	Feather								
HLE T PAD 40	540	713	306	TS 583	3	20-30	Quartz	No	Medial Fragment			None Observed	0%		0.16	5-10									
HLE T PAD 40	541	713	306	TS 583	3	20-30	Quartz	No	Medial Fragment			None Observed	0%		0.36	10-15			13.97	8.48	3.48				
HLE T PAD 40	542	713	306	TS 583	3	20-30	Quartz	No	Medial Fragment			None Observed	0%		0.52	10-15			11.51	13.18	3.32				
HLE T PAD 40	543	713	306	TS 583	3	20-30	Quartz	No	Medial Fragment			None Observed	0%		0.55	10-15			14.57	10.66	4.10				
HLE T PAD 40	544	713	306	TS 583	3	20-30	Quartz	No	Distal Fragment			None Observed	0%		0.35	10-15	Axial		13.82	6.39	2.92				
HLE T PAD 40	545	713	306	TS 583	3	20-30	Quartz	No	Distal Fragment			None Observed	0%		0.23	5-10	Feather								
HLE T PAD 40	546	713	306	TS 583	3	20-30	Quartz	No	Flake			None Observed	0%		0.53	15-20	Axial	Focal	15.46	10.37	2.88	L>W			
HLE T PAD 40	547	713	306	TS 583	3	20-30	Quartz	No	Flake			None Observed	0%		4.35	35-40	Feather	Focal	17.06	37.85	9.37	W>L			
HLE T PAD 40	548	713	306	TS 583	3	20-30	FGS	No	Angular Fragment			None Observed	0%		1.14	20-25									
HLE T PAD 40	549	713	306	TS 583	3	20-30	FGS	No	Distal Fragment			None Observed	0%		0.19	5-10	Feather								
HLE T PAD 40	550	693	311	TS 584	1	0-10	IMT	No	Medial Fragment			None Observed	0%		0.19	5-10									
HLE T PAD 40	551	693	311	TS 584	1	0-10	IMT	Dull Heat Fracture	Medial Fragment			None Observed	0%		4.73	30-35			33.14	18.55	9.98				
HLE T PAD 40	552	693	311	TS 584	1	0-10	Chert	No	Proximal Fragment			None Observed	0%		0.32	10-15		Plain	9.10	11.50	3.16				
HLE T PAD 40	553	693	311	TS 584	1	0-10	IMT	No	Proximal Fragment			None Observed	0%		0.86	15-20		Focal	10.76	15.56	4.47				
HLE T PAD 40	554	693	311	TS 584	1	0-10	IMT	No	Proximal Fragment			None Observed	0%		0.20	5-10		Focal							
HLE T PAD 40	555	693	311	TS 584	1	0-10	IMT	No	Proximal Fragment			None Observed	0%		0.42	10-15		Plain	10.29	9.78	5.83				
HLE T PAD 40	556	693	311	TS 584	1	0-10	IMT	No	Proximal Fragment			None Observed	0%		0.36	15-20		Faceted	16.28	9.00	2.67				
HLE T PAD 40	557	693	311	TS 584	1	0-10	Chert	No	Flake			None Observed	0%		0.86	20-25	Axial	Plain	20.30	9.44	4.79	Elongate			
HLE T PAD 40	558	693	311	TS 584	1	0-10	FG Silcrete	No	Flake			None Observed	0%		0.26	10-15	Hinge	Focal	12.01	8.74	2.23	L>W			
HLE T PAD 40	559	693	311	TS 584	1	0-10	Chert	No	Flake			None Observed	0%		0.21	10-15	Feather	Plain	7.54	14.17	2.06	W>L			
HLE T PAD 40	560	693	311	TS 584	1	0-10	IMT	No	Flake			None Observed	0%		0.05	5-10	Hinge	Plain				L>W			
HLE T PAD 40	561	693	311	TS 584	1	0-10	IMT	No	Flake			None Observed	1-30%	Cobble Cortex	3.75	30-35	Feather	Plain	30.29	19.35	4.57	L>W			
HLE T PAD 40	562	693	311	TS 584	1	0-10	IMT	No	Flake			None Observed	31-89%	Cobble Cortex	4.57	25-30	Axial	Plain	27.01	20.15	8.23	L>W			
HLE T PAD 40	563	693	311	TS 584	1	0-10	IMT	No	Flake			None Observed	0%		0.71	15-20	Feather	Faceted	17.23	11.76	2.94	L>W			
HLE T PAD 40	564	693	311	TS 584	1	0-10	IMT	No	Flake			None Observed	0%		1.23	25-30	Feather	Faceted	26.11	11.59	4.48	Elongate			
HLE T PAD 40	565	693	311	TS 584	1	0-10	IMT	No	Flake			None Observed	0%		0.45	20-25	Feather	Scarred	20.08	7.10	2.41	Elongate			
HLE T PAD 40	566	693	311	TS 584	1	0-10	Chert	No	Flake			None Observed	0%		2.52	25-30	Plunging	Plain	26.17	16.22	6.01	L>W			
HLE T PAD 40	567	693	311	TS 584	1	0-10	Quartzite	No	Flake			None Observed	0%		4.70	25-30	Feather	Plain	27.95	21.39	8.02	L>W			
HLE T PAD 40	568	693	311	TS 584	1	0-10	Quartz	No	Proximal Fragment			None Observed	0%		0.21	5-10		Plain							
HLE T PAD 40	569	693	311	TS 584	1	0-10	Quartz	No	Proximal Fragment			None Observed	0%		0.15	10-15		Plain	11.66	6.79	1.81				
HLE T PAD 40	570	693	311	TS 584	1	0-10	Quartz	No	Proximal Fragment			None Observed	0%		2.44	15-20		Crushed	17.87	16.75	9.80				
HLE T PAD 40	571	693	311	TS 584	1	0-10	Quartz	No	Distal Fragment			None Observed	0%		0.57	15-20	Feather		8.54	15.43	5.16				
HLE T PAD 40	572	693	311	TS 584	1	0-10	Quartz	No	Distal Fragment			None Observed	0%		0.10	5-10	Crushed								
HLE T PAD 40	573	693	311	TS 584	1	0-10	Quartz	No	Distal Fragment			None Observed	0%		0.70	10-15	Feather		13.54	11.12	6.21				
HLE T PAD 40	574	693	311	TS 584	1	0-10	Quartz	No	Flake			None Observed	1-30%	Rough Granular	1.60	15-20	Axial	Cortical	16.10	17.59	5.71	W>L			
HLE T PAD 40	575	693	311	TS 584	1	0-10	Quartz	No	Flake			None Observed	1-30%	Cobble Cortex	0.98	25-30	Axial	Focal	26.70	7.42	6.25	Elongate			
HLE T PAD 40	576	693	311	TS 584	1	0-10	IMT	No	Proximal Fragment	Backed	Bondi Point Whole	None Observed	0%		0.23	15-20		Focal	18.11	6.35	1.83				Partial single backing on left distal forming point
HLE T PAD 40	577	693	311	TS 584	1	0-10	Silcrete	No	Proximal Fragment	Backed	Undiagnostic	None Observed	0%		0.88	15-20		Ridged	15.64	13.13	3.24				Partial single backing at prox end of left lateral
HLE T PAD 40	578	693	311	TS 584	1	0-10	IMT	No	Distal Fragment	Retouched	Undiagnostic	None Observed	0%		1.00	20-25	Feather		22.22	9.69	3.55				Steep unifacial concave retouch at prox end
HLE T PAD 40	579	693	311	TS 584	1	0-10	IMT	No	Medial Fragment	Retouched	Thumbnail Scraper	None Observed	0%		0.95	15-20			15.95	11.87	3.88				Unifacial ventral scalar retouch around distal - neat convex shape. Prox snapped.
HLE T PAD 40	580	693	311	TS 584	1	0-10	IMT	No	Distal Fragment			None Observed	0%		0.62	10-15	Feather		11.48	14.82	7.08				
HLE T PAD 41	581	294	854	TS 541	2	10-20	Quartz	No	Flake			None Observed	0%		1.51	15-20	Axial	Scarred	18.70	11.61	6.38	L>W			
HLE Y PAD 27	582	217	540	TS 397	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		0.31	10-15			9.43	13.01	2.47				
HLE Y PAD 27	583	207	540	TS 398	1	0-10	Chert	No	Flake			None Observed	1-30%	Cobble Cortex	0.38	15-20	Axial	Focal	11.43	16.68	2.50	W>L			
HLE Y PAD 27	584	207	540	TS 398	3	20-30	Quartz	No	Angular Fragment			None Observed	0%		0.44	10-15									
HLE Y PAD 27	585	217	550	TS 400	1	0-10	FG Silcrete	No	Flake			None Observed	1-30%	Cobble Cortex	3.20	30-35	Plunging	Cortical	33.91	16.03	6.48	Elongate			
HLE Y PAD 27	586	217	550	TS 400	2	10-20	Chert	No	Distal Fragment			None Observed	1-30%	Cobble Cortex	2.42	25-30	Feather		28.37	17.69	5.21				
HLE Y PAD 27	587	217	560	TS 402	1	0-10	Chalcedony	No	Flake			None Observed	0%		0.10	5-10	Feather	Focal				L>W			
HLE Y PAD 27	588	222	580	TS 404	1	0-10	Quartz	No	Angular Fragment			None Observed	0%		0.23	5-10									
HLE Y PAD 27	589	222	580	TS 404	1	0-10	Chert	No	Distal Fragment			None Observed	0%		0.16	10-15	Axial		14.80	4.79	2.71				
HLE Y PAD 27	590	222	580	TS 404	1	0-10	Quartz	No	Flake			None Observed	0%		0.13	10-15	Feather	Focal	10.63	4.45	2.59	Elongate			
HLE Y PAD 27	591	222	580	TS 404	1	0-10	FG Silcrete	No	Flake			None Observed	0%		0.84	20-25	Plunging	Scarred	20.69	15.40	4.36	L>W			
HLE Y PAD 27	592	222	580	TS 404	1	0-10	Chalcedony	No	Flake			None Observed	0%		0.03	5-10	Hinge	Focal				W>L			Pink, high quality material (unique)
HLE Y PAD 27	593	222	580	TS 404	2	10-20	Quartz	No	Medial Fragment			None Observed	0%		0.33	15-20			5.79	15.27	3.82				
HLE Y PAD 27	594	222	580	TS 404	2	10-20	FG Silcrete	No	Distal Fragment			None Observed	0%		0.06	5-10	Feather								
HLE Y PAD 27	595	227	590	TS 405	1	0-10	IMT	No	Medial Fragment			None Observed	0%		0.11	5-10									
HLE Y PAD 27	596	227	590	TS 405	1	0-10	IMT	No	Distal Fragment			None Observed	0%		1.35	15-20	Axial		12.17	19.95	6.00				
HLE Y PAD 27	597	227	590	TS 405	1	0-10	IMT	No	Medial Fragment	Retouched	Undiagnostic	None Observed	0%		1.29	25-30			25.49	13.70	3.06				Unifacial ventral step/scalar retouch - trimmed at an angle across prox, continuous around left lateral and distal. Right side broken.
HLE Y PAD 27	598	207	510	TS 406	1	0-10	Chert	No	Medial Fragment			Light Usewear	0%		0.35	10-15			14.74	11.60	1.91				
HLE Y PAD 27	599	207	510	TS 406	3	20-30	Quartz	No	Distal Fragment			None Observed	0%		0.06	5-10	Feather								
HLE Y PAD 27	600	887	327	TS 408	2	10-20	Quartzite	No	Medial Fragment			None Observed	0%		2.60	20-25			15.37	21.86	8.78				
HLE Y PAD 27	601	877	327	TS 409	1	0-10	Quartz	No	Angular Fragment			None Observed	0%		0.39	10-15									
HLE Y PAD 27	602	877	327	TS 409	1	0-10	Quartzite	No	Medial Fragment			None Observed	0%		2.55	25-30			29.05	15.02	6.60				
HLE Y PAD 27	603	877	327	TS 409	1	0-10	Quartz	No	Proximal Fragment			None Observed	1-30%	Rough Granular	0.71	10-15		Cortical	11.58	9.96	5.92				
HLE Y PAD 27	604	877	327	TS 409	1	0-10	FG Silcrete	No	Flake			None Observed	0%		0.10	10-15	Hinge	Ridged	4.72	13.07	1.61	W>L			
HLE Y PAD 27	605	877	327	TS 409	2	10-20	Quartz	No	Medial Fragment			None Observed	0%		0.07	5-10									
HLE Y PAD 27	606	877	327	TS 409	2	10-20	Quartz	No	Proximal Fragment			None Observed	0%		0.24	5-10		Plain							
HLE Y PAD 27	607	877	327	TS 409	2	10-20	Quartz	No	Distal Fragment			None Observed	0%		0.13	5-10	Feather								
HLE Y PAD 27	608	877	327	TS 409	2	10-20	Quartz	No	Flake			None Observed	0%		0.94	15-20	Axial	Plain	15.95	11.22	4.47	L>W			
HLE Y PAD 27	609	877	327	TS 409	3	20-30	Quartz	No	Flake			None Observed	0%		0.35	10-15	Axial	Plain	11.40	9.73	2.23	L>W			
HLE Y PAD 27	610	867	327	TS 410	1	0-10	Quartz	No	Distal Fragment			None Observed	0%		0.09	5-10	Feather								
HLE Y PAD 27	611	867	327	TS 410	1	0-10	Quartzite	No	Flake			None Observed	1-30%	Rough Granular	2.25	20-25	Axial	Faceted	20.37	14.62	5.79	L>W			
HLE Y PAD 27	612	867	327	TS 410	1	0-10	IMT	No	Flake			None Observed	0%		1.16	15-20	Axial	Plain	17.76	15.68	6.14	L>W			
HLE Y PAD 27	613	857	327	TS 411	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		0.15	5-10									
HLE Y PAD 27	614	857	327	TS 411	1	0-10	Quartz	No	Proximal Fragment			None Observed	0%		0.28	5-10		Plain							
HLE Y PAD 27	615	857	327	TS 411	1	0-10	Quartz	No	Flake			None Observed	0%		0.18	5-10	Axial	Plain				L=W			
HLE Y PAD 27	616	857	327	TS 411	2	10-20	Quartz	No	Medial Fragment			None Observed	0%		0.14	5-10									
HLE Y PAD 27	617	857	327	TS 411	2	10-20	Quartz	No	Flake			None Observed	0%		0.18	10-15	Feather	Crushed	12.47	8.16	1.74	L>W			
HLE Y PAD 27	618	857	327	TS 411	2	10-20	Quartz	No	Core	Bipolar		None Observed	0%		0.71	15-20			17.57	11.47	3.48		3	Indeterminate	
HLE Y PAD 27	619	857	327	TS 411	3	20-30	Quartz	No	Proximal Fragment			None Observed	1-30%	Rough Granular	0.15	5-10		Focal							
HLE Y PAD 27	620	847	327	TS 412	1	0-10	Quartz	No	Proximal Fragment			None Observed	0%		0.24	5-10		Crushed							
HLE Y PAD 27	621	877	337	TS 414	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		0.15	5-10									
HLE Y PAD 27	622	867	337	TS 415	1	0-10	Chert	No	Medial Fragment			None Observed	0%		0.10	5-10									
HLE Y PAD 27	623	867	337	TS 415	1	0-10	Chalcedony	No	Distal Fragment			None Observed	0%		0.19	10-15	Feather		12.30	5.04	4.20				

Site name	ID	Easting	Northing	Square	Spit	Depth (cm)	Material	Heat Affected?	Reduction Type	Tool/Core Type	Backed / Retouched Type	Usewear	Cortex %	Cortex Type	Weight (g)	Size Range mm	Termination	Platform	L mm	W mm	Th mm	Flake Shape	Cores # scars	Core body	Comments
HLE Y PAD 27	624	867	337	TS 415	1	0-10	FG Silcrete	No	Distal Fragment			None Observed	0%		0.26	15-20	Plunging		15.50	5.45	3.38				
HLE Y PAD 27	625	867	337	TS 415	1	0-10	Chert	No	Flake			None Observed	0%		0.13	5-10	Feather	Plain				L>W			
HLE Y PAD 27	626	867	337	TS 415	1	0-10	Quartzite	No	Flake			None Observed	0%		2.04	15-20	Axial	Plain	19.39	15.81	5.66	L>W			
HLE Y PAD 27	627	867	337	TS 415	1	0-10	Quartz	No	Flake			None Observed	0%		0.74	15-20	Axial	Plain	9.85	15.47	4.73	W>L			
HLE Y PAD 27	628	867	337	TS 415	1	0-10	Quartz	No	Flake			None Observed	0%		0.56	10-15	Axial	Crushed	8.59	13.12	3.23	W>L			
HLE Y PAD 27	629	867	337	TS 415	1	0-10	Quartz	No	Flake			None Observed	0%		0.12	5-10	Axial	Focal				L>W			
HLE Y PAD 27	630	867	337	TS 415	2	10-20	Chert	No	Proximal Fragment			None Observed	0%		0.15	10-15		Scarred	6.84	11.3.9	2.07				
HLE Y PAD 27	631	867	337	TS 415	2	10-20	Quartz	No	Distal Fragment			Light Usewear	0%		0.24	10-15	Axial		11.25	7.68	2.83				
HLE Y PAD 27	632	867	337	TS 415	2	10-20	Quartz	No	Flake			None Observed	0%		0.17	10-15	Feather	Plain	6.85	13.84	2.02	W>L			
HLE Y PAD 27	633	867	337	TS 415	2	10-20	Quartz	No	Core Fragment			None Observed	0%		3.79	20-25			24.19	19.44	6.92				
HLE Y PAD 27	634	857	337	TS 416	2	10-20	Chert	No	Medial Fragment	Backed	Bondi Point Whole	None Observed	0%		0.34	15-20			16.06	5.81	3.35				Single backing across prox and left lateral
HLE Y PAD 27	635	005	404	TS 418	1	0-10	Chert	No	Medial Fragment			None Observed	0%		0.15	5-10									
HLE Y PAD 27	636	005	404	TS 418	1	0-10	Quartzite	No	Proximal Fragment			None Observed	0%		0.74	10-15		Ridged	12.09	13.21	4.39				
HLE Y PAD 27	637	005	404	TS 418	1	0-10	Quartz	No	Distal Fragment			None Observed	0%		0.16	5-10	Crushed								
HLE Y PAD 27	638	005	404	TS 418	1	0-10	Quartz	No	Flake			None Observed	0%		0.10	5-10	Feather	Plain				L=W			
HLE Y PAD 27	639	005	404	TS 418	1	0-10	Quartz	No	Core	Multidirectional		None Observed	0%		9.65	25-30			27.44	15.47	17.43		3	Indeterminate	
HLE Y PAD 27	640	005	404	TS 418	2	10-20	IMT	No	Flake			None Observed	0%		3.28	30-35	Feather	Plain	34.38	23.66	4.22	L>W			
HLE Y PAD 27	641	005	384	TS 419	1	0-10	Quartz	No	Proximal Fragment			None Observed	0%		0.27	10-15		Plain	11.94	8.31	2.20				
HLE Y PAD 27	642	005	384	TS 419	1	0-10	Quartz	No	Distal Fragment			None Observed	0%		0.12	5-10	Crushed								
HLE Y PAD 27	643	005	384	TS 419	1	0-10	Quartz	No	Flake			None Observed	0%		1.87	20-25	Plunging	Plain	24.67	12.96	4.83	L>W			
HLE Y PAD 27	644	005	384	TS 419	1	0-10	Chert	No	Flake			None Observed	0%		0.87	20-25	Axial	Plain	23.27	9.01	3.58	Elongate			Grey/beige, same material for ID 644 and 648-653
HLE Y PAD 27	645	005	384	TS 419	2	10-20	FG Silcrete	No	Proximal Fragment			None Observed	0%		0.20	5-10		Crushed							
HLE Y PAD 27	646	005	384	TS 419	2	10-20	Quartz	No	Medial Fragment			None Observed	0%		0.40	10-15			9.79	11.98	3.68				
HLE Y PAD 27	647	005	384	TS 419	2	10-20	Quartz	No	Distal Fragment			None Observed	0%		1.21	20-25	Feather		22.94	11.11	5.52				
HLE Y PAD 27	648	005	384	TS 419	2	10-20	Chert	No	Medial Fragment			None Observed	0%		0.01	5-10									Grey/beige, same material for ID 644 and 648-653
HLE Y PAD 27	649	005	384	TS 419	2	10-20	Chert	No	Medial Fragment			None Observed	0%		0.21	10-15			12.26	10.28	1.03				Grey/beige, same material for ID 644 and 648-653
HLE Y PAD 27	650	005	384	TS 419	2	10-20	Chert	No	Flake			None Observed	0%		0.19	10-15	Axial	Plain	12.15	10.40	1.51	L>W			Grey/beige, same material for ID 644 and 648-653
HLE Y PAD 27	651	005	384	TS 419	2	10-20	Chert	No	Flake			None Observed	0%		0.73	20-25	Axial	Plain	23.72	16.20	2.32	L>W			Grey/beige, same material for ID 644 and 648-653
HLE Y PAD 27	652	005	384	TS 419	2	10-20	Chert	No	Flake			None Observed	0%		0.48	15-20	Hinge	Plain	18.81	9.02	2.99	Elongate			Grey/beige, same material for ID 644 and 648-653
HLE Y PAD 27	653	005	384	TS 419	2	10-20	Chert	No	Core	Multidirectional		None Observed	1-30%	Plain	21.66	30-35			34.99	26.38	23.38		12	Indeterminate	Grey/beige, same material for ID 644 and 648-653
HLE Y PAD 27	654	089	411	TS 421	1	0-10	Quartzite	No	Distal Fragment			None Observed	0%		0.01	5-10	Feather								
HLE Y PAD 27	655	089	411	TS 421	1	0-10	Quartzite	No	Flake			None Observed	0%		1.76	15-20	Feather	Scarred	18.95	15.53	5.99	L>W			
HLE Y PAD 27	656	089	411	TS 421	1	0-10	Quartzite	No	Flake			None Observed	0%		0.49	15-20	Hinge	Crushed	15.27	9.55	2.74	L>W			
HLE Y PAD 27	657	207	408	TS 422	2 (5cm)	5-10	Quartz	No	Core	Unifacial		None Observed	0%		1.10	10-15			13.93	11.47	6.58		1	Flake	
HLE Y PAD 27	658	207	408	TS 422	2 (5cm)	5-10	FGS	No	Medial Fragment			None Observed	1-30%	Cobble Cortex	8.47	40-45			18.63	46.94	12.09				
HLE Y PAD 27	659	207	408	TS 422	3 (5cm)	10-15	Chert	No	Flake			None Observed	1-30%	Rough Granular	0.36	5-10	Axial	Ridged				L>W			
HLE Y PAD 27	660	207	408	TS 422	3 (5cm)	10-15	Chert	No	Flake			None Observed	0%		1.08	15-20	Feather	Plain	18.37	12.82	6.01	L>W			
HLE Y PAD 27	661	207	408	TS 422	3 (5cm)	10-15	Chert	No	Flake			None Observed	0%		1.47	15-20	Feather	Plain	19.25	16.88	6.58	L>W			
HLE Y PAD 27	662	207	408	TS 422	3 (5cm)	10-15	Chert	No	Flake			None Observed	0%		0.29	10-15	Hinge	Plain	11.78	10.32	2.00	L>W			
HLE Y PAD 27	663	207	408	TS 422	4 (5cm)	15-20	FG Silcrete	No	Medial Fragment			None Observed	0%		0.28	10-15			12.01	9.08	1.99				
HLE Y PAD 27	664	207	408	TS 422	4 (5cm)	15-20	Chert	No	Distal Fragment			None Observed	1-30%	Rough Granular	1.25	15-20	Hinge		14.17	19.19	5.79				
HLE Y PAD 27	665	207	408	TS 422	4 (5cm)	15-20	Chert	No	Flake			None Observed	0%		0.70	15-20	Feather	Plain	16.04	15.28	3.62	L=W			
HLE Y PAD 27	666	207	408	TS 422	4 (5cm)	15-20	Quartz	No	Flake			None Observed	0%		3.28	20-25	Axial	Plain	20.14	18.73	9.62	L>W			
HLE Y PAD 27	667	207	408	TS 422	6 (5cm)	25-30	Quartz	No	Flake			None Observed	0%		2.51	15-20	Axial	Plain	17.45	16.51	9.08	L=W			
HLE Y PAD 27	668	197	408	TS 423	1	0-10	Quartzite	No	Medial Fragment			None Observed	0%		1.00	15-20			17.60	12.11	3.98				
HLE Y PAD 27	669	197	408	TS 423	1	0-10	IMT	No	Proximal Fragment			None Observed	0%		4.57	30-35		Faceted	32.21	25.58	5.82				
HLE Y PAD 27	670	197	408	TS 423	1	0-10	Quartz	No	Flake			None Observed	0%		0.08	5-10	Feather	Plain				L>W			
HLE Y PAD 27	671	197	408	TS 423	2	10-20	FGS	No	Medial Fragment			None Observed	1-30%	Cobble Cortex	0.73	15-20			15.45	12.76	3.54				
HLE Y PAD 27	672	197	408	TS 423	2	10-20	Chert	No	Medial Fragment			None Observed	0%		0.14	5-10									
HLE Y PAD 27	673	197	408	TS 423	2	10-20	IMT	No	Medial Fragment			Light Usewear	0%		0.55	15-20			17.72	11.07	3.14				
HLE Y PAD 27	674	197	408	TS 423	2	10-20	Quartz	No	Medial Fragment			None Observed	0%		0.17	10-15			13.55	4.00	2.40				
HLE Y PAD 27	675	197	408	TS 423	2	10-20	FGS	No	Proximal Fragment			None Observed	1-30%	Cobble Cortex	0.88	20-25		Plain	20.14	11.77	4.23				
HLE Y PAD 27	676	197	408	TS 423	2	10-20	Quartz	No	Distal Fragment			None Observed	0%		0.34	10-15	Feather		8.29	11.80	4.28				
HLE Y PAD 27	677	187	408	TS 424	1	0-10	Quartz	No	Proximal Fragment			None Observed	0%		0.19	10-15		Plain	4.33	11.95	3.83				
HLE Y PAD 27	678	187	408	TS 424	1	0-10	IMT	No	Proximal Fragment			None Observed	0%		0.36	10-15		Plain	9.93	13.10	2.27				
HLE Y PAD 27	679	187	408	TS 424	1	0-10	IMT	No	Proximal Fragment			None Observed	0%		0.14	10-15		Crushed	5.79	14.19	1.71				
HLE Y PAD 29	680	895	740	TS 435	5 (5cm)	20-25	Silcrete	No	Split Flake			None Observed	0%		1.74	15-20	Feather	Plain	19.58	15.99	6.02				Left
HLE Y PAD 29	681	885	740	TS 436	1	0-10	Chert	No	Distal Fragment			Light Usewear	0%		0.05	5-10	Feather								
HLE Y PAD 29	682	875	730	TS 440	2	10-20	Quartz	No	Proximal Fragment			None Observed	0%		0.88	15-20		Plain	8.86	18.55	5.41				
HLE Y PAD 29	683	875	730	TS 440	2	10-20	Quartz	No	Flake			None Observed	0%		0.39	10-15	Feather	Plain	7.82	13.85	3.46	W>L			
HLE Y PAD 29	684	885	765	TS 442	2	10-20	Chert	No	Proximal Fragment			None Observed	0%		0.76	10-15		Plain	13.49	12.27	4.00				Same material for ID 684-687, broken flake conjoin with ID 685
HLE Y PAD 29	685	885	765	TS 442	2	10-20	Chert	No	Medial Fragment			None Observed	1-30%	Rough Granular	0.60	15-20			15.84	10.49	2.68				Same material for ID 684-687, broken flake conjoin with ID 684
HLE Y PAD 29	686	885	765	TS 442	2	10-20	Chert	No	Proximal Fragment			None Observed	1-30%	Rough Granular	0.78	15-20		Plain	19.50	14.31	2.21				Same material for ID 684-687
HLE Y PAD 29	687	885	765	TS 442	2	10-20	Chert	No	Distal Fragment			None Observed	0%		1.63	20-25	Feather		17.09	21.62	7.03				Same material for ID 684-687
HLE Y PAD 29	688	885	765	TS 442	2	10-20	IMT	No	Proximal Fragment			None Observed	0%		0.66	15-20		Scarred	18.73	9.86	2.31				Grey, same material for ID 688-690
HLE Y PAD 29	689	885	765	TS 442	2	10-20	IMT	No	Flake			None Observed	0%		0.56	15-20	Feather	Crushed	13.86	15.52	2.71	W>L			Grey, same material for ID 688-690
HLE Y PAD 29	690	885	765	TS 442	2	10-20	IMT	No	Flake			None Observed	0%		0.12	10-15	Feather	Plain	7.75	11.94	1.40	W>L			Grey, same material for ID 688-690
HLE Y PAD 29	691	885	765	TS 442	2	10-20	Chert	No	Flake			None Observed	0%		0.88	20-25	Feather	Plain	22.95	17.69	5.71	L>W			
HLE Y PAD 29	692	885	765	TS 442	2	10-20	Chert	No	Flake			None Observed	0%		2.09	20-25	Hinge	Plain	24.40	15.40	10.16	L>W			Quartz veins
HLE Y PAD 29	693	885	765	TS 442	2	10-20	IMT	No	Flake			None Observed	0%		0.36	15-20	Feather	Ridged	15.40	12.82	1.93	L>W			
HLE Y PAD 29	694	875	765	TS 443	2	10-20	Chert	No	Distal Fragment			None Observed	0%		0.51	10-15	Hinge		13.19	15.01	2.08				
HLE T PAD 40	695	818	363	TS 585	1	0-10	Quartz	No	Angular Fragment			None Observed	0%		0.33	10-15									
HLE T PAD 40	696	818	363	TS 585	1	0-10	Quartz	No	Angular Fragment			None Observed	0%		0.10	5-10									
HLE T PAD 40	697	818	363	TS 585	1	0-10	Quartz	No	Medial Fragment			None Observed	0%		0.12	5-10									