REDACTED VERSION

ACT MATERIALS RECOVERY FACILITY

ADDENDUM TO APPENDIX R CULTURAL HERITAGE ASSESSMENT

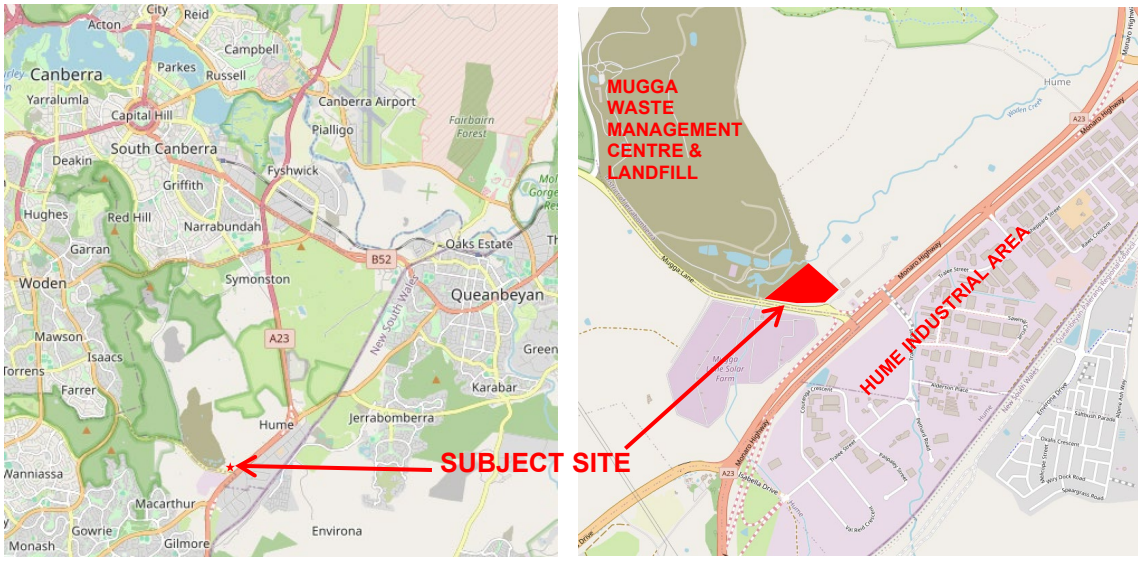
Prepared for Veolia Environmental Services (Australia) Pty Ltd | 2 April 2025

Introduction

This report is prepared as an Addendum to *Appendix R Cultural Heritage Assessment* (CHA) prepared by Navin Officer Heritage Consultants for GHD and ACT NoWaste in 2023 and submitted with a draft EIS for a new Materials Recovery Facility (MRF) on Block 12 Section 25 Hume, refer Figure 1.

Since that time ACT NoWaste has passed the responsibility to finalise the EIS to Veolia. GHD are not in a position to complete the EIS and as such, Veolia has engaged Element Environment to undertake this work.

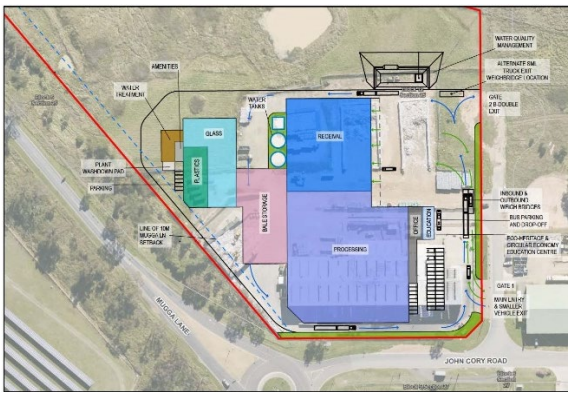
Figure 1: Site Location



Veolia has made changes to the proposed site layout and design of the MRF to achieve operational efficiencies (refer Figure 2 & 3).

Figure 2: Veolia Revised Site Plan

Figure 3: GHD Concept Plan



Additional Investigations

The Navin Officer *Appendix R Cultural Heritage Assessment* considered a 'Proposed Impact Area' and concluded that:

- No further works are required at site HMRF01 (as all artefacts were collected), but HMRF01 should be added to the Heritage Register as a site of Aboriginal heritage.
- No further works are required at site NW1/PAD 1.

- With regards to Hume Site 1, if calcareous deposits are encountered during construction, then work must stop and the unanticipated discovery protocol for palaeontological material is to be complied with.

Review of the revised site plan indicates works are proposed in areas outside of the 'Proposed Impact Area' of the CHA. Since the time of CHA finalisation, an investigative auger survey of Hume Site 1 has been completed.

As a result, ACT Heritage requested additional advice as the revised proposal includes works outside of the previously identified 'Proposed Impact Area'. The additional advice required included:

- An addendum report which considers the latest investigation of Hume Site 1 and the revised development footprint and assesses whether direct impacts to deposits associated with Hume Site 1 will occur.
- If this assessment, or further Council advice identifies that proposed works may diminish the significance of Hume Site 1, recommendations must be presented to comply with *Heritage Act 2004* provisions. This must include consideration of alternatives to avoid heritage impacts, and if these alternatives are not reasonably practicable, measures that could be adopted to minimise heritage impacts. *Heritage Act 2004* approvals are required if proposed works will diminish the significance of Hume Site 1.
- Specific assessment of potential impacts to Hume Site 1 (both its registered boundary, and the boundary as extended by recent investigations by Navin Officer Heritage Consultants), rather than assessment of the broader erosional impacts to the banks of Dog Trap Creek; though it is noted that these are linked.
- Articulate why the lower bank is resistant to erosion (for example, exposed bedrock).
- Consider where along the height of the bank that erodibility changes. The Navin Officer Heritage Consultants (2011) report which documents the results of excavation at Hume Site 1 noted that the densest accumulation of deposits associated with Hume Site 1 occurs about 1 m above a creek bed bedrock platform. It is unclear if flow may reach this height.
- Describe the outflows in relation to the height of the bank and outline if this will be below Hume Site 1, or if it will have a direct impact. It is noted that upper bank erosion is expected for the 20 percent Annual Exceedance Probability (AEP) and above flood events. It must be clear where along the profile of the bank that Hume Site 1 is located, and if a lower AEP may also impact associated deposits this should be stated.

In response to the above feedback from ACT Heritage, Navin Officer undertook further assessment of the heritage values in the general area and their report is attached to this Addenda.

Assessment

The ground visibility in the project area was generally low with patchy to thick vegetation covering most sections of the study area, higher visibility was restricted to exposures associated with erosion scalds and vehicle tracks. The March 2025 assessment encountered greater ground visibility in comparison to the survey conducted for the MRF in 2022. Overall exposure of the study area was 20% and visibility within those exposures was 80%.

The study area as a whole is assessed to have low Aboriginal and historic archaeological potential. This assessment is based on the high level of disturbance in the study area within areas assessed as having archaeological potential. The western portion of the study area has been subject to less disturbance than the east, however the archaeological potential of this area is considered to be low based on landform and the results of past assessments. The contained nature of the study area and low ground surface visibility means that no more detailed conclusions can be drawn.

Due to the highly disturbed nature of the site, there is low potential for the discovery of any unrecorded Aboriginal or historical heritage sites.

As such, the proposed mitigation measures, amended as a result of the Navin Officer additional assessment, are outlined in Table 1 below.

Table 1: Mitigation measures to be implemented for the proposal

Potential Impact	ID	Mitigation Measure	Timing
Impacts to known heritage sites NW1/PAD 1 and HMRF01	H01	Long-term management outcomes for all artefacts collected in association with HMRF01 would be developed in consultation with the RAOs following completion of the assessment for the adjacent proposed FOGO facility.	Following completion of assessment for the proposed FOGO facility
	H02	All proposal personnel, including contractors, would be made aware of the heritage status of the NW1/PAD 1 and HMRF01 sites prior to impacts.	Prior to construction and construction
Impacts to unknown heritage sites	H03	The protocols for the unanticipated discovery of archaeological material and suspected human remains (presented in Appendix 6 of the CHA) would be adopted and complied with during construction activities involving ground surface disturbance and excavation.	Construction
Impacts to Hume Site 1	H04	If calcareous deposits are encountered during construction, then work would stop and the unanticipated discovery protocol for palaeontological material (presented in Appendix 5 of the CHA) would be adopted and complied with.	Construction
	H05	The fenced area along Dog Trap Creek contains the area associated with the revised boundary of Hume Site 1. All proposal workers would be made aware of the fenced area and that it should not be removed or disturbed during construction.	Construction

Conclusions

Based on the results of the additional assessment of cultural heritage and with the implementation of proposed mitigation measures, the risk to cultural heritage is considered to be low.

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Material Recover Facility, Hume, ACT – Additional Works

Addendum to Cultural Heritage Assessment

Navin Officer Heritage Consultants Pty Ltd *March 2025*

1. Background

The proposed Hume Material Recovery Facility (MRF) is to be constructed within Jerrabomberra district, Australian Capital Territory (ACT). A Cultural Heritage Assessment (CHA) & Statement of Heritage Effects (SHE) report for this project was completed by Navin Officer Heritage Consultants (NOHC) for GHD in June 2023 with surveys for this stage of the project conducted in December 2022.

The proposal entails the construction of a new facility for the Hume MRF following the destruction of the existing MRF in December 2023 caused by a fire. Works will include the construction of warehouse structures and hardstand facilities, as well as other associated works. The impact area proposed by GHD was roughly 26180 square metres in size.

There was one previously recorded Aboriginal heritage site (NW1/PAD1) located within the initial study area. Site NW1/PAD1 has been previously subject to surface salvage and subsurface testing, following these actions it was recommended that no further action was required at this site (CHMA, 2011a & b).

During the course of the December 2022 survey one Aboriginal site was identified in the study area, HMRF01 (NOHC, 2023). This site was subject to emergency heritage site collection as it was located in an area subject to heavy vehicle movement which was assessed to be causing damage to the site. Four lithic artefacts were salvaged from this site. No further works are required at site HMRF01.

A paleontological site (Hume Site 1) abuts the MRF study area and is located roughly 40 metres north of proposed works areas. The original recorded boundary of Hume Site 1 was located roughly 100 metres northeast of the MRF study however, in the course of works for the MRF and neighbouring FOGO facility additional assessment of the site was undertaken resulting in a revision of the site boundary (NOHC, 2023; NOHC, 2024).

2. Current Assessment

NOHC were contacted by Element Environment on behalf of Veolia in regard to the assessment of updated impact areas that had not been considered in the initial report for the proposed MRF. The updated impact area proposed by Veolia is roughly 30,311 square metres in size. This additional area will allow for the construction of an above ground fuel tank, bio-retention tank, and hot load drop off area. This report functions as an addendum to the Non-Aboriginal & Aboriginal Cultural Heritage Assessment Report (NOHC, 2023).

An additional 4,131 metres square area was identified as requiring further survey (see Figure 2). The updated impact area intersects previously recorded sites NW1/PAD1 and HMRF01, however, as noted above, no further heritage constraints are posed by these sites.

A site visit was undertaken on the 17 February 2025 by:

Jasmine Fenyvesi, NOHC

Wally Bell, Buru Ngunawal Aboriginal Corporation

This assessment was written by Jasmine Fenyvesi, with review by Nicola Hayes.

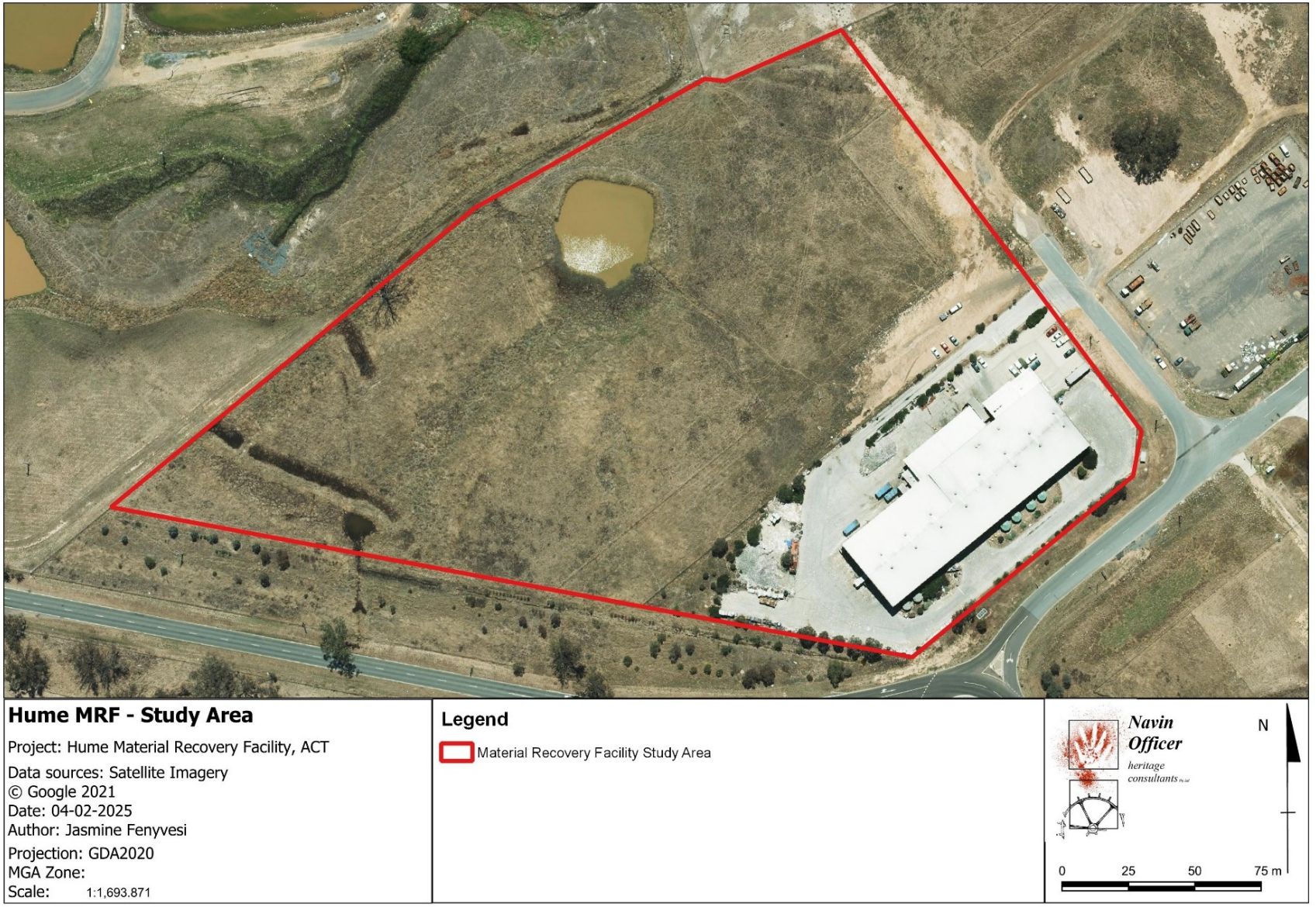

Figure 1 Hume Material Recovery Facility Proposal site

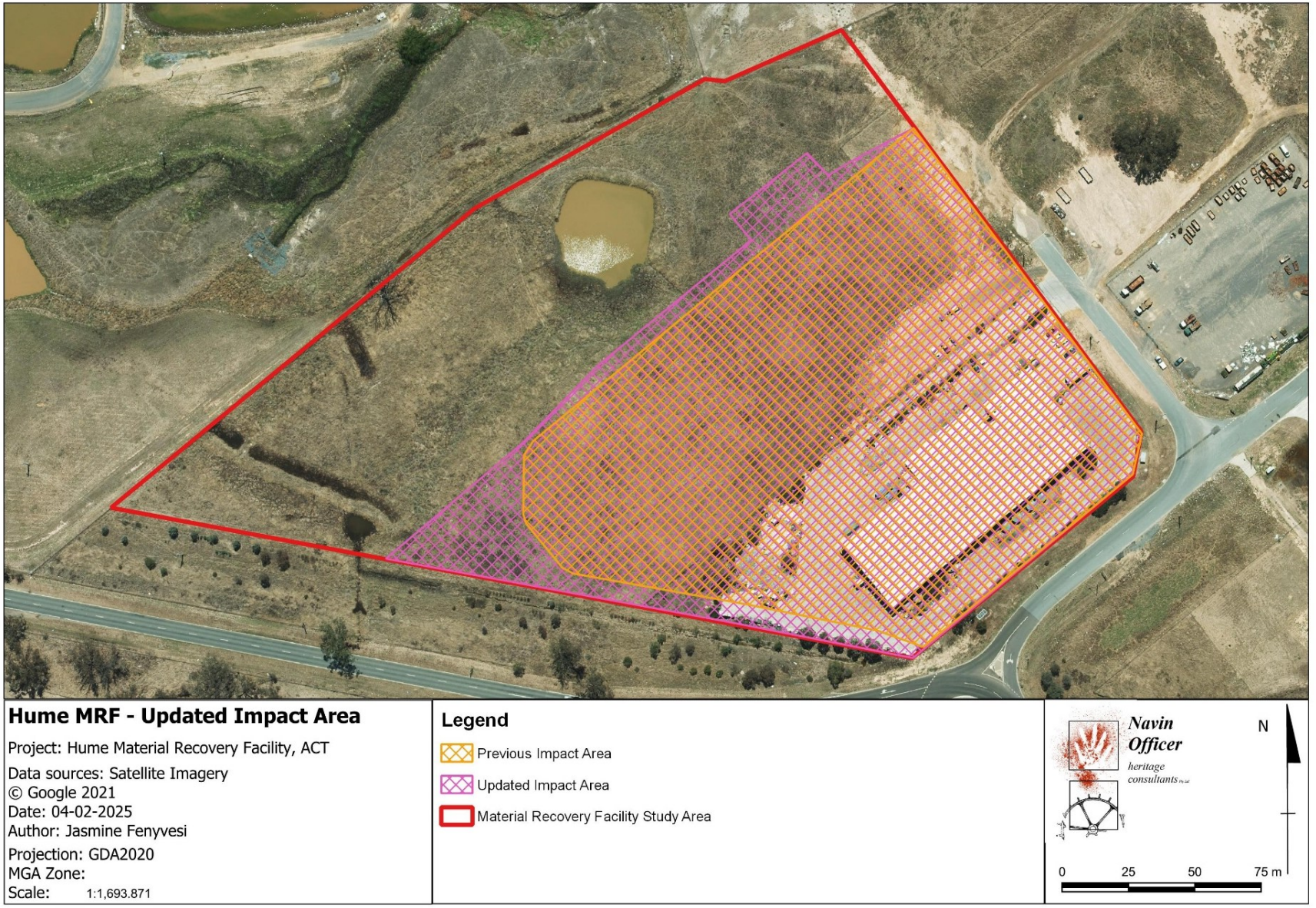

Figure 2 Updated impact area in relation to previous impact area

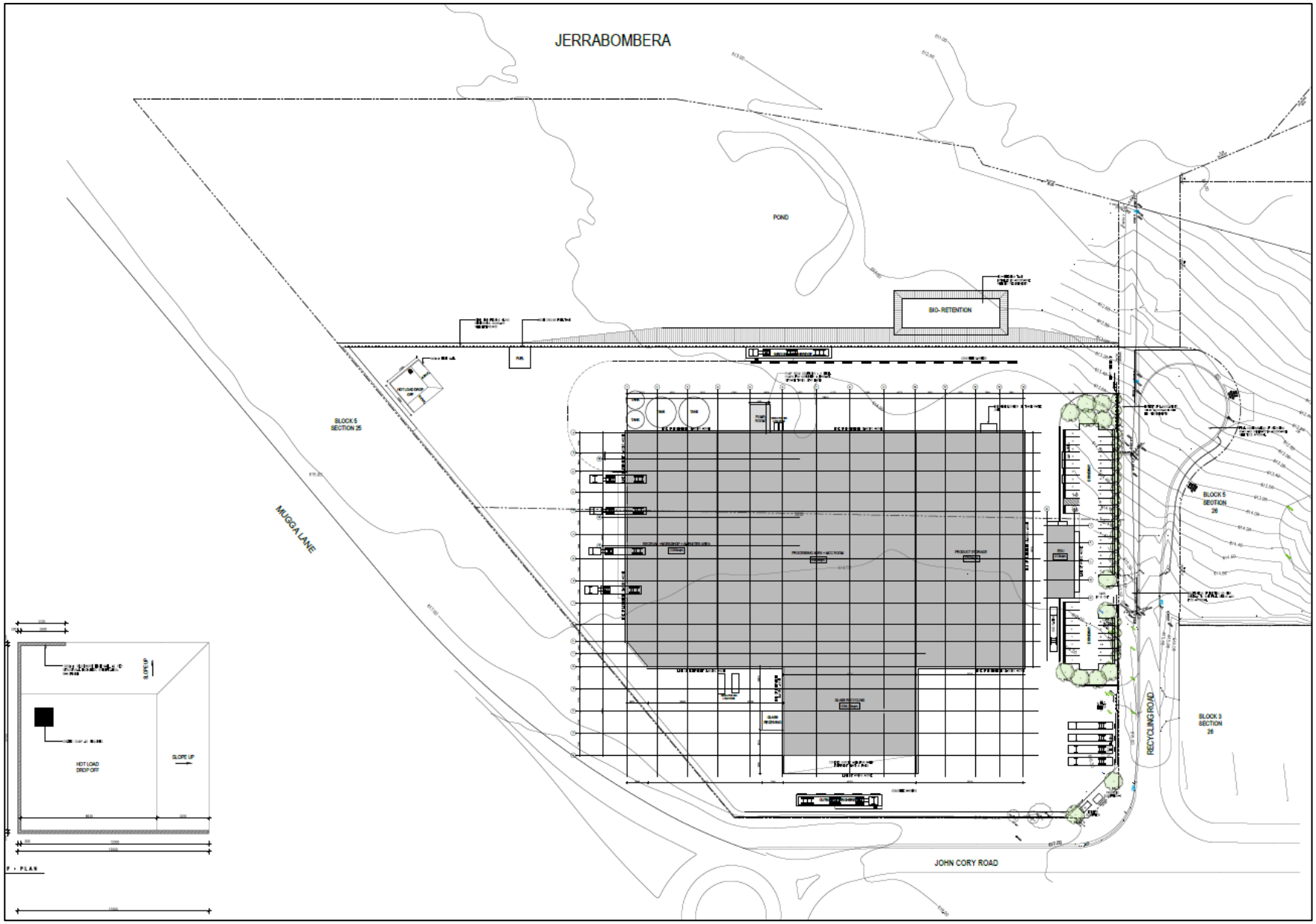

Figure 3 Hume Material Recovery Facility Updated Proposal Layout provided by Veolia

Figure 4 Previously recorded sites within the MRF study area

3. Field Assessment

No sites of Aboriginal or non-Aboriginal heritage were located during the current assessment.

Two previously recorded sites NW1/PAD1 and HMRF01 are located within the study area however, as noted above, no heritage constraints are posed by these sites. Full site descriptions and an explanation of works can be found within the Hume MRF CHA & SHE (NOHC, 2023).

The effectiveness of archaeological field survey is to a large degree related to the obtrusiveness of the sites being looked for and the incidence and quality of ground surface visibility. Visibility variables were estimated for all areas of comprehensive survey within the study area. These estimates provide a measure with which to gauge the effectiveness of the survey and level of sampling conducted. They can also be used to gauge the number and type of sites that may not have been detected by the survey.

Ground surface visibility is a measure of the bare ground visible to the archaeologist during the survey. There are two main variables used to assess ground surface visibility, the frequency of exposure encountered by the surveyor and the quality of visibility within those exposures. The predominant factors affecting the quality of ground surface visibility within an exposure are the extent of vegetation and ground litter, the depth and origin of exposure, the extent of recent sedimentary deposition, and the level of visual interference from surface gravels.

The ground visibility in the project area was generally low with patchy to thick vegetation covering most sections of the study area, higher visibility was restricted to exposures associated with erosion scalds and vehicle tracks (Figure 5). The current assessment encountered greater ground visibility in comparison to the survey conducted for the MRF in 2022. Overall exposure of the study area was 20% and visibility within those exposures was 80%.

The study area as a whole is assessed to have low Aboriginal and historic archaeological potential. This assessment is based on the high level of disturbance in the study area within areas assessed as having archaeological potential. The western portion of the study area has been subject to less disturbance than the east, however the archaeological potential of this area is considered to be low based on landform and the results of past assessments. The contained nature of the study area and low ground surface visibility means that no more detailed conclusions can be drawn.

Due to the highly disturbed nature of the site, there is low potential for the discovery of any unrecorded Aboriginal or historical heritage sites.

Figure 5 Examples of MRF survey area visibility and disturbance

4. Water Flow Assessment – Hume Site 1

Hume Site 1 is a paleontological site containing 'megafaunal' fossil deposits exposed in the eastern wall of a 6 m deep erosion gully on Dog Trap Creek, see Figure 6**Error! Reference source not found.**. The fossil bones are exposed along approximately 30 m of the gully wall and extend vertically through approximately 2 m of sediments. The densest accumulation of bone occurs at around 5 m below the present surface and about one metre above the creek bed bedrock platform. The boundary of Hume Site 1 is adjacent to the MRF study area and over 40 metres from impact areas, see Figure 7. While the site boundary is located outside of works areas and will not be directly impacted by works, concerns were raised by ACT Heritage about the impacts that flooding and water runoff could inadvertently have on Hume Site 1. The assessment of these impacts on Hume Site 1 have been informed by the water flow assessment conducted by GHD in 2024 for the initial MRF proposal as well as a Stream Erosion Index (SEI) assessment by Martens in 2025 for the updated MRF proposal.

As part of the water flow assessment, GHD (2024) conducted modeling of the erodibility of the creek banks as well as the existing flow velocities and flood events within Dog Trap Creek.

The main creek and major tributaries in Dog Trap Creek have eroded to bedrock, which has exposed blocky ignimbrite in the channel bed and lower banks. The presence of bedrock and weakly cemented or clay soils has limited erosion and has caused the bank to form a steep to near-vertical lower bank in the bedrock / resistant material and less-steep, more erodible upper banks.

GHD (2024) noted that the lower bank and bed is able to withstand significantly higher velocities and shear stresses than the more erodible upper bank material. Their assessment found that while upper bank erosion is expected in the cases of 20 percent (%) Annual Exceedance Probability (AEP) and above flood events, the lower bank and creek bed are much more resistant to erosion. As the fossil deposits associated with Hume Site 1 are located around 5 m below the upper banks it is considered that they will not be affected by this upper bank erosion.

It was found that during smaller flow events, such as the 1 year flood, velocities exceeding the upper bank erosion threshold velocity (ETV) are confined to the bed and lower banks (GHD, 2024). Where the bank is inundated by > 100 mm water during an 1% AEP flood, modelled velocities under existing conditions reach approx. 1.6 m/s – 3.6 m/s, with peak velocities of over 4 m/s experienced mid-channel. These flows reach the height of the fossil exposures associated with Hume Site 1 and indicate that Hume Site 1 has been subject to directly impact from flood events. The lack of morphological change over the last 60 years indicates that this section of the channel is resistant to the modelled flows of over 4 m/s.

The modelling conducted by GHD (2024) indicates a minor increase in flow over very small sections of the right bank (between 4 m and 10 m sections), located along the outer bank of meander bends. The modelled difference between existing and design flood velocities shows small increases (typically <0.2 m/s) along small (Between 1.5 m and 15 m) sections of outer meanders along the east bank, see Table 1. These sections are in areas where existing velocities already exceed the ETV.

The proposed MRF is not anticipated to impact the creek morphology and minor increase in velocity due to the development are not modelled to cause an increase in shear stresses and are anticipated to have a negligible impact on bank retreat rates. Therefore, the proposed MRF does not pose an increased risk to Hume Site 1.

Table 1 Flood model scenarios and critical velocities at locations (depth > 100mm) (from GHD, 2024)

Event	Critical Duration (Velocity)	Max existing case velocity (first bend downstream of the discharge point)	Max design case velocity (first bend downstream of the discharge point)	Max change in velocity (first bend downstream of the discharge point)
1 EY	90 minute	3.22 m/s	3.22 m/s	+0.11 m/s
0.5 EY	270 minute	3.48 m/s	3.48 m/s	+ 0.16 m/s
20% AEP	180 minute	4.18 m/s	4.18 m/s	+ 0.15 m/s
1% AEP	180 minute	4.63 m/s	4.62 m/s	+0.45 m/s

A Stream Erosion Index (SEI) assessment was completed by Martens (2025) to determine the likely impact on downstream soils and the bed and banks of Dog Trap Creek. The SEI is the ratio of the developed catchment stormwater volume exceeding the 'stream forming flow' in relation to the catchment stormwater volume exceeding the 'stream forming flow' predevelopment.

Currently the flow volume from the site predevelopment is estimated to be 2.5 megalitres (ML) per year. It is estimated that the flow volume post development will be 4.08 ML per year

The ACT Government does not have a target for SEIs, therefore Martens set a target value of less than 3. As a reference point, Blacktown City Council and Camden Council in NSW allow SEIs to be no greater than 3.5 and 5.0 respectively.

The SEI for the MRF proposal is predicted to be 1.63. This indicates that the development is unlikely to have a negative impact on the stream morphology downstream from the site. The low SEI results are likely due to the retention and reuse from the rainwater tank within the proposed treatment train.

The SEI assessment does not take into account the effects of the proposed onsite water detention system which will include a controlled discharge outlet. This is designed to ensure that after heavy rain events that all captured water would be released slowly over a period of six or more hours, thus only marginally increasing flows. Flood duration is an important factor in erodibility, with a longer flood peak more likely to result in erosion than a short flash flood event. GHDs hydrologic assessment (2024) indicated that the rainfall / runoff response at the MRF site is rapid, with short-duration, peaked hydrographs typical of a low permeability system. The installation of a controlled discharge outlet will further lower the risk of high flows causing erosion within Dog Trap Creek and as a result Hume Site 1.

Figure 6 Dog Trap Creek Bank within the site boundary for Hume Site 1

Figure 7 Location of Hume Site 1 in relation to the proposed MRF impact area

5. Recommendations

It is recommended that:

1. The protocols for the unanticipated discovery of archaeological material and suspected human remains (presented in Appendix 1) shall be adopted and complied with during construction activities involving ground surface disturbance and excavation.

2. With regards to Hume Site 1, if calcareous deposits are encountered during construction, then work must stop and the unanticipated discovery protocol for palaeontological material presented in Appendix 5 should be adopted and complied with.

3. A copy of this report should be provided to the ACT Heritage

References

CHMA, 2011a ACT NOWaste Mugga Lane Resource Management Centre Extensions Conservation Management Plan. Report to ACT NOWaste.

CHMA, 2011b ACT NOWaste Mugga Lane Resource Management Centre Extensions, Sub-Surface Archaeological Investigations, Conservation Management Plan. Report to ACT NOWaste.

GHD 2024 Hume Materials Recovery Facility, Hume, Water Impact Assessment. Report to Transport Canberra and City Services.

Martens, 2025 Water Impact Assessment Proposed Hume Materials Recovery Facility, Hume, ACT. Report to Element Environment care of Veolia.

Navin Officer Heritage Consultants (NOHC), 2023 Material Recovery Facility, Hume, ACT. Cultural Heritage Assessment. Report to GHD Pty Ltd.

Navin Officer Heritage Consultants (NOHC), 2024 Hume FOGO Facility – Results of HFFPAD01 Test Excavation and Hume Site 1 Auger Survey, Hume, ACT. Statement of Heritage Effects. Report to GHD Pty Ltd.

APPENDIX 1

UNANTICIPATED DISCOVERY PROTOCOLS

Protocol to be followed in the event that previously unrecorded or unanticipated Aboriginal or non Aboriginal archaeological material (objects, artefacts, deposits or relics) are encountered

1. All ground surface disturbance in the area of the finds should cease immediately the finds are uncovered.

    a. The discoverer of the find(s) will notify machinery operators in the immediate vicinity of the find(s) so that work can be halted; and

    b. The site supervisor and the development proponent will be informed of the find(s).

2. If there is substantial doubt regarding a human or Aboriginal or historical European origin for the finds, then consider if it is possible to gain a qualified opinion (such as from the project archaeologist) within a short period of time. If feasible, gain a qualified opinion (this can circumvent proceeding further along the protocol for remains which turn out not to be archaeological). If a quick opinion cannot be gained, or the identification is positive, then proceed to the next step.

3. Immediately notify the following authorities or personnel of the discovery:

    a. The ACT Heritage Council (within five working Days);

    b. Representatives from the Representative Aboriginal Organisations (RAOs) (where appropriate); and

    c. The project archaeologist (if not already present).

4. Facilitate, in co-operation with the appropriate authorities and stakeholders:

    a. The recording and assessment of the finds by a suitably qualified heritage professional (either the project archaeologist). This will include determining if the find(s) are from a new or previously recorded site, and lodgement of site information for all new recordings with the Heritage Unit;

    b. Fulfilling any legal constraints arising from the finds. This will include complying with Heritage Council advice, any Statement of Heritage Effects (SHE) requirements in the case of a previously recorded site; and

    c. The development and conduct of appropriate management strategies. Strategies will depend on stakeholder requirements and the assessed significance of the find(s).

5. Where the management of find(s) involves the salvage excavation or collection of artefacts, this material will be curated according to the provisions of any relevant SHE, or as directed by the Heritage Council.

6. Any re-commencement of construction related ground surface disturbance may only resume in the area of the find(s) following compliance with any consequential legal requirements and gaining written approval from the ACT Heritage Council.

Protocol to be followed in the event that suspected human remains are encountered

1. All ground surface disturbance in the area of the finds should cease immediately the finds are uncovered.

    a. The discoverer of the find(s) will notify machinery operators in the immediate vicinity of the find(s) so that work can be temporarily halted; and

    b. The site supervisor and the development proponent will be informed of the find(s).

2. If there is substantial doubt regarding a human origin for the remains, then consider if it is possible to gain a qualified opinion within a short period of time. If feasible, gain a qualified opinion (this can circumvent proceeding further along the protocol for remains which turn out to be non-human). If conducted, this opinion must be gained without further disturbance to any remaining skeletal material and its context as possible (Be aware that the site may be considered a crime scene containing forensic). If a quick opinion cannot be gained, or the identification is positive, then proceed to the next step.

3. Immediately notify the following people of the discovery:

    a) The local Police (this is required by law);

    b) The ACT Heritage Council (within five working Days);

    c) Representatives from the Representative Aboriginal Organisations (RAOs) (where appropriate); and

    d) The project archaeologist (if not already present).

4. Facilitate the evaluation of the find(s) by the statutory authorities and comply with any stated requirements. Depending on the evaluation of the find(s), the management of the find(s) and their location may become a matter for the Police and/or Coroner.

5. Construction related works in the area of the find(s) may not resume until the development proponent receives written approval from the relevant statutory authority: from the Police or Coroner in the event of an investigation; and from the ACT Heritage Council in the case of human remains outside of the jurisdiction of the Police or Coroner.

6. In the event that the proponent continues an active role in the evaluation and/or management of the find(s), via a direction or advice from the Police, Coroner and/or Heritage Council, then all or some of the following steps may be conducted:

7. Facilitate, in co-operation with the appropriate authorities, the definitive identification of the skeletal material by a specialist (if not already completed). This must be done with as little further disturbance to any remaining skeletal material and its context as possible.

8. If the specialist identifies the bone as non-human then, where appropriate, the protocol for the discovery of historical or Aboriginal artefacts (above) should be followed.

9. If the specialist determines that the bone material is human, then the proceeding course of action may be of three types:

    a. The bone(s) are of an Aboriginal and non-Aboriginal person who died less than 100 years ago and where traumatic death is suspected. Such remains come under the jurisdiction of the *ACT Coroner's Act* 1997. All further decisions and responsibilities regarding the remains and find location rest with the ACT Police, and/or the ACT Coroner.

b. The bone(s) are of a non-Aboriginal person who died more than 100 years ago. In this case, and where the Police have indicated that they have no interest in the find(s), the following steps may be followed:

   i. Ascertain the requirements of the ACT Heritage Council, the development proponent, the project archaeologist, and the views of any relevant community stakeholders;

   ii. Based on the above, determine and conduct an appropriate course of action. Possible strategies could include one or more of the following:

      1. Avoiding further disturbance to the find and conserving the remains *in situ* (this option may require relocating the development and this may not be possible in some contexts);

      2. Conducting (or continuing) archaeological salvage of the finds following receipt of any required statutory approvals;

      3. Scientific description (including excavation where necessary), and possibly also analysis of the remains prior to reburial;

      4. Recovering samples for dating and other analyses; and/or

      5. Subsequent reburial at another place and in an appropriate manner determined by the Heritage Council and in consultation with other relevant stakeholders.

c. The bone(s) are of an Aboriginal person who died more than 100 years ago. In this case the following steps may be followed:

   i. Ascertain the requirements of the local RAOs, the ACT Heritage Council, the development proponent, and the project archaeologist;

   ii. Based on the above, determine and conduct an appropriate course of action. Possible strategies could include one or more of the following:

      1. Avoiding further disturbance to the find and conserving the remains *in situ*, (this option may require relocating the development and this may not be possible in some contexts);

      2. Conducting (or continuing) archaeological salvage of the finds following receipt of any required statutory approvals;

      3. Scientific description (including excavation where necessary), and possibly also analysis of the remains prior to reburial;

      4. Recovering samples for dating and other analyses; and/or

      5. Subsequent reburial at another place and in an appropriate manner determined by the RAOs and the Heritage Council.

Protocol to be followed in the event that palaeontological material, or suspected palaeontological material, is encountered

(Note, 'palaeontological material' refers to fossilised or semi-fossilised bone or other organic material)

1) All ground-disturbing works in the area of the palaeontological material cease immediately. The discoverer of the material will notify machinery operators in the area to ensure work is halted.

2) The palaeontological material will not be removed from the area.

3) Inform the site supervisor and the development proponent of the discovery.

4) Inform the project archaeologist of the discovery. The possibility of obtaining a qualified opinion within a short period of time (from a palaeontologist or similar qualified person) to confirm whether the objects discovered are palaeontological material will be considered at this point. A swift assessment of the material can preclude further steps in the protocol being carried out, for objects that are identified as not being palaeontological material. If identification of the object cannot be obtained within a short timeframe, or if the find is confirmed to be palaeontological material, proceed to the next step.

5) Notify the following organisations:

   - The ACT Heritage Council (within five working Days)

6) If feasible, leave excavations open (and make safe) so that the location where the material was found can be assessed by a suitably qualified person.

7) Organise the assessment and recording of the finds by a suitably qualified person. This assessment will determine whether the material is from a new or previously recorded site, and will result in a lodgement of site information with the ACT Heritage.

8) Clarify and comply with any legal constraints arising from the discovery. This will involve seeking and complying with advice from the ACT Heritage Council. Unless advised otherwise by the ACT Heritage, constraints will include a halting of all works in the area until a management strategy has been developed and implemented.

9) Develop and implement an appropriate management strategy. This will be done in cooperation with the project archaeologist (or other suitably qualified professional) and in consultation with the ACT Heritage. The strategy will be developed in consultation with RAOs where appropriate. The strategy must be approved by the ACT Heritage prior to being implemented. The strategy developed will depend on variables that include the assessed significance of the material and the assessed likelihood of further palaeontological material being present in the area.

10) Where the management strategy for the area involves the resumption of works in the area, with or without salvage of the palaeontological material, a Statement of Heritage Effect would be required.

11) Development works in the area can commence when stipulated by the management strategy.

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Cultural Heritage Assessment

Material Recovery Facility,

Hume ACT

June 2023

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A Report to GHD Pty Ltd

Navin Officer

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Jasmine Fenyvesi	3.1	Following client advice	09/02/2023
Jasmine Fenyvesi	3.2	On completion of MRF noise and flood inputs	18/04/2023
Jasmine Fenyvesi	3.3	Following client advice	12/05/2023
Jasmine Fenyvesi	4.1	Following RAO comment period	05/06/2023

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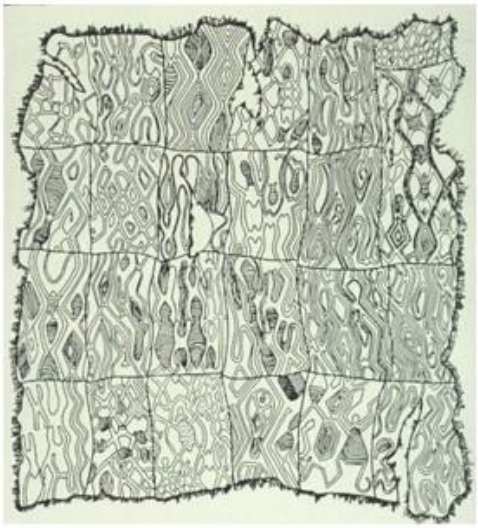
Cover photographs: NOHC December 2022



NOHC proudly acknowledges Australia's Aboriginal and Torres Strait Islander people, their many diverse communities across our nation and their rich culture. We pay respect to their Elders past and present. We acknowledge Aboriginal and Torres Strait Islander people as Australia's first peoples and as the Traditional Owners and custodians of the land and water across the Australian landscape and seascape. We recognise and value the ongoing contribution of Aboriginal people to Australian life and how their contribution continues to enrich our society. In our daily work we recognise, cherish, celebrate, and defend the evidence of Aboriginal and Torres Strait Islander people's rich and complex history and prehistory which extends back from the present day into a deep and distant past. We understand that this archaeological evidence has meaning to the descendants of those who created it. Through our research and conservation efforts we strive to unlock hidden meanings from these traces of the past and to make that knowledge available to current and future generations of Aboriginal and Torres Strait Islander people.

EXECUTIVE SUMMARY

The proposed Hume Material Recovery Facility (MRF) is to be constructed within Jerrabomberra district, Australian Capital Territory (ACT). The study area is roughly 5 hectares and covers an area of roughly 325 metres by 236 metres and is contained within Blocks 6 and 10, Section 25, Hume, see Figure 1-1 and Figure 1-2. The proposal site is bounded by Dog Trap Creek to the north, Mugga Lane to the southwest, and John Cory Road to the northeast.

The proposal entails upgrades to the existing Hume MRF, including the construction of additional warehouse structures and hardstand facilities, as well as other associated works to augment current operations. The proposed impact area is roughly 2.4 hectares. The upgraded MRF is expected to have a capacity of 115,000 tonnes per annum.

The report was commissioned by GHD Pty Ltd.

One previously recorded Aboriginal heritage site (NW1/PAD1) is located within the proposal site. One Aboriginal artefact scatter (HMRF01) discovered during the survey by NOHC was found within the [redacted] section of the proposal site. [redacted]

The noise and vibration assessment conducted by GHD found that vibration impacts expected for the proposed MRF are minimal, therefore no further assessment is needed to mitigate any vibration generating activities for the site.

A flood assessment, also conducted by GHD, found that the construction and use of the proposed MRF is highly unlikely to contribute to additional flood velocity that has potential to cause erosion to the creek.

It is considered unlikely that construction or operation of the Hume MRF would impact deposits associated [redacted] No further works are required at sites NW1/PAD 1 [redacted]

Partial harm is proposed at HMRF01, and additional impacts are considered likely in the area outside of the study area. Site HMRF01 is subject to impacts from [redacted], surface erosion, and weed coverage which has had damaging effects on the archaeological material at the site.

Due to the ongoing impacts to the site, following advice from ACT Heritage, it was proposed that a collection of the site be undertaken as soon as possible to mitigate any further harm. Following approval from ACT Heritage, a collection survey was undertaken in March 2023.

It is recommended that:

1. No further works are required at site HMRF01. All artefacts collected in association with HMRF01 should follow the long-term management outcomes developed for the Hume FOGO project.

2. No further works are required at site NW1/PAD 1.

3. HMRF01 should be added to the Heritage Register as a site of Aboriginal heritage.

4. All proposal personnel, including contractors, should be made aware of the heritage status of these sites prior to impacts.

5. The protocols for the unanticipated discovery of archaeological material and suspected human remains (presented in Appendix 5) shall be adopted and complied with during construction activities involving ground surface disturbance and excavation.

[redacted]

7. A copy of this report should be provided to ACT Heritage

8. A copy of this report should be provided to each of the ACT RAOs.

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1 INTRODUCTION

1.1 Proposal site Location and Description

The proposed Hume Material Recovery Facility (MRF) is to be constructed within Jerrabomberra district, Australian Capital Territory (ACT). The study area is roughly 5 hectares and covers an area of roughly 325 metres by 236 metres and is contained within Blocks 6 and 10, Section 25, Hume, see Figure 1-1 and Figure 1-2. The proposal site is bounded by Dog Trap Creek to the north, Mugga Lane to the southwest, and John Cory Road to the northeast.

This report documents the results of a cultural heritage assessment of the Hume MRF. The report was commissioned by GHD Pty Ltd.

1.1.1 Description of Proposed Activity

The proposal entails the construction of a new facility for the Hume MRF following the destruction of the existing MRF in December 2023 caused by a fire. Works will include the construction of warehouse structures and hardstand facilities, as well as other associated works, see Figure 1-3. The proposed impact area is roughly 2.4 hectares. The proposed new MRF is expected to have a capacity of 115,000 tonnes per annum.

1.1.2 Heritage Status of the Hume Material Recovery Facility Proposal site

One previously recorded Aboriginal heritage site (NW1/PAD1) is located within the proposal site. Site NW1/PAD1 has been previously subject to surface salvage and subsurface testing, following these actions it was recommended that no further action was required at this site (CHMA, 2011).

There are seven previously recorded Aboriginal heritage sites (HFF01, HUME1, NW2/PAD 2, HID1391, HID139, H/A11, MPAD2) and two areas of archaeological potential (PAD 4, HFFPAD01) located [redacted]. An unlisted historic heritage site (H/H4) is located 160 metres from the proposal site. [redacted]

1.2 This Report

1.2.1 Outline

This report:

- Describes the proposed development/works etc (Section 1);
- Describes the methodology employed in the study (Section 2);
- Describes the environmental setting of the proposal site (Section 3);
- Provides information relevant to the Aboriginal cultural context of the proposal site (Section 4);
- Provides a heritage context for the proposal site (Sections 5 and 6);
- Describes the results of the data review, field survey and Aboriginal consultation program conducted in the context of the assessment (Section 7);
- Assesses the significance of the cultural heritage identified within the Hume MRF proposal site (Section 8);
- Provides a statutory information as it relates to the cultural heritage identified within the proposal site (Section 9); and

- Provides management recommendations based on the results of the investigation (Section 10).

1.2.2 Restricted Information

Information in this report relating to the exact location of sensitive sites has been redacted.

Figure 1-1 Hume Material Recovery Facility Proposal site

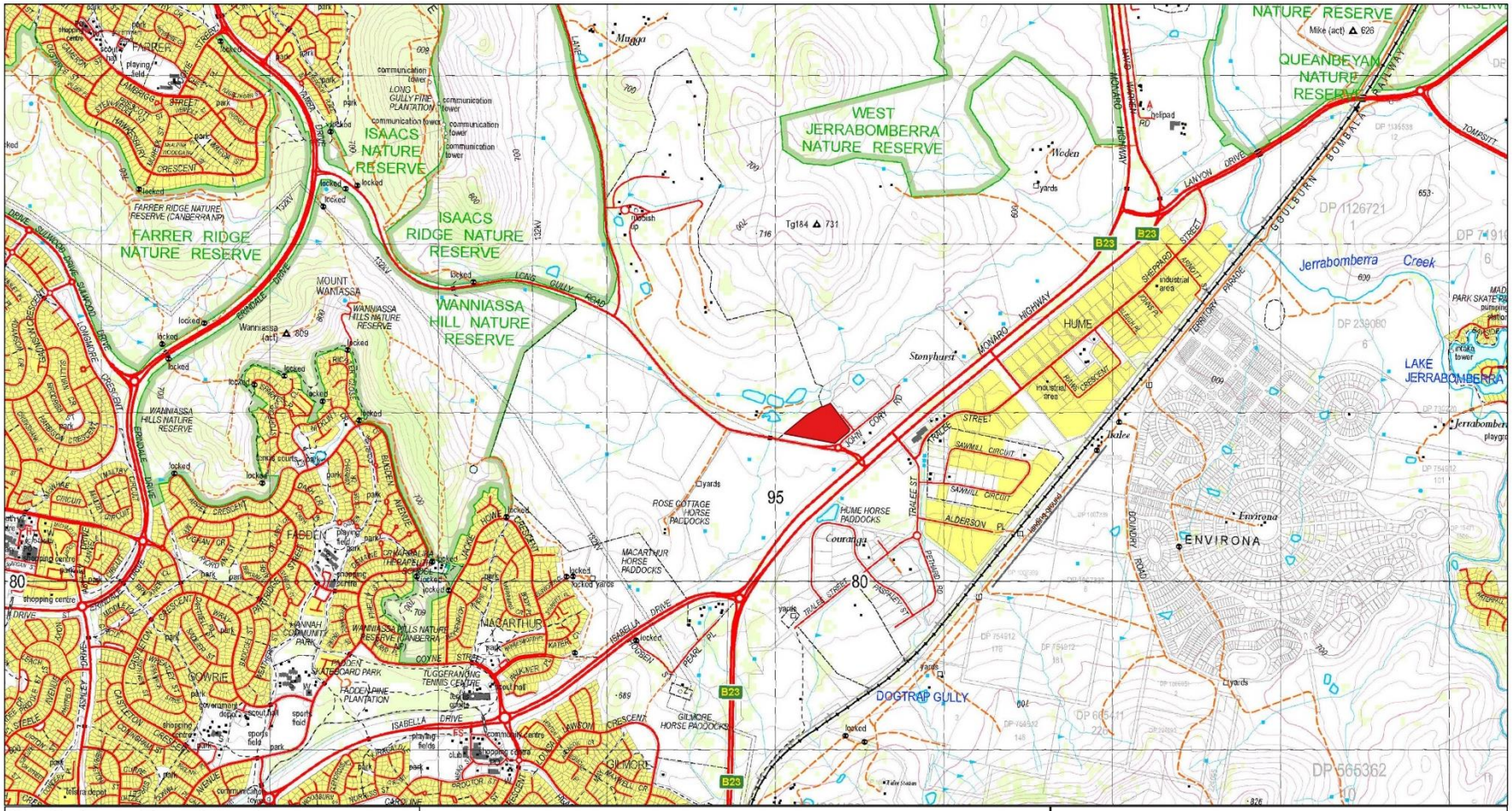


Figure 1-2 Hume Material Recovery Facility Proposal site within wider region

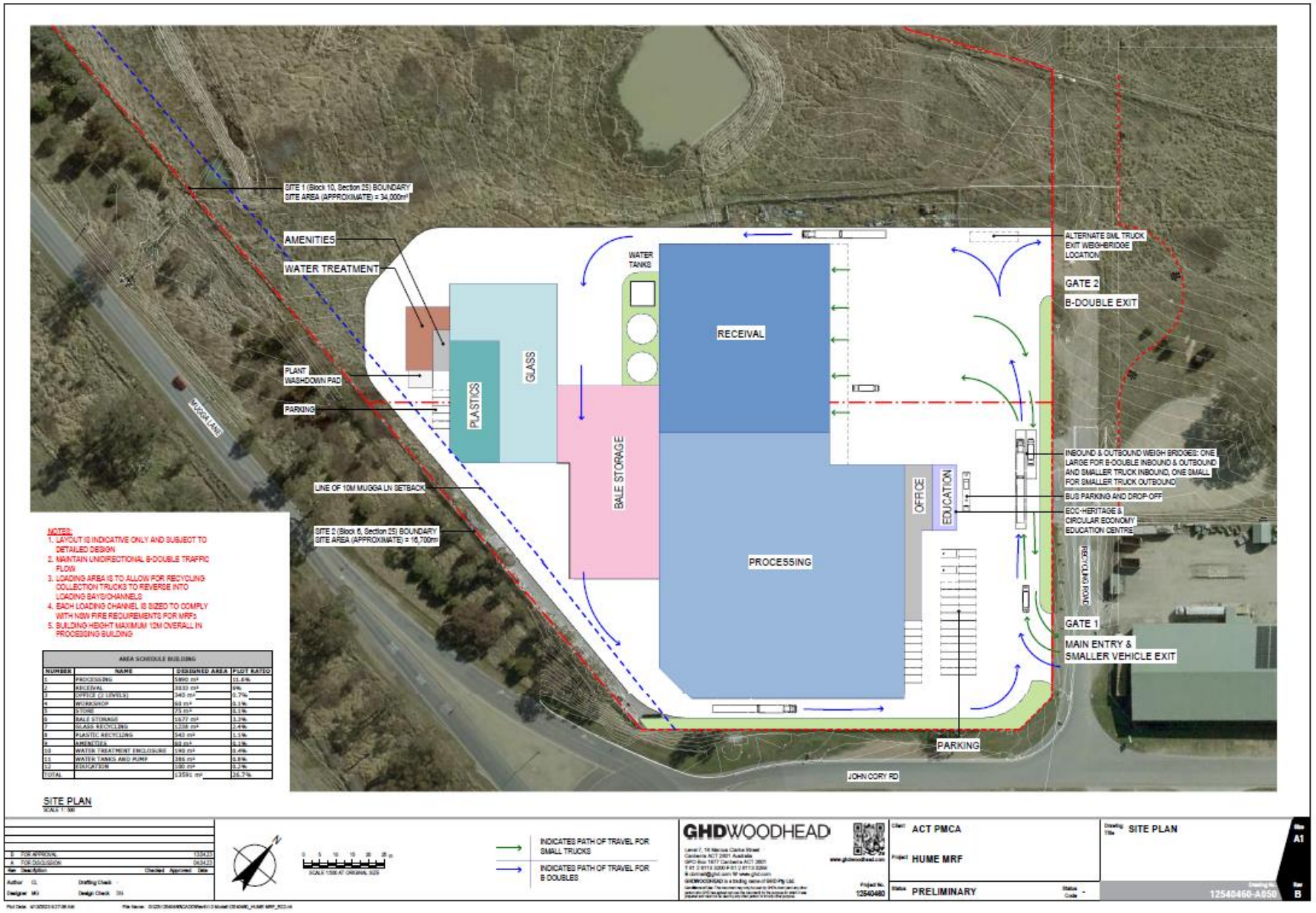


Figure 1-3 Hume Material Recovery Facility Proposed Layout provided by GHD

2 RESEARCH DESIGN AND METHODOLOGY

2.1 Literature and Database Review

A range of archaeological and historical data was reviewed for the Hume Material Recovery Facility proposal site and its surrounds. This literature and data review was used to determine if known Aboriginal and historical sites were located within the area under investigation, to facilitate site prediction on the basis of known regional and local site patterns, and to place the area within an archaeological and heritage management context. The review of documentary sources included heritage registers and schedules, local histories, and archaeological reports.

Literature sources included the Heritage Registers maintained by the Australian Heritage Council, (Federal) Department of Environment and the Heritage Registers and associated reports held by ACT Heritage, and the ACT Department of Environment, Planning and Sustainable Development Directorate.

2.2 Field survey

Site surveys were undertaken by Navin Officer Heritage Consultants (NOHC) staff on the 21st of December 2022 (Jasmine Fenyvesi and Robert Bogdanek). This involved a walk over of the area proposed to be impacted by the proposed Hume Material Recovery Facility.

A foot survey was chosen as the best approach due to the contained nature of the proposal and the limited area of impact. The survey was aimed at determining whether any other historical or Aboriginal sites were evident in the area.

All areas accessible to the survey team were traversed, with particular focus given to areas with low to moderate levels of disturbance. The west of the study area was inaccessible to the survey team due to extremely high grass and vegetation levels. An attempt was made to walk around the perimeter of the study area along Dog Trap Creek but was unsuccessful as the path was blocked by overgrown blackberry bushes. A further attempt was made to access the study area along Mugga Lane but this also proved to be inaccessible. Where possible, field participants walked in transects roughly 5 metres apart to ensure full coverage of all impact areas, see Figure 2.1.

Field recording of sites involved:

- Taking GPS positions for each site;
- Taking one or more digital photographs, showing the general context of the site and each artefact recorded;
- Recording basic technological traits for each artefact; and
- Recording the landscape setting of each site.

NOHC was accompanied by Wally Bell, and Reuben House, from the Representative Aboriginal Organisations (RAOs) Buru Ngunnawal Aboriginal Corporation (BNAC), and Mirrabei.

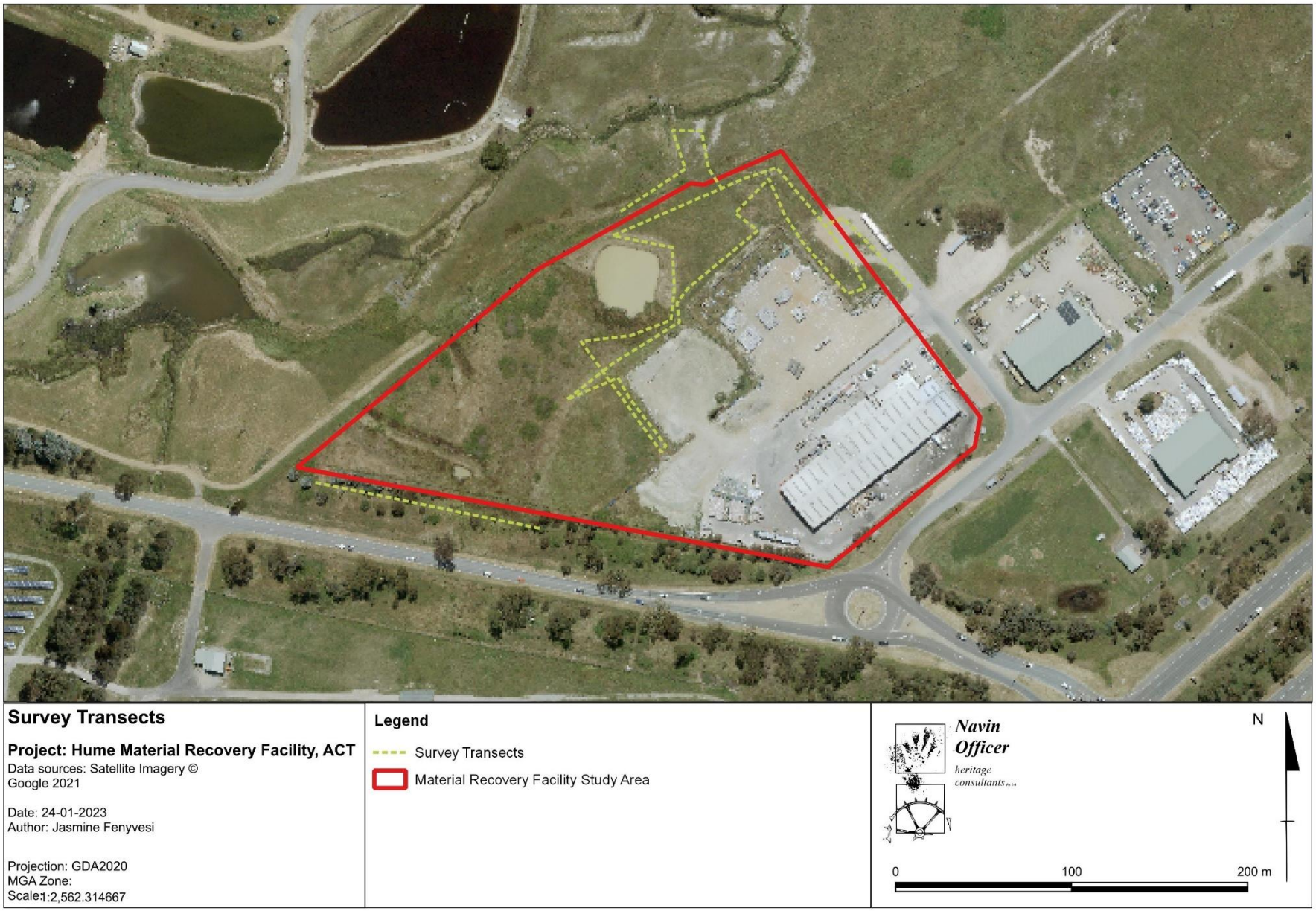


Figure 2-1 Map of survey transects undertaken.

2.3 Recording Parameters

The archaeological survey aimed at identifying material evidence of Aboriginal occupation as revealed by surface artefacts and areas of archaeological potential un-associated with surface artefacts. Potential recordings fall into two broad categories: sites and potential archaeological deposits.

2.3.1 Aboriginal Sites and PADs

A site is defined as any material evidence of past Aboriginal activity that remains within a context or place which can be reliably related to that activity. Most Aboriginal sites are identified by the presence of three main categories of artefacts: stone or shell artefacts situated on or in a sedimentary matrix, marks located on or in rock surfaces, and scars on trees.

Frequently encountered site types within south-eastern Australia include stone artefact occurrences – including isolated finds and open artefact scatters, coastal and freshwater middens, rock shelter sites – including occupation deposit and/or rock art, grinding groove sites and scarred trees. For the purposes of this section, only the methodologies used in basic site identification are outlined, together with those for the recording types encountered by this investigation.

Stone Artefact Occurrences

Stone artefact occurrences are the most commonly recorded site type in Australia. They may consist of single artefacts – described as isolated finds; or as a distribution of more than one artefact – often described as an artefact scatter or 'open camp site' when recording surface artefacts, or as a subsurface artefact distribution when dealing with an archaeological deposit.

Where artefact incidence is very low, either in terms of areal distribution (artefacts per square metre) or density (artefacts per cubic metre), then the differentiation of the recording from background artefacts counts or *background scatter* may be an issue.

Isolated finds

An isolated find is a single stone artefact, not located within a rock shelter, and which occurs without any associated evidence of Aboriginal occupation within a radius of 60 metres. Isolated finds may be indicative of:

- Random loss or deliberate discard of a single artefact;
- The remnant of a now dispersed and disturbed artefact scatter; and
- An otherwise obscured or sub-surface artefact scatter.

Except in the case of the latter, isolated finds may be considered to be constituent components of the *background scatter* present within any particular landform.

The distance used to define an isolated artefact varies according to the survey objectives, the incidence of ground surface exposure, the extent of ground surface disturbance, and estimates of *background scatter* or *background discard* densities. In the absence of baseline information relating to background scatter densities, the defining distance for an isolated find must be based on methodological and visibility considerations. Given the varied incidence of ground surface exposure and deposit disturbance within the proposal site, and the lack of background baseline data, the specification of 60 metres is considered to be an effective parameter for surface survey methodologies. This distance provides a balance between detecting fine scale patterns of Aboriginal occupation and avoiding environmental biases caused by ground disturbance or high ground surface exposure rates. The 60 metre parameter has provided an effective separation of low density artefact occurrences in similar southeast Australian topographies outside of semi-arid landscapes.

Background scatter

Background scatter is a term used generally by archaeologists to refer to artefacts which cannot be usefully related to a place or focus of past activity (except for the net accumulation of single artefact losses).

There is no single concept for background discard or 'scatter', and therefore no agreed definition. The definitions in current use are based on the postulated nature of prehistoric activity, and often they are phrased in general terms and do not include quantitative criteria. Commonly agreed is that background discard occurs in the absence of 'focused' activity involving the production or discard of stone artefacts in a particular location. An example of unfocused activity is occasional isolated discard of artefacts during travel along a route or pathway. Examples of 'focused activity' are camping, knapping and heat-treating stone, cooking in a hearth, and processing food with stone tools. In practical terms, over a period of thousands of years an accumulation of 'unfocused' discard may result in an archaeological concentration that may be identified as a 'site'. Definitions of background discard comprising only qualitative criteria do not specify the numbers (numerical flux) or 'density' of artefacts required to discriminate site areas from background discard.

Artefact scatters

Artefacts situated within an open context are classed as an open artefact scatter (or 'open camp site') when two or more occur no more than 60 metres away from any other constituent artefact. The 60 metre specification relates back to the definition of an isolated find (*refer above*). The use of the term *scatter* is intended only to be descriptive of the current archaeological evidence and does not infer the original human behaviour which formed the site. The term *open camp site* has been used extensively in the past to describe open artefact scatters. This was based on ethnographic modelling suggesting that most artefact occurrences resulted from activities at camp sites. However, in order to separate the description from the interpretation of field evidence, the terms *artefact scatter*, *artefact distribution* or *artefact occurrence* are now more extensively used. The latter two options can also be used to categorise artefacts occurring in sub-surface contexts.

Scarred Trees

Trees with scars of Aboriginal origin form the other major type of artefactual evidence. Each tree is normally considered to be a separate site. The identification of a scar as Aboriginal in origin is dependent on a set of inter-related interpretive criteria. The credibility of alternative causal explanations such as natural traumas and other types of human scarring must be tested for each scar.

A range of diagnostic criteria has been developed to assist in the identification of Aboriginal scarred trees. The following criteria are based on archaeological work conducted by Simmons (1977) and Beesley (1989), and the field manual for Aboriginal scarred trees developed by Long (2005):

1. The scar does not normally run to ground level: (scars resulting from fire, fungal attack or lightning nearly always reach ground level). However, ground termination does not necessarily discount an Aboriginal origin (some ethno-historical examples of canoe scars reach the ground);

1(a). If a scar extends to the ground, the sides of the original scar must be relatively parallel: (natural scars tend to be triangular in shape;

2. The scar is either approximately parallel sided or concave, and symmetrical: (few natural scars are likely to have these properties except fire scars which may be symmetrical but are wider at the base than their apex. Surveyors marks are typically triangular, and often adzed);

3. The scar should be reasonably regular in outline and regrowth: scars of natural origin tend to have irregular outlines and may have uneven regrowth;

4. The ends of the scar should be 'shaped', either squared off, or pointed (often as a result of regrowth): (a 'keyhole' profile with a 'tail' is suggestive of branch loss);

5. A scar which contains adze or axe marks on the original scar surface is likely to be the result of human scarring. Their morphology and distribution may lend support to an interpretation of an Aboriginal origin: (marks produced after the scarring event may need to be discounted);

6. The scar must date to the time of Aboriginal bark exploitation within its region: The traditional Aboriginal exploitation of bark probably ceased in most regions between 100 and 150 years ago. However, in some locations associated with Aboriginal settlement, the Aboriginal removal of bark may have continued to the present day or restarted as part of new cultural movements.

7. The tree must be endemic to the region: (and thus exclude historic plantings).

Field based identification of Aboriginal scars, is based on surface evidence only and will not necessarily provide a definitive classification. In many cases the possibility of a natural origin cannot be ruled out, despite the presence of several diagnostic criteria or the balance of interpretation leaning toward an Aboriginal origin. For this reason, interpretations of an Aboriginal origin are qualified by the recorder's degree of certainty. The following categories were used:

- Aboriginal scar – This is a scar where an Aboriginal origin is considered the most likely. The scar conforms to all of the criteria and a natural origin is considered unlikely and improbable;

- Probable Aboriginal scar – This is a scar that conforms to all of the criteria and where an Aboriginal origin is considered to be the most likely. Despite this, a natural origin cannot be ruled out; and

- Possible Aboriginal scar – This is a scar which conforms to all or most of the criteria and where an Aboriginal origin cannot be reliably considered as more likely than alternative natural causes. The characteristics of this scar will also be consistent with a natural cause.

Potential Archaeological Deposits

A potential archaeological deposit, or PAD, is defined as any location where the potential for subsurface archaeological material is considered to be moderate or high, relative to the surrounding proposal site landscape. The potential for subsurface material to be present is assessed using criteria developed from the results of previous surveys and excavations relevant to the region. Where necessary, PADs can be given an indicative rating of their 'archaeological potential' based on a combined assessment of their potential to contain artefacts, and the potential archaeological value of the deposit. Table 3.1 illustrates the matrix on which this assessment is based. Locations with low potential for artefacts fall below the threshold of classification. In such cases the potential incidence of artefactual material is considered to be the same as, or close to that for background scatter. Where there is moderate potential for artefacts, the predicted archaeological potential parallels the potential significance of the deposit. For deposits with high potential for artefacts, the assessed archaeological potential is weighted positively.

The boundaries of PADs are generally defined by the extent of particular micro-landforms known to have high correlations with archaeological material. A PAD may or may not be associated with surface artefacts. In the absence of artefacts, a location with potential will be recorded as a PAD. Where one or more surface artefacts occur on a sedimentary deposit, a PAD may also be identified where there is insufficient evidence to assess the nature and content of the underlying deposit. This situation is due mostly to poor ground surface visibility.

2.3.2 Historical Sites and Features

Historical archaeology refers to the 'post-contact' period and includes domestic, commercial and industrial sites as well as most maritime sites. It is the study of the past using physical evidence in conjunction with historical sources. The two primary types of places or items that may form part of the historical archaeology context include:

1. Below ground evidence, including building foundations, occupation deposits, features and artefacts; and above ground evidence, including buildings, works, industrial structures and relics that are intact or ruined; and

2. Areas of land that display evidence of human activity or occupation.

Within these broad parameters, an historical archaeological site may include:

- Topographical features and evidence of past environments (that is, resident in pollens and diatoms);
- Evidence of site formation, evolution, redundancy, and abandonment (that is, features and materials associated with land reclamation, sequences of structural development, demolition/deconstruction, and renewal);
- Evidence of function and activities according to historical theme/s represented (for example, an industrial site may contain diagnostic evidence of process, products, and by-products);
- Evidence associated with domestic occupation including household items and consumables, ornaments, personal effects, and toys;
- Evidence of diet including animal and fish bones, and plant residues;
- Evidence of pastimes and occupations including tools of trade and the often-fragmentary signatures of these activities and processes;
- Methods of waste disposal and sanitation, including the waste itself which may contain discarded elements from all classes of artefact as well as indicators of diet and pathology; and
- Any surviving physical evidence of the interplay between site environment and people.

The information found in historical archaeological sites is often part of a bigger picture which offers opportunities to compare and contrast results between sites. The most common comparisons are made at the local level, however, due to advances in research and the increasing sophistication and standardization of methods of data collection, the capacity for wider reference (nationally and, occasionally, internationally) exists and places added emphasis on identification and conservation of historical archaeological resources.

2.4 Study Limitations

Archaeological assessments commissioned for development projects are restricted to the specific footprint that will be impacted by the proposal. The area of land being assessed is specifically constrained, and in many cases will not representatively sample the different landforms found across the wider region being studied. Therefore, a full picture of the archaeology of an area cannot be gained or assumed by this type of assessment.

These limitations will usually become less pronounced as further assessments are carried out in a region, since additional sites are assessed. A systematic bias in the data can still easily occur, however, if the patches of ground are concentrated in one landform type over another. This could be the case if the assessments relate to development projects which preferentially occur on specific landforms.

Data on uses of the land by Aboriginal groups in the post-contact period, including the present day, might be limited if activities practised by Aboriginal groups have not been reported in the public domain or to NOHC. This could occur if land use practises are associated with knowledge that is culturally restricted.

2.5 Glossary

Aboriginal Object	An object associated with Aboriginal people because of Aboriginal tradition (*Heritage Act 2004*).
Aboriginal Place	A place associated with Aboriginal people because of Aboriginal tradition (*Heritage Act 2004*).
Aboriginal site	A place or location which relates to past or contemporary Aboriginal occupation. Sites can be divided into those identified from archaeological evidence (archaeological sites), and those related to intangible cultural values, such as revealed by oral tradition and lore, or from the historical record. An Aboriginal site may have both archaeological and intangible values.
Archaeological site	A place or location with the confirmed presence of archaeological evidence of Aboriginal occupation, where the context of that evidence can be reliably related to the Aboriginal actions which produced the evidence.
Artefact	An object, normally portable, made or modified by human hand (see 'stone artefact').
Artefact occurrence	A term usually applied to site recordings comprising stone artefacts and which refers to one or more stone artefacts situated within a specified surface area or subsurface deposit. Various measures are used for defining the boundaries of such recordings. Refer also to 'surface' and 'subsurface artefact occurrence'.
Artefact scatter	A formerly used open site-type classification defined as two or more stone artefacts situated no more than a specified distance (such as 60 m) away from any other included artefact. Typically, this category did not include isolated finds. The use of the term *scatter* was intended only to be descriptive and did not infer the original human behaviour which formed the site. The term *open camp site* has been used extensively in the past to describe open artefact scatters.
Background discard or scatter	There is no single concept for background discard or 'scatter', and therefore no agreed definition. The definitions in current use are based on the postulated nature of prehistoric activity, and often they are phrased in general terms and do not include quantitative criteria. It is commonly agreed that background discard occurs in the absence of 'focused' activity involving the production or discard of stone artefacts in a particular location. An example of unfocused activity is occasional isolated discard of artefacts during travel along a route or pathway. Examples of 'focused activity' are camping, knapping and heat-treating stone, cooking in a hearth, and processing food with stone tools. In practical terms, over a period of thousands of years an accumulation of 'unfocused' discard may result in an archaeological concentration that may be identified as a 'site'. Definitions of background discard comprising only qualitative criteria do not specify the numbers (numerical flux) or 'density' of artefacts required to discriminate site areas from background discard.
Exposure incidence	The percentage of the ground (i.e., without grass, leaf litter, gravel cover) that can be seen in the overall area.
In situ	A site or object that has been preserved in place, i.e., undisturbed

Isolated find	A single stone artefact, not located within a rock shelter, and which occurs without any associated evidence of Aboriginal occupation within a specified radius, such as 60 m (depending on which archaeological convention is used). Isolated finds may represent single discard events, be constituent components of background scatter, or be indicative of larger obscured, remnant and disturbed sites.
Lithic assemblage (of stone)	Collection of whole and fragmentary stone artefacts and manuports obtained from an archaeological site, either by collecting items scattered on the present ground surface (see lithic scatter) or by controlled excavation (see also 'stone artefact').
Open camp site	A formerly-used site type classification defined as an open context stone artefact occurrence (or artefact scatter), containing two or more artefacts situated no more than a specified arbitrary distance (such as 60 m) away from any other included artefact. The term *open camp site* was based on ethnographic modelling suggesting that most artefact occurrences resulted from activities at camp sites. However, in order to separate the description from the interpretation of field evidence, both open camp sites and isolated finds are now referred to as *artefact occurrences.*
Potential archaeological deposit (PAD)	A discrete location or area, defined spatially either by geomorphological, disturbance or administrative criteria, within which there is a predicted likelihood that subsurface archaeological material is present, and that this material would warrant archaeological investigation in order to determine its scientific, cultural, or statutory value and status.
Proposal site	The area for which the assessment is being undertaken.
Visibility	Visibility within exposures relates to what can be seen as a percentage of the ground within exposures.

3 ENVIRONMENTAL CONTEXT

3.1 Proposal site

The proposal site consists of valley floor topography situated on the southern side of Dog Trap Creek opposite the Hume Industrial Estate. Dog Trap Creek, also referred to as Woden Creek (Barber 2000), is a tributary of Jerrabomberra Creek and drains a relatively large catchment of around 19 km^2 bounded by the Tralee Hills in the south, Isaacs Ridge and Wanniassa Hills in the west, and low hills to the north. Its confluence with Jerrabomberra Creek occurs 2.8 km downstream of the proposal site. Bedrock within the catchment is dominated by the Silurian aged Mt Painter volcanics consisting mostly of acid rocks and porphyry (Canberra 1:250000 geological map).

The proposal site is characterised by a low relief valley floor topography and low rises which may be related to underlying bedrock and fan deposits. Drainage courses tend to be ill-defined and broad over most of the proposal site. Topographic units within the proposal site comprise low broad spurs, minor drainage lines. Local elevation ranges from approximately 612 metres AHD along Dog Trap Creek to 618 metres AHD in the southern end of the proposal site along Mugga Lane and John Cory Road.

There is some confusion over the soil landscape of the proposal site. The Soil and Land Resources mapping for the ACT (NSW OEH, 2016) lists the area as being entirely within a disturbed soil landscape, however, the Soil Landscapes of Central and Eastern NSW, which includes the ACT, has the area listed as being formed of the Williamsdale soil landscape (DPIE, 2020). A disturbed soil landscape has been defined as terrain that has "been disturbed by human activity to a depth of at least 100 cm" (NSW OEH, 2016) with the original soil being either removed, greatly disturbed or buried. Within Canberra this soil landscape is largely restricted to areas used for quarries and tips. The Williamsdale soil landscape occurs on undulating rise, fans, valley flats and depressions within the Canberra lowlands. The soil landscape is defined by the high variation in form over a small area, the Williamsdale soils consist of moderately deep Red and Brown Chromosols and Red and Brown Kandosols on upper slopes of rises and fans and where bedrock is close to the surface shallow Leptic Tenosols and Rudosols frequently occur. Lower slopes and drainage lines are dominated by moderately to very deep Brown and Yellow Chromosols with some Brown Kandosols. The Williamsdale soils overlay Silurian volcanics. Though some portions of the proposal site have been highly disturbed it is likely that in areas with only moderate levels of disturbance the original soil landscape remains mostly intact.

Vegetation has been cleared with very few remnants of the Eucalypt woodland, only two large old growth Eucalypts remain, one of which appears dead. The grasslands vary from previously ploughed and improved pastures to native grass species. Prior to European settlement, this area is thought to have supported a woodland comprising an association of dominant species E. *melliodora* (Yellow Box) and E. *blakelyi (*Blakely's red gum) (Pryor 1938).

The proposal site has been subject to a variety of impacts including original vegetation clearance, cultivation and pasture development, stock grazing, fencing of paddocks, refuse dumping, the construction of the recycling facility and its associated infrastructure, as well the construction of roads and dams. Generally, levels of disturbance across the proposal site range from moderate to very high.

3.2 Dog Trap Creek

The Dog Trap Creek, catchment is situated on the Canberra Plain, an area of generally subdued relief that includes much of the urban area of Canberra (Abell 1992). The undulating terrain of the plain is considered to reflect the softness of the underlying rocks including shale and siltstone of the Canberra Formation and interbedded sediments in the Deakin Volcanics (Abell 1991). Rising above the general level of the plain are erosional residuals of more resistant volcanic rocks (e.g., Mount Ainslie and Mount Taylor) and indurated sandstone (e.g., Black Mountain).

A rocky hill, to the north of the proposal site on the northern banks of Dog Trap Creek, is underlain by hard porphyry that is more resistant than the surrounding Deakin Volcanics. An apron of colluvium extends south and east from the lower slopes of the hill and is intermittently exposed in the western bank of Dog Trap Creek (Aplin and Pillans 2002).

[redacted] This Soil Landscape occurs on poorly drained alluvium and colluvium in a limited number of valley bottoms within the ACT. It comprises only 2% of the ACT. According to Sleeman and Walker (1979), the main Great Soil Groups (Stace et al. 1972) in this association are red and yellow podsolic soils and yellow earths, with minor instances of solodics and humic fley. However, the dark coloured, calcareous soils at the site are best classified as Black Earths, not previously documented in the Canberra region, but reported on basaltic parent materials in the Nimmitabel area by Pillans and Walker (1995), (Aplin and Pillans 2002).

Dominant soil types are red podsolic, yellow earths, and yellow podsolic, with minor instances of solodics and humic fley. The geology of this area consists of Quaternary sediments within alluvial and basal slope contexts, and small areas of bedrock forming locally elevated but low gradient spur lines.

[redacted]

The steep sided and narrow morphology of the Dog Trap Creek gully suggests that the downcutting is a relatively recent phenomenon. The truncation of a remnant ridge and furrow ploughland situated on the valley floor by the main gully, [redacted], supports this contention (refer Site SPPR in NOHC 2001:22). This ploughland is a nineteenth century feature and may pre-date the gully formation. Alternately, the ploughland may have been placed next to a much narrower and/or shallower creek gully at the time of its creation.

The Federal Territory Feature Map, drafted around 1915, notes the presence of a 'Deep Gully' along the course of Dog Trap creek between Mugga Lane and Jerrabomberra Creek, see **Figure 3-2**. This notation suggests that by this time the drainage line was deeply entrenched, as it is today. This feature was probably the origin for the naming of Long Gully Lane which crossed the creek along the present day alignment of Mugga Lane (**Figure 3-2**).

The original Crown survey plans of land portions for freehold selection in 1878 show the presence of the Dog Trap creek line, but do not indicate whether it is gullied. The absence of an entrenched or incised drainage line however is inferred by the surveyor's depiction of the creek diverging into two parallel streambeds where it flows beyond the north-eastern corner of portion 200 (**Figure 3-2)**. The two courses quickly converge beyond the portion boundary. This flow behaviour would be unusual for an entrenched streamline but is characteristic of broad or shallow drainage courses. A consequence of this argument is that significant downcutting of Dog Trap Creek began in the late nineteenth century and had developed into a 'deep gully' by the establishment of the Federal Territory in the early twentieth century.

Land surface disturbance in Dog Trap Creek and surrounds has occurred as a result of the following activities:

- Clearance of original native vegetation;
- Cultivation and pasture development;
- Stock grazing;
- Use of an adjacent area for waste disposal;
- The construction of dams, fences;
- Major gully filling and re-contouring along upper reaches of Dog Trap Creek, associated with the management of the Mugga Land Landfill site (Figure 3.1); and
- Soil conservation works conducted in the early to mid 1960's including mounds and ditches to divert water from the edges of the Dog Trap Creek, leading to hardened 'spillways' at nick-points on side gullies Figure 3.2).

The degraded state and active erosion of Dog Trap Creek is a major concern. Increased development adjacent to the creek will increase the hydrologic stress on this system, leading to further erosion. Ideally, creek stabilisation works are needed in conjunction with increasing development in the catchment.

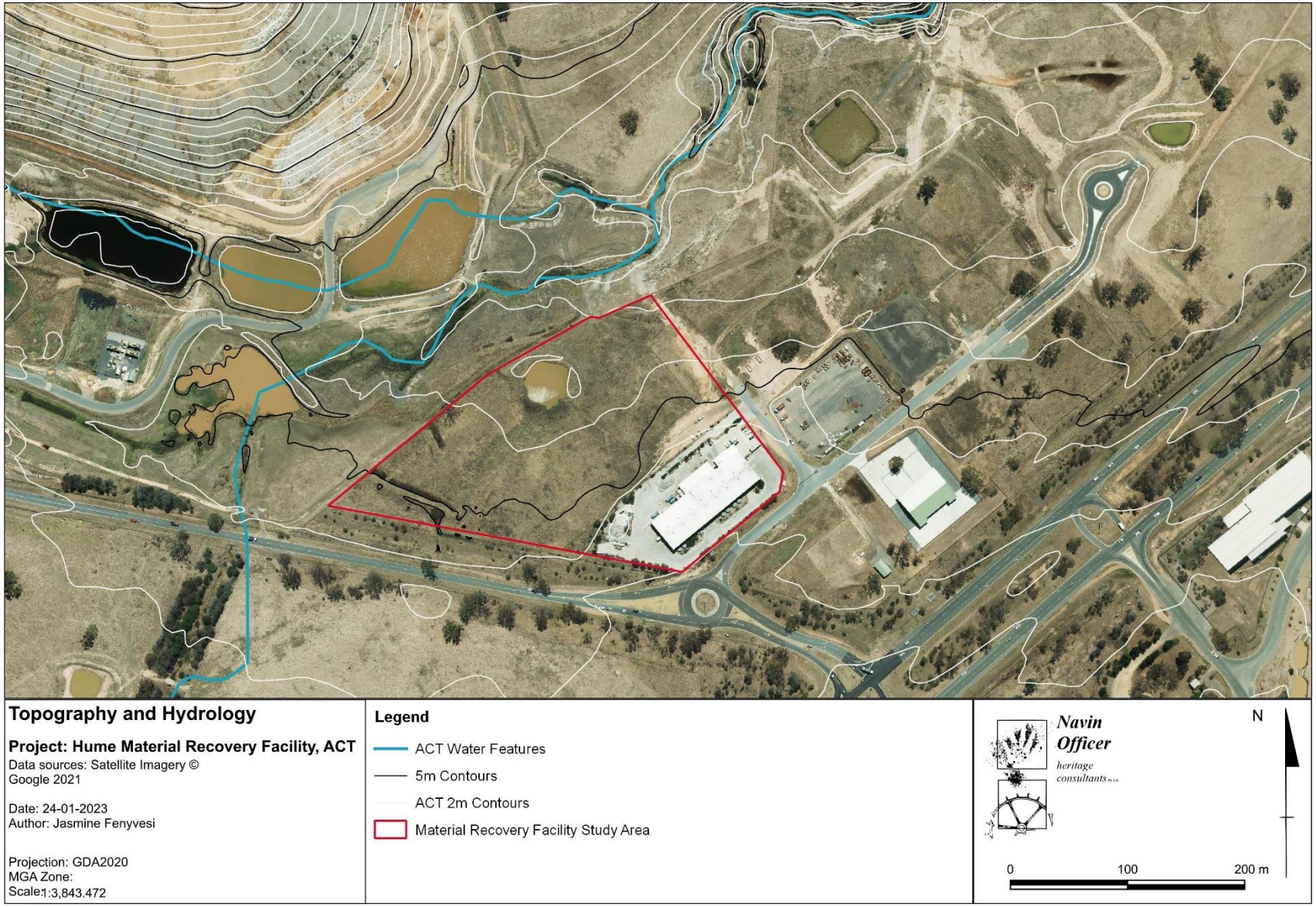


Figure 3-1 Topographic map of the Proposal site (ACT 5m and 2m contours 2015, courtesy of ACT Mapi)

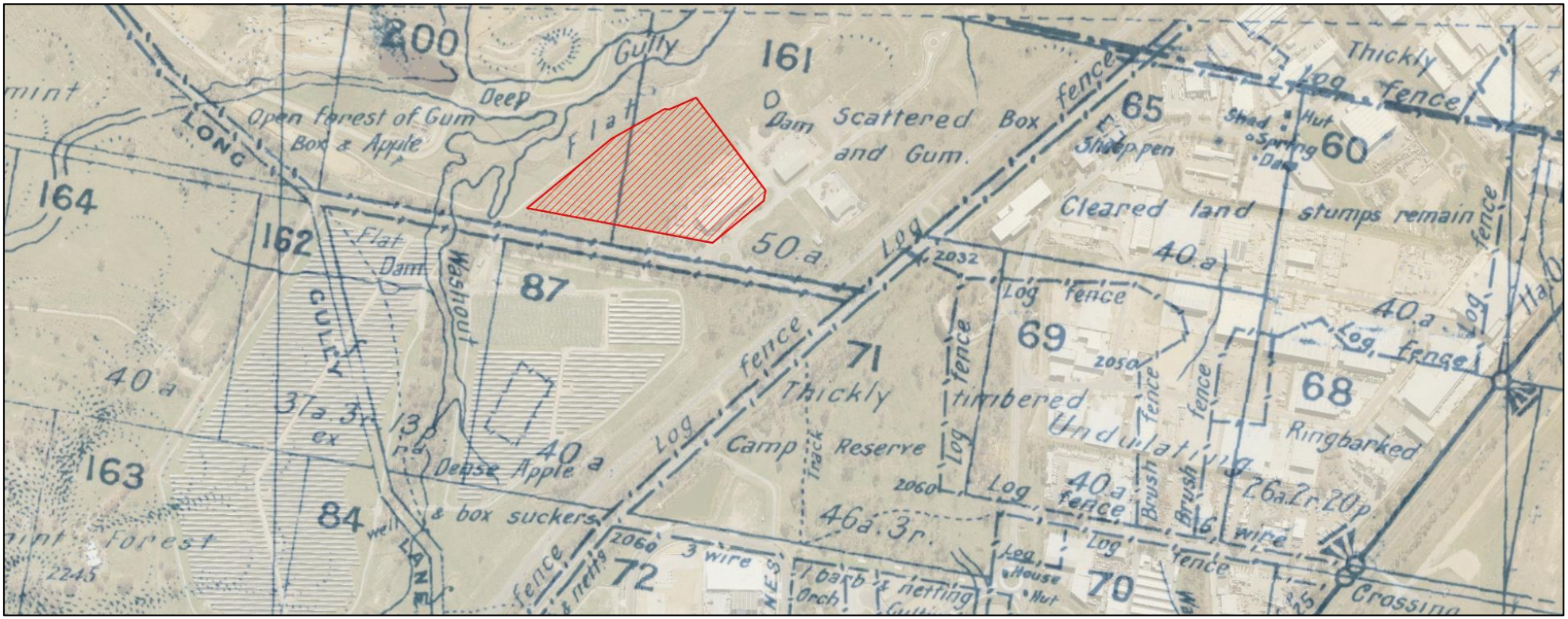


Figure 3-2 Location of the proposal site relative to extract from Sheet 11 of the Federal Territory Feature Map 1:15,840 (20 chains to an inch), Dept of Home and Territories Lands and Surveys Branch c.1915 (Australian National Library G8981.G46 s15 1915), showing Dog Trap Creek as a 'Deep Gully'

Figure 3-3 Photos of landscape examples

4 ABORIGINAL CULTURAL CONTEXT

4.1 ACT Ethnohistory

Tribal boundaries within Australia are based largely on linguistic evidence and it is probable that boundaries, clan estates and band ranges were fluid and varied 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. Social interaction across these language boundaries appears to have been a common occurrence.

There have been several attempts to identify historical boundaries between Aboriginal language groups and the local kinship families within these groups. Wilhelm Schmidt published the first large-scale map of the native languages of Australia in 1919, based in part on the maps published by explorer Alfred William Howitt in 1904 showing the boundaries of Aboriginal language groups in south-east Australia (Briggs, 2018; Howitt, 1996 [1904]:823). The Ngunnawal and Ngarigo language groups form part of the Yuin linguistic group, which Schmidt shows as extending southward from Sydney to Cape Howe (Schmidt, 1919).

Tindale's map of tribal boundaries attempted to reconstruct the distribution of Aboriginal language groups at the time of European contact, prior to the onset of the major disruptions and displacements that followed in the 19th and early 20th Centuries (Tindale, 1974:5). Tindale regarded the boundaries between language groups to be stable and long-standing, being affected more by climate variables than the European invaders (Tindale, 1974: 56). In regard to the ACT, the map shows the Ngunnawal language group extending across Canberra, bordering the Gundungurra language group in the north, the Walgalu and Ngarigo language groups in the south, and the Wiradjuri language group in the West.

Jackson-Nakano's map shows the kinships groups in the Canberra region from the 1820s (Jackson-Nakano, 2001). Jackson-Nakano (2001:xiv) notes that Aboriginal family groups within the Canberra-Queanbeyan district and surrounds were known by many names in the early nineteenth century, but local Europeans who knew them best referred to them as Kamberri – also spelled Kgamberry, Kamberra and even Nganbra (Ngambri). She says the heart of their country was centred on the area now referred to as the Acton Peninsular. To the Northeast, the Kamberri shared a border with the Gundungurra speaking Pajong, to the Northwest the Kamberri and Pajong share borders with the Ngunawal speaking Wallabalooa. The Kamberri share borders to the East with the Ngarigo speaking Moolinggoolah kinship group, to the West the Kamberri share a border with the Walgalu speaking Gurmal, and the Ngarigo speaking Monaro kinship group share a border to the South. Some of these kinship groups shared Country as well as borders. Jackson-Nakano asserts that the Kamberri were a multilingual kinship group by the 1820s, speaking the languages and dialects of their neighbouring groups, and at this time the families joined neighbouring friendly groups as they were pushed off their land. Some Kamberri individuals, she says, intermarried with neighbouring Ngunawal families from the 1880s, and some descendants of such marriages re-identify in modern times as Ngunnawal. While maintaining their distinct association with the ACT and surrounds, members of Kamberri-Ngunnawal families might also identify personally as Ngunawal, Walgalu or even Wiradjuri through their familial links to these other groups (Jackson-Nakano 2001: xv).

References to the traditional Aboriginal inhabitants of the Canberra region are rare and often difficult to interpret (Flood 1980, Huys 1993). The consistent impression however is one of rapid depopulation and a desperate disintegration of a traditional way of life over little more than fifty years from initial white contact (Officer 1989). The disappearance of Aboriginal people from the tablelands was probably accelerated by the impact of European diseases which may have included the smallpox epidemic in 1830, influenza, and a severe measles epidemic by the 1860's (Flood 1980, Butlin 1983).

By the 1850's the traditional Aboriginal economy had largely been replaced by an economy based on European commodities and supply points. Reduced population, isolation from the most productive grasslands, and the destruction of traditional social networks meant that the final decades of the region's indigenous culture and economy was centred on white settlements and properties (Officer 1989).

By 1856 the local 'Canberra Tribe' were reported to number around seventy (Schumack 1967) and by 1872 recorded as only five or six 'survivors' (Goulburn Herald 9 Nov 1872). While the Aboriginal population had no doubt decreased, a more likely scenario is that of dispossession and the movement of people off their traditional lands. In the 1880s, the 'NSW Aborigines Protection Board' had been formed and began establishing reserves across the state, the largest of which for the Canberra region were located around Yass. While a few Aboriginal people were able to continue living in the Canberra and Queanbeyan area, by 1900 it seems the majority of families had moved to reserves near Yass (Jackson-Nakano 2001).

Early accounts of Aboriginal lifestyles in and comparable with the current study localities describe aspects of a successful hunting and gathering economy and eventful social life and inter-group contacts. The material culture, which is partly reflected in the surviving archaeological record, included stone and wooden artefacts, skin clothing and bark and bough temporary dwellings (Flood 1980, Huys 1993).

The Aboriginal people of the Canberra region continue to hold strong association with the area and take an active role in retaining their connection to their traditional lands.

4.2 Representative Aboriginal Organisations

Four local Aboriginal organisations have stated an objective to represent traditional Aboriginal cultural values and interests within the ACT. These groups have been recognised by the Minister as Representative Aboriginal Organisations (RAOs) as defined under the ACT *Heritage Act 2004.* These groups are the:

- Buru Ngunawal Aboriginal Corporation (Buru Ngunawal);
- King Brown's Tribal Group Pty Ltd (KBTG);
- Mirrabei; and
- Ngarigu Currawong Clan (Ngarigu).

It is the policy of the ACT Heritage Council that the RAOs should be consulted with regard to the management of, and potential impacts to, Aboriginal cultural values and places within the ACT.

4.3 Evidence of RAO Consultation

Contact was made by phone and email with the RAOs to inform them of this assessment and to organise representation during the field survey.

The following personnel participated in the initial fieldwork program and represented the interests of their group in the proposal:

- Wally Bell (BNAC)
- Reuben House (Mirrabei)

Following SHE approval by ACT Heritage, the following personnel participated in the collection survey program and represented the interests of their group:

- Kelsie Brown (KBTG)
- Judy Bell (Mirrabei)

Records of Aboriginal Field Participation are provided in Appendix 1.

Table 4.1 Consultation Log

Date	Type of Contact (email, phone etc)	Group/Individual	Comment/Action
07/12/22	Phone	All groups	Call around to groups for availability for survey in the week of the 19th December. BNAC (Wally Bell)– Expressed that the first half of the week would work best for their group. KBTG (Adrian Brown, Tina Brown, Nevada Brown) – Adrian answered and expressed that they should have availability for the whole week. Mirrabei – no answer, message left NCC - no answer, message left
12/12/22	Email (BNAC, KBTG, Mirrabei), phone/ letter (Ngarigu)	All groups	Invitations to all groups to participate in a field survey
21/12/22	Field Survey	BNAC, Mirrabei	Field participation. Onsite discussion of previous work in the proposal site.
23/02/23	Email (BNAC, KBTG, Mirrabei), phone/ letter (Ngarigu)	All groups	Invitations to all groups to participate in an emergency collection survey for site HMRF01
28/02/23	Email (BNAC, KBTG, Mirrabei), phone/ letter (Ngarigu)	All groups	Follow up email regarding updated date of survey
03/03/23	Field Survey	KBTG, Mirrabei	Field participation. Collection of artefacts within site HMRF01.
12/05/23	Email and mail	All groups	Draft report sent to RAOs for review period
1-2/06/23	Phone and in person	All groups	Follow up conversations regarding the draft report. BNAC (Wally Bell, phone)- Agree with the recommendations of the report. KBTG (Adrian Brown, in person)- Agree with the recommendations of the report. Mirrabei (Paul House, phone)- Agree with the recommendations of the report, would like all artefacts recovered from emergency collection to be repatriated into one of the existing conservation areas in the Dog

Date	Type of Contact (email, phone etc)	Group/Individual	Comment/Action
			Trap Creek area with the FOGO artefacts. Ngarigu (James Mundy, in person)- Happy with the recommendations of the report.

5 ARCHAEOLOGICAL CONTEXT

5.1 ACT Regional Overview

Stone artefact scatters are the most frequently occurring residue of Aboriginal cultural activity in the region. They may range considerably in size and density, factors that are often interpreted as an indication of intensity of the Aboriginal land use. As well, they provide insight into stylistic and technological behaviours. Such scatters are representative of one or more stages in what is termed a 'reduction sequence'. That is, the entire process from obtaining stone raw material, to manufacture of stone tools and to eventual discard or loss and incorporation into the archaeological record. Isolated finds are artefacts that occur without any apparently associated archaeological materials or deposit. Artefact scatters are defined as spatially concentrated occurrences of two or more flaked stone artefacts.

Broad distinctions may be made between sites formed as a result of general living and habitation activities and sites located in response to the fixed locations of specific resources. Occupation sites relating to the former activities are most commonly recognised by the discard of flaked stone materials in sedimentary deposits. Subsequent processes of erosion or land use may deflate or section these sediments to reveal surficial or embedded (sometimes stratified) materials. Sites formed as a result of resource location may be recognised by a range of features including the proximity of discarded stone materials to source stone materials and characteristic extraction and use marks upon stone or wood materials, i.e., quarries, hatchet grinding grooves and scarred trees.

The wider regional pattern of Aboriginal occupation site occurrence within the Queanbeyan/ACT region is one of higher site size and frequency in areas proximate to major permanent creek lines with a reduction in site size and frequency around less permanent water sources. Whilst sites have been found to occur throughout topographic and vegetational zones, there is a tendency for more of the larger sites to be located in proximity to creeks, wetlands and proximate parts of valley floors. A trend for larger sites to be near major water sources, but avoiding frost drainage hollows, was noted at a regional level by Flood (1980). Elsewhere in the Canberra/Queanbeyan region high site and artefact frequencies have also been correlated with the geographic occurrence of specific resources particularly, stone procurement outcrop locations (Access Archaeology 1990; Heffernan and Klaver 1995; Kuskie 1992a, 1992b).

Scarred trees may be the result of Aboriginal uses of bark and/or wood materials. Various other activities, including the retrieval of honey and other foodstuffs may also result in distinctive 'toe hold' and extractive scars. Scarred trees are sparsely documented in the wider Canberra/Queanbeyan region where suitable mature woodland has been retained (Officer 1992). The identification of scars as Aboriginal in origin is problematic for a number of reasons.

A variety of natural processes such as fire damage, lightning strike and branch tears may mimic the scars formed by Aboriginal bark removal. In addition, bark was also a building material favoured by early European settlers, and there are instances where Aboriginal people were employed to strip bark for European buildings. The distinction between Aboriginal and historic scarred trees is therefore often difficult.

5.2 The Hume Region

ANUTECH undertook a survey of south Tuggeranong in 1984. The study area included the Tuggeranong Town centre area and the Calwell, Theodore, Condor and Banks areas. A total of 24 Aboriginal open sites, or artefact scatters, and 21 isolated finds were located during that survey.

In 1992, Access Archaeology undertook a survey along Jerrabomberra Creek, covering an area of 260 ha. The survey area extended from Lanyon Drive in the south to Hindmarsh Drive in the north, bounded on the east and west by Jerrabomberra Creek and the Monaro Highway. Three Aboriginal isolated finds were located in the course of the study (Access Archaeology 1992).

Walshe conducted a preliminary survey of the Hume Industrial Estate in 1994, which comprised a number of blocks totalling 30 ha on the Jerrabomberra Creek floodplain. No sites were located in the course of the survey (Walshe 1994).

In 1995 two surveys were undertaken in areas to the east of the proposal site as part of archaeological surveys for earless dragon trapping sites in the Jerrabomberra Valley. Despite the good visibility encountered at some of these locations no sites were identified (Klaver 1995; Saunders 1995).

During the survey for the proposed extension of the Mugga Mugga Quarry, Sullivan (1996) recorded low densities of Aboriginal artefacts in the hills to the north of the proposal site.

In 1997 Klaver prepared a Preliminary Statement for the (then) proposed Jerrabomberra Aquatic Facility located at Hume, less than a kilometre to the north of the proposal site (Klaver 1997). The subject area was approximately 200 ha and covered land east and west of Jerrabomberra Creek. Ten Aboriginal sites were located during the field survey. The sites comprised six isolated finds, three artefact scatters and a possible extraction (quarry) site.

Access Archaeology undertook an archaeological survey of 'The Poplars' in 1991. Nine Aboriginal artefact scatters (PPSD1-3 and PPS5-10), one scarred tree (PPS4) and three isolated finds (PIF1-3) were recorded. Archaeological Heritage Surveys undertook an assessment of 'The Poplars' in 2003. Five sites additional to those recorded by Access Archaeology were found (PPS11-12 and PIF4-6). Four areas of high archaeological potential were identified; these were PAD1 – North, PAD2, PAD3 and PAD4.

Saunders (1999) conducted a survey of the proposed site for a correctional facility on Block 4, Section 102 in Symonston. Two areas of Aboriginal archaeological potential were identified within the subject area. It was recommended that the two areas be further investigated by removal of the grass cover and detailed surface inspection, followed by targeted test pitting (Saunders 1999:25). Subsequently excavation in the areas of PAD was conducted at Symonston in 2001 (Navin Officer Heritage Consultants 2001). No Aboriginal cultural material was retrieved from the backhoe pits.

An archaeological survey was conducted at East O'Malley in 2000. The survey area comprised approximately 45 ha of low to moderately graded slopes and creek flats situated in the upper reaches of the Yarralumla Creek catchment, immediately west of the Mugga Mugga Quarry (Navin Officer Heritage Consultants 2000). The study area included mostly north or northeast facing slopes that form part of a major spurline off the Red Hill Range. Eleven cultural heritage sites or features were identified in the course of the survey. Aboriginal sites comprised five scarred trees, three of possible Aboriginal origin (EO1-3) and two of probable Aboriginal origin (EO4 & 5); and four Aboriginal isolated stone artefacts (EO6-9).

Navin Officer Heritage Consultants (NOHC) conducted a survey (2004) and a program of subsurface testing (2005) at the site of the ACT Prison, now the AMC, in Hume. During the survey they located an area of potential archaeological deposit, JPAD1. Following this survey, sub-surfacing testing was undertaken at JPAD1. A 650 m long grader scrape and eight backhoe pits were excavated within the study area. No Aboriginal cultural material was identified during the testing program. It was concluded that no substantial or significant Aboriginal archaeological remains are present within the identified potential archaeological deposit JPAD1.

In 2007, Dearling conducted a preliminary survey for upgrades to Lanyon Drive between The Monaro Highway, ACT, and Tompsitt Drive, NSW, 1.7km east of the current proposal site. No sites were located in the course of the survey (Dearling, 2007).

As part of works by Telstra to upgrade the mobile network OzArk (2012) undertook a survey for the installation of fibre optic cabling between the Hume Industrial Estate, ACT, and the Tralee Hills, NSW, [redacted]. Three Aboriginal sites were located by the study, an artefact scatter and two isolated finds. Site Hume OS1 is located [redacted], while sites Tralee IF 1 and Tralee IF2 are [redacted]. Hume OS1 is a 1 km long area consisting of several small clusters of artefacts and several isolated finds making up a single diffused open site. [redacted]

In 2013, Biosis conducted a field survey for the installation of a 132kV powerline alignment, roughly 8 km in length, [redacted] of the current proposal site. Fourteen Aboriginal archaeological sites were identified along the course of the alignment, including eight artefact scatters (T1, T4, T5, T7, T8, T9, T13 and RRF27), one of which contained an area of PAD (T5), and six isolated finds (T2, T3, T6, T10, T11, T12). Of these fourteen sites one (RRF27) had been previously recorded. Site TV5 with associated PAD was assessed as being of moderate significance, while all other sites were assessed as having low significance.

Following this assessment, in 2015, Biosis completed surface collection at sites T1, T2, T3,T5,T7, T13 and RRF27. The area of PAD associated with site T5 was able to be avoided by the proposal. Two artefacts were salvaged at T1, one artefact was salvaged at T2, T3 was unable to be refound, 67 artefacts were salvaged at T5, and twelve artefacts were salvaged at T7.

Past Traces undertook an assessment for the installation of a 11kV power cable from the Gilmore Substation to the Canberra Data Centre in Hume, roughly a 3.5 km alignment (2019). Four new recorded sites and one previously recorded site were located by the survey. The sites included an artefact scatter (OS1), and artefact scatter with PAD (OS4) , and three isolated finds (OS2, OS3, OS5). Site OS4 contained a flaked glass artefact, along with seven lithic artefacts, and an area of PAD on [redacted] from the current proposal site. Glass artefacts are a rare site type in the region and provide evidence of a contact site, for this reason site OS4 is considered to be of high archaeological significance.

In 2020, Jacobs assessed the intersection configuration for the Monaro Highway between the Alexander Maconochie Centre and the southern approach to Johnson Drive, to the east of the proposal site, as part of a feasibility study for the Monaro Highway Upgrade Program. During this assessment Jacobs identified two areas of PAD, Monaro Lanyon PAD 1 and Monaro Lanyon PAD 2. No visible surface artefacts were located at either PAD however, the potential for subsurface artefacts was assessed as being high. The cultural heritage significance of the PAD and any subsurface Aboriginal objects that may be present have not been assessed at this stage, as no archaeological subsurface testing has occurred.

NOHC conducted a 7 km survey for the installation of an Optic Fibre Cable (OFC) within the Jerrabomberra district (2020), 1.7 km east of the current proposal site. The alignment ran alongside [redacted]. Five Aboriginal sites were recorded by the survey, including four isolated finds (F2H-01, F2H-03, F2H-04, F2H-05) and one artefact scatter (F2H-02).

Jacobs conducted further surveys along the Monaro Highway, encompassing the [redacted]. As a result of the survey five Aboriginal sites (MI 001, MI 002, MI 003, MI 004, MI 005) and three areas of PAD (Monaro Isabella PAD 001, Monaro Isabella PAD 002, Monaro Isabella PAD 003) were recorded. One previously record site (TV6) and a previously recorded and partially excavated PAD (Hume PAD 6) were revisited, site TV6 could not be refound. It was recommended that if impacts were proposed in the areas of PAD that a program of archaeological test excavation be undertaken (Jacobs, 2022).

5.3 The Proposal site

A number of archaeological studies have been undertaken within and around the Hume Material Recovery Facility proposal site. The Hume area and Dog Trap Creek valley have been subject to extensive survey and subsurface investigations from the 1990's onward, leading to a great deal of research focused in the area.

A large-area investigation of Hume was conducted by Barber (2000), including the current proposal site. Barber's study was undertaken to identify and record the heritage values of Hume and adjacent areas within the Tuggeranong and Jerrabomberra districts as part of the planning procedures for the possible expansion of the Hume industrial estate. The study assessed some 800 hectares of land and included an extensive field survey program. Barber noted that grass cover across the area was a severe limitation to the identification of both Aboriginal and European heritage sites.

A total of nineteen Aboriginal sites and twelve European sites were recorded in the course of the survey. All Aboriginal sites consisted of surface scatters of artefacts [redacted]. In addition, seventeen areas of archaeological sensitivity were identified, consisting of locally elevated ground (mostly spur-line crests) adjacent to watercourses. One area of archaeological sensitivity was mapped within the current proposal site, see Figure 5-1.

Navin Officer Heritage Consultants carried out a cultural heritage assessment of the Mugga Resource Recovery Estate in 2001. The study area comprised Block 10, Section 23, Hume, an area previously investigated by Barber in 2000. Three low-density artefact scatters previously recorded during Barber's (2000) survey, HA11, HA12, and HA13, were assessed. The sites contained between three and ten artefacts and were associated with deposits exhibiting low to moderate archaeological potential (Navin Officer Heritage Consultants 2001).

Four additional areas of archaeological potential identified by Barber (2000) were also assessed as having low to moderate archaeological potential. These included low gradient crests on spur and knoll features adjacent to drainage lines (Navin Officer Heritage Consultants 2001).

In 2003 AASC undertook surface salvage of Site HA11 and test pitting of Hume PAD 1, within the current study area, and Hume PAD 2. Thirty five artefacts were collected at site HA11. Twelve shovel pits were excavated at PAD1 and sixteen at PAD2, see Figure 5-2. One artefact was located during the testing of PAD1, and 13 artefacts were located at PAD2. The majority of the artefact assemblage was made up of flakes and flaked pieces, with two cores recovered at Hume PAD2 and the raw material makeup was largely chert/tuff with three silcrete flakes at Hume PAD2 and one quartzite flake collected at HA11. Following AASC's investigations at HA11, Hume PAD1, and Hume PAD2 it was recommended that monitoring should occur during ground disturbance at these sites

Hughes et. al. (Huonbrook, 2007) undertook monitoring of ground disturbance of HID1391 (HA11) and HID1395 (Hume PAD2). Grader scrapes were excavated at each site to the [redacted]. A total of 285 artefacts were recovered from HID1391 and 458 from HID1395. As the scrapes were conducted over similarly sized areas it was proposed that HID1395 contained a higher density of artefacts compared to HID 1395. Artefact types included flakes, retouched flakes, cores, axes, hammerstones, anvils, ground stones and flaked pieces, made up of a wide range of raw materials including hornfels, quartz, and silcrete with lesser quantities of FGS, volcanic, chert, quartzite and MGS. The average depth artefacts were located was between 100 to 150 mm, and the maximum depth of artefacts recovered by the scrapes was 500 mm Higher than expected number of ground edge artefacts (i.e., axes and anvils) were located by the grader scrapes, this was thought to be due to the increased visibility of these artefact types due to their size. It was noted that artefacts of this type tend to occur more frequently within large sites with a high diversity of artefact types and raw materials. In contrast, Hughes et al observed that there was a clear bias in the size of artefacts recovered, with small flakes less than 10 mm in size under represented. The assemblage recovered by the grader scrapes was much higher than expected and it was suggested that the use of grader scrapes as the sole means of salvaging artefacts/ archaeological material was an inappropriate strategy. It was estimated by Hughes et al (Huonbrook, 2007, pg. 31) that the rate of recovery from systematic excavations is 100 times greater than recovery through use of grader scrapes and predicted that the estimated total number of artefacts at HID 1391 and HID 1395 would be 28,500 and 45,800 artefacts respectively. As the remaining portions of the site, [redacted], were highly likely to contain significant high density archaeological deposits it was recommended that that the areas be protected. If protection was not possible, prior to any ground breaking works a staged program of systematic excavation would be undertaken.

AASC and CHMA undertook the next phases of excavation at HID 1395, as well as HAC2 and HA12, as part of the works for Stage 2 and 3 of the Hume Resource Recovery Estate (AASC and CHMA, 2008a). Excavation was undertaken across the entire Stage 2 and 3 study area in two phases, focusing on three main landscape units identified in the study area; higher dissected plains, lower dissected plains, and elevated terraces. Phase 1 involved the excavation of 44 test pits (1 x 0.5m) across a representative sample of the landscape units identified. Following this, as part of Phase 2, a further 16 test pits were excavated in selected locations as well as three trenches (4 x 1m) in high density areas identified during Phase 1 associated with sites HID 1395, HAC2, and HA12. A total of 938 lithic artefacts and 33 bone specimens were recovered from the investigations, 252 lithic artefacts from test pits and 686 lithic artefacts and 33 bone specimens from trenches. Of the 938 artefacts recovered from

these works, 920 of them were sourced from the [redacted]. High artefact concentrations were noted to be associated with sites HID 1395, HAC2 and HA12, all located on [redacted]. At HID 1395 the average artefact density was 35 artefacts per square metre, at HAC2 it was 56 artefacts per square metre, and at HA12 it was 80 artefacts per square metre. These densities represent some of the highest densities known in Canberra. A new site name (HRRE1) was given to the low levels of artefact concentrations across the study area not associated with previously recorded sites. The majority of raw materials used in artefact production seem to be local, with a smaller portion of the assemblage made up of materials likely imported from outside the region. The age of the sites was hypothesised to be between 5000 to 200 years ago. The significance of sites HID 1395, HAC2, and HA12 was assessed as being of moderate to high significance. Sites HID 1391 and new site HRRE1 were assessed as being of low significance. HID 1391 was assessed as low significance due to the high level of destruction of the site and HRRE1 was assessed as low significance due to its status as a low density artefact concentration that has been moderately disturbed. Further salvage excavation was recommended for site HID1395 in the northern portion of the site, as the southern portion has been largely destroyed. It was recommended that site HAC2 and the northern portion of HA12 be conserved and permanently fenced off and that salvage excavation be undertaken in the southern portion of HA12 if any further impacts were to occur.

A further program of test and salvage excavation in the same area recovered an additional 2830 artefacts (AASC and CHMA, 2008b). Salvage excavation was undertaken at sites HID1395 and HA12, as well as a program of subsurface testing between sites HA12 and HAC2 for an area reserved for a proposed water detention pond. A 2 5m^2 area was excavated within the northern portion of HID 1395 and four 1x0.5m test pits were excavated in the southern portion of the site. Within the southern portion of HA12 another 25 m^2 area was excavated. Ten 1x0.5m test pits were excavated in the proposed detention pool area associated with HA12 and HAC2. A total of 924 artefacts were recovered from northern salvage works at HID 1395 and 56 artefacts were recovered from the four test pits in the southern portion of HID1395 with an additional 14 surface artefacts located. A further 463 artefacts were recovered from the salvage works at HA12. No artefacts were recovered from the 10 test pits at the detention pond area. As a result of the investigation, the three sites were assessed as being representative of "interim camp locations that were frequented on a regular basis… these areas were regularly used as overnight camp locations by Aboriginal people travelling through the landscape" (AASC and CHMA, 2008b; pg. 45).

A survey of the Hume West Industrial Estate, 220 metres south of the current proposal site, by AASC (2007) identified eight Aboriginal sites/PADs including two previously recorded sites and six new Aboriginal site recordings (HW1 – HW6), three of which were associated with an area of continuous PAD (PAD 2). The site recordings included two isolated finds (HW2, HW3), an artefact scatter (HW6), and three artefact scatters associated with PAD2 (HW1/PAD2, HW4/PAD2, HW5/PAD2). The survey also re-identified two areas of PAD (HA1/PAD1 and Hume PAD 1) previously identified by Barber (2000). Site HA1/PAD1 was recorded as an artefact scatter with associated PAD, and Hume PAD1 was classified as an area of PAD with no recorded surface artefacts. Following the survey, a program of surface collection and subsurface testing was undertaken within the study area (AASC and CHMA, 2008c). Surface salvage was undertaken at sites HW2, HW3, and HW6 resulting in the recovery of four artefacts. Subsurface testing was undertaken at HA1/PAD 1, Hume PAD 1, HW1-HW4-HW5/PAD2, with 15 test pits (1x0.5m) excavated at each PAD, with an associated surface collection program at each site. A total of 14 artefacts were recovered from subsurface investigations and 22 from surface salvage at HW1-4-5/PAD2, 51 artefacts were recovered from subsurface investigations and 10 from surface salvage at HA1 PAD1, and 33 artefacts were recovered from subsurface investigations at Hume PAD 1 with no surface finds recorded. The majority of site HW1-HW4-HW5/PAD2 was [redacted] and as such much of the site would be conserved within the heritage area. The areas outside the [redacted] boundary were recommended for salvage excavation, as was Hume PAD1 and HA1/PAD1.

Salvage excavations were undertaken in July of 2008 (AASC and CHMA, 2008c), resulting in the recovery of 335 artefacts. At HW1/PAD2 an 8m x 0.5m trench was excavated, at Hume PAD1 a 2x2m pit was excavated, and at HA 1/PAD1 an 8m x 0.5m trench was excavated. A total of 184 artefacts were recovered from HA1/PAD1, 143 artefacts were recovered from HW1/PAD2, and only eight artefacts were recovered from Hume PAD1. Sites HA 1/PAD1 and HW1/PAD2 were thought to be comparable to site HID1395, in terms of density and composition of the assemblages, and were assessed as being of moderate significance and medium conservation value. The landform that these

sites occurred on was [redacted]. Hume PAD1 was assessed as being of low-mod significance and low conservation value.

Further excavations were required at HW1/PAD2 in 2010 (CHMA, 2010a) as the original boundary of the proposed Couranga homestead heritage area was altered and as a result, the eastern portion of site HW1/PAD 2 would now be potentially impacted by the proposed development activity. Excavation was carried out in two phases. During Phase 1 eighteen 0.5x0.5m test pits were excavated, following this in Phase 2 a 5m^2 area was excavated as a trench in 1x1m units, in 05.x0.5m quadrants for better understanding of distribution. A total of 12 artefacts were located during test pitting, nine were located within the trench.

In 2010, CHMA (2010b) carried out a cultural heritage assessment for the installation of a sewer line for the Canberra Data Centre Project. The project area was bound on the southeast by the recycling centre property (the current proposal site) and to the northeast the Stonyhurst Property. Three previously recorded sites were identified within the study area (HAC2, HA12 and HA13) as well as six new Aboriginal site recordings, including an isolated find, an artefact scatter, and four artefact scatters with associated PAD (Hume 1, Hume 2, Hume 3 plus PAD, Hume 4 plus PAD, Hume 5 plus PAD and Hume 6). CHMA identified a need to redefine the boundaries of site HA12, the proposed new boundary was named 'HA12 extension'. Site Hume 2 plus PAD was also thought to be an extension of previously identified site HAC2 and site Hume 3 plus PAD may be the previously recorded site of HA13. A confined subsurface testing program at sites Hume 2, Hume 3, Hume 4, Hume 5 and HA12 was undertaken within areas to be impacted by the sewerage line (CHMA, 2011a). All test pits were excavated in 0.5 x 0.5m units with three test pits excavated at Hume 2 (0 subsurface artefacts, 2 surface), five test pits excavated at Hume 3 (7 subsurface artefacts, 11 surface), five test pits excavated at Hume 4 (9 subsurface artefacts, 38 surface), ten test pits excavated at Hume 5 (37 subsurface artefacts, 11 surface) and five test pits excavated at HA12 (7 subsurface artefacts, 0 surface). Hume 3, 4, and 5 are located on same landscape feature and are likely continuation of same site, the higher concentration of artefacts noted at Hume 5 was thought to be due to the more favourable northerly aspect of the site. A glass artefact was noted at site Hume 5, this is evidence of a contact site and a rare artefact/site type in the ACT and as such it was determined that the site had research potential to provide insight into the contact period between Aboriginal occupants and European settlers.

CHMA undertook further investigations at site Hume 5 (2012), [redacted] of the current proposal site, undertaken through a grant given by the ACT Heritage Unit. A two stage excavation program was undertaken at the site. Stage 1 involved the excavation of 21 0.5 x 0.5 m test pits and from the findings of the Stage 1 excavations, six locations were selected to be expanded upon. Two 2 x 1 m trenches and four 1 x 1m trenches were excavated as part of Stage 2 works. Nineteen Aboriginal stone artefacts were recovered from the Stage 1 test pits. There was also a range of European artefacts recovered within the test pits, with 7 of the 21 test pits containing European material (33 European artefacts recovered total). None of the European artefacts showed any signs of having been 'modified' by Aboriginal people. As part of Stage 1 works a surface inspection was also undertaken with 182 surface artefacts located. Of the identified surface artefacts, 134 were a white ceramic material with a dark brown external glaze, a number of which had diagnostic features which indicated modification by Aboriginal people. The remaining surface artefacts were made up of 26 glass fragments (predominantly dark green bottle glass), fifteen Aboriginal stone artefacts, five porcelain fragments, and one pottery fragment. The Stage 2 expanded excavations yielded a combined total of 164 European and Aboriginal artefacts, with 143 European artefacts and 21 Aboriginal stone artefacts. The localised concentration of European artefacts indicated that this was the site of a rudimentary dwelling, probably dating to the 1840s to 1890s. While Aboriginal modified ceramic and glass artefacts were located during surface collection, due to the disturbed nature of the surface site the assemblage cannot be conclusively tied to the Hume 5 site, as no modified glass or ceramic artefacts were located by systematic excavations. Without a definitive link between the European and Aboriginal artefact assemblages, CHMA concluded that there was only tentative evidence that local Aboriginal people and European settlers interacted at this location (2012).

As part of plans to extend operations at the Mugga Lane Resource Management Centre, CHMA (2011b) undertook an assessment an eight hectare area, including the current proposal site, which spanned the area between Mugga Lane, the Monaro Highway, Dog Trap Creek and the Stonyhurst property. The survey located two artefact scatters (NW1 and NW2), one with associated PAD

(NW1/PAD1), as well as an area of PAD with no associated surface artefacts (PAD2). Site NW1/PAD1 is located within the current study area. Site NW2 is associated with Hume 1, which is also associated with HA11 and HID1391. Following the initial assessment, a program of surface salvage and subsurface testing was undertaken at the identified sites (CHMA, 2011c). This included the excavation of fifteen 0.5 x0.5m test pits at PAD1 and a further ten test pits at PAD2. One artefact was located at each PAD, indicating a far lower level of archaeological sensitivity in comparison to sites excavated to the north east (i.e., HID1395, HAC2, HA12, etc.).

The Mugga Solar Farm, 100 metres southwest of the current proposal site, has also been subject to detailed archaeological investigations. The solar farm site was first assessed in 2013 (NOHC), resulting in the identification of two Aboriginal sites (Tugg1 and Tugg2) as well as an area of PAD (Tugg PAD1) and the location of two previously recorded Aboriginal sites (H/A14 and H/A15) and a PAD (Hume PAD6) previously identified by Barber (2000). Subsurface testing was undertaken at the identified PADs in 2015 in two separate programs (NOHC, 2015a and 2015b). Hume PAD 6 covers [redacted], and for reporting purposes were designated Hume PAD6 A, B, and C. Transects were placed along the spur lines with 11 0.5 x0.5m tests pits excavated at Hume PAD 6a, 24 at Hume PAD 6b, and 35 at Hume PAD 6c, totalling 70 pits. A total of 45 artefacts were recovered from 18 of the 70 test excavation pits completed for the project. Hume PAD6c contained the most artefacts, and they were clustered in three general areas, around Pit 39, Pit 45 and Pit 51. It was recommended that a program of subsurface salvage be undertaken at these locations. Tugg PAD1 was initially recorded as not impacted by the project. Additional mapping provided to NOHC indicated that Tugg PAD1 was to be impacted and a separate program of subsurface testing was undertaken. Fifteen 0.5 x 0.5m test pits were excavated, with a total of 10 artefacts recovered from three of the test pits. The densest cluster of artefacts was identified within Pit 13 and so further salvage excavation was recommended at this location.

Salvage excavations were carried out at Hume PAD 6 and Tugg PAD1 in 2016 (NOHC), focusing on the pits where the highest artefact densities were encountered. Artefacts were recovered from all excavated areas with 21 artefacts recovered from around Pit 13 at Tugg PAD 1 and 457 artefacts recovered from Pit 39, 367 from Pit 45 and 896 from Pit 51, totalling 1720 artefacts at Hume PAD 6c. A total of 10 square metres was excavated at Pit 13, Tugg PAD1 and 80 square metres was excavated at Hume PAD 6c (Pit 39: 26 m^2, Pit 45: 20 m^2, Pit 51: 34 m^2). All three of the larger sites (Pit 39, Pit 45 and Pit 51) have evidence of on-site knapping, and each assemblage contained substantial numbers of artefacts made from distinctive materials that were almost certainly derived from the same parent rocks. Quartz, silcrete and unidentifiable fine-grained material (FGS) were dominant, with chert, quartzite and igneous rock present in relatively small numbers. The frequency of materials varies between sites, with FGS being dominant on Pit 39, silcrete and quartz being co-dominant on Pit 45, and silcrete being dominant on Pit 51. All of the assemblages are dominated by unretouched flakes, with retouched flakes, cores and flaked pieces being present on all sites.

The salvage excavations, and the previous test excavations, indicated that the density of artefacts across the area was highly variable. The assessment concluded that although the density of artefacts was variable, it is likely that the subsurface artefact scatter is continuous between the three excavated areas, and extends through other unexcavated regions of PAD 6, indicating that the entirety of Hume PAD 6c should be treated as a single archaeological site. Given that the total area of Hume PAD6c is slightly over 2ha (20 000 square metres), if the density of artefacts across Hume PAD6c is between 1 and 12 artefacts per square metre (a conservative estimate, given that the median density of all salvage excavation squares was 12 artefacts per square metre) then the total size of the assemblage on the spur line would be in the order of magnitude of tens to hundreds of thousands of artefacts.

NOHC surveyed the area immediately adjacent to the Hume Material Recovery Facility in 2022 as part of an assessment for the proposed FOGO Facility. As a result, an isolated find (HFF01) and an area of PAD (HFFPAD01) were identified. This report found that the proposal site as a whole was assessed to have low Aboriginal and historic archaeological potential. This assessment was based on the high level of disturbance across the proposal site. The exception is HFFPAD01 which has been subject to significantly less impact than the surrounding area. Subsurface testing was recommended for HFFPAD01 if impacts were to occur at the site. These works have not yet been undertaken.

5.3.1 Conclusions

Hume PAD 6 along with the other areas of PAD adjacent to Dog Trap Creek, are among some of the densest artefact assemblages to have been recorded in the Canberra region with high levels of variation within the assemblages and retain a high degree of spatial complexity. The high incidence of these rich subsurface sites in this relatively low-lying area [redacted] contrasts the theory that areas of high archaeological significance will only occur around major rivers.

While the areas of PAD are located in low lying areas, they all occur on locally elevated terrain. The difference in elevation is small along Dog Trap Creek, and in the case of Hume PAD 6, areas excavated were less than 50cm above the level of the surrounding terrain. In topographic mapping of more than 1m these minute differences are difficult to observe.

The presence of surface artefacts is not a reliable indicator of the occurrence of subsurface artefacts within the Dog Trap Creek valley. The large subsurface assemblage at Hume PAD 6 was associated with no visible surface artefacts, and though small numbers of surface artefacts were noted in the areas around HID1395, HAC2 and HA12, the density and richness of the subsurface assemblage at these sites was much greater. In contrast, similar numbers of surface artefacts were encountered at site NW1/PAD1, however only one subsurface artefact was located during subsurface testing.

The highly variable nature of the subsurface artefact scatter as well as the highly localised nature of the rich subsurface deposits indicates that it may be easy to miss these dense sites if pit spacing is too sparse. This has been shown at HID1395 and Hume PAD 6, at both sites salvage excavations resulted in an unanticipated number of artefacts being located in comparison to the densities that were observed during testing phases (Huonbrook, 2007, NOHC, 2016).

[redacted]

[redacted]

Figure 5-1 Map of previously recorded sites within the vicinity of the proposal site

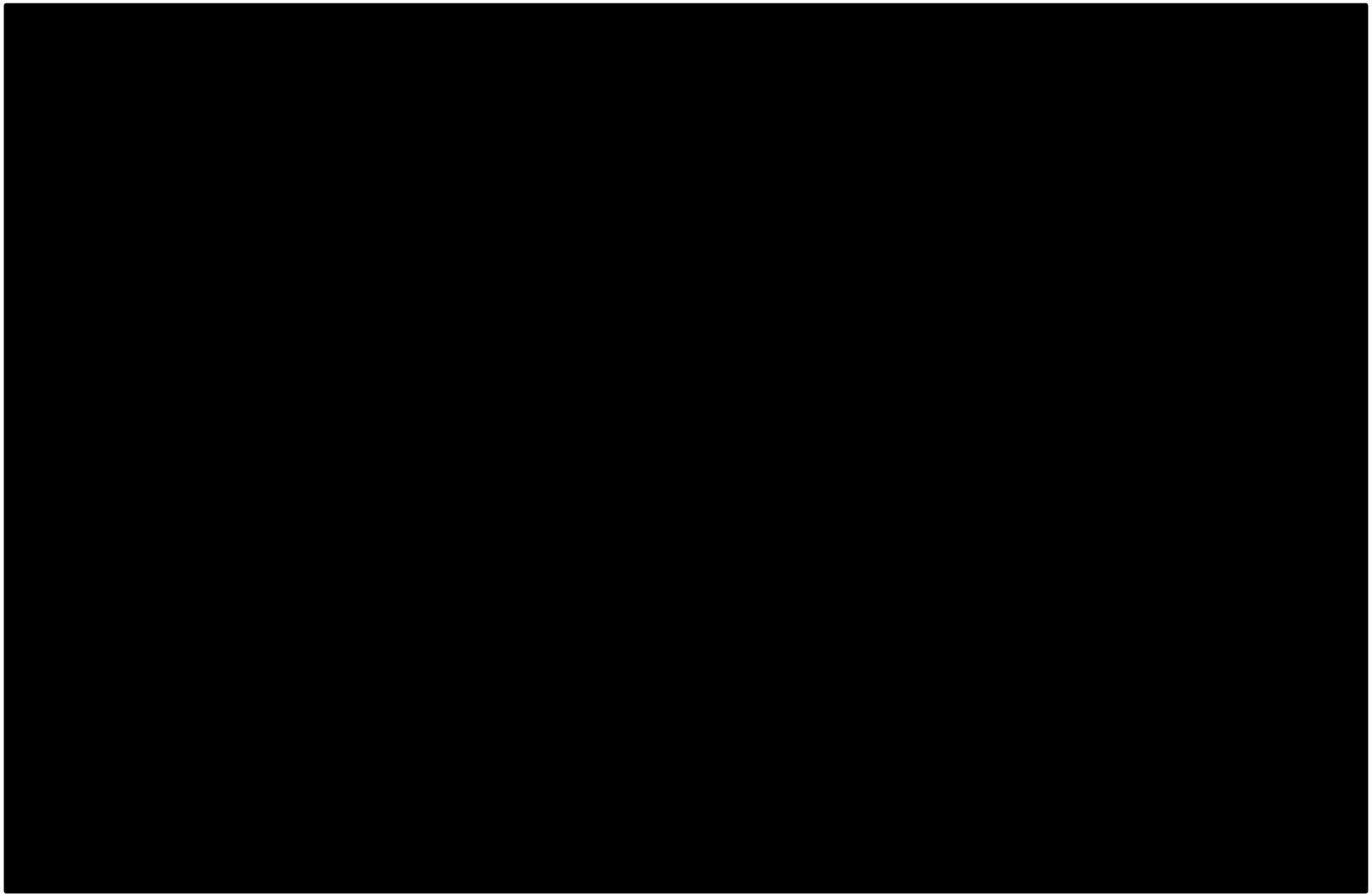


Figure 5-2 Map of subsurface investigation works previously undertaken within and in the vicinity of the proposal site

5.4 Predictive Archaeological Model – Aboriginal Heritage

As a result of the archaeological surveys undertaken to date in the local area and ethno-historical data from the local region and south-eastern Australia more broadly, qualitative observations regarding Aboriginal site location parameters may be summarised as follows:

- The most commonly recorded site types are surface and subsurface scatters of stone artefacts
- Artefact densities in open artefact scatters may vary considerably.
- open artefact scatters are most likely to occur on relatively level ground in locally well-drained contexts, either spurline crests, terraces or elevated creek banks in valley floor contexts, low gradient crests and streamline banks in mid valley slope contexts, and level crests, shoulders and saddles on major ridgelines and spurs.
- the majority of open artefact scatters, (particularly larger sites), are situated adjacent to, or in close proximity to, creek flats or valley bottom contexts, frequently on low gradient basal slopes adjacent to streams or wetlands.
- Open artefact scatters which contain relatively large artefact assemblages and densities occur most frequently and consistently within 100-150 m of major and relatively permanent drainage lines.
- Open artefact scatters which occur away from the valley basal slopes and major tributaries tend to be small and sparser. A preference for major confluences and valley constrictions may be indicated.
- Subsurface deposits of artefacts will not necessarily be associated with visible surface artefacts
- Most sites located away from major water sources will consist of low density scatters of artefacts, and mostly contain less than ten visible surface artefacts.
- Artefacts may occur wherever surface exposures of exploitable rock occur, rock sources which are known to have been locally exploited include chalcedony, chert, quartz, and fine grained igneous rocks such as fine grained porphyry and fine grained intrusives within granodiorite.
- The occurrence of high grade chert does not necessarily indicate Aboriginal exploitation (Officer and Navin 1992).
- Aboriginal scarred trees may occur anywhere old-growth trees survive. It is estimated that in the Canberra/Queanbeyan region trees bearing Aboriginal scars would need to be in the order of 140 to 150 years old.

6 HISTORICAL CONTEXT

6.1 Regional Overview

The Canberra region has a history of European settlement dating back to the 1820s when the first settlers and squatters moved into the area in the wake of early exploratory undertakings in search of the Murrumbidgee River. From this time through to the mid-1830s most of the productive country was acquired by squatters and absentee landholders and by the 1850s substantial properties were being established by the likes of Joshua Moore and Robert Campbell (Williams and Barber 1995: 7; Navin, Officer and Legge 1996:13).

Large estates were established around the Hume area during the 1820s. This included Robert Campbell's 'Duntroon', which extended from the Molonglo to the Hume valley, and the 'Jerrabomberra' property, established by John Palmer who arrived with the First Fleet (Lea-Scarlett 1968: 10). Land use over this period was focused upon grazing, although dairying is known to have been undertaken at Jerrabomberra by the early 1830s (Lea-Scarlett 1968: 11).

Following the establishment of the large land grantees whose land covered the best grasslands on the river flats and basal valley slopes, the pattern of land selection was characterised by the purchase or selection of small parcels of forested land, following the Robertson Land Act of 1861. The land selectors who applied for land under the Robertson Land Acts were often people of limited financial resources or no government contacts, and often locals whose occupations and families were connected to the labour force of the larger estates. Their landholdings were often small and conditionally purchased, with freehold title only gained after completion of all payments. During the payment period, various conditions were often specified, including the conduct of improvements such as fencing and clearing, and a period of residency on the block.

Compared to the original government grants, the land subject to selection was mostly more marginal and forested, and often poorly watered in upper creek catchments. In many cases the smallholdings proved uneconomic, and selectors could not support their payments and consequently lost or sold their holdings. The buyers were frequently the neighbouring large estate holders who retained the best land, the best water sources and could raise sufficient capital.

Subdivision of Jerrabomberra appears to have commenced in the 1870s when a series of 100 acre blocks were leased to tenant farmers (Gillespie 1991:155). Further subdivision of the estate into blocks of 50 to 300 acres occurred in the 1880s (Gillespie 1991:181).

During the latter half of the nineteenth century, there was a continuing consolidation of settlement throughout the region. George Campbell, the fourth son of Robert Campbell, came to Duntroon in 1855 and added to the large holdings left to him by his father by purchasing land north of Canberra. George resided at Duntroon until 1876, when he went to England and lived until his death in 1881. Duntroon was managed by Campbell's nephew, Frederick, until the Commonwealth resumed the property (Gillespie 1991).

The proposal site falls within the former NSW portions of 161, Parish of Queanbeyan, and 200, Parish of Tuggeranong, County of Murray, see Figure 3-2.

Portions 161 (50 acres) and 200 (69 acres) forms part of an estate comprising seven portions totalling 313 acres originally selected by Thomas Tong. Tong was born in England around 1833 and arrived in Melbourne in 1854. Fletcher (1993) records Tong as being resident at Naas, Queanbeyan, Cuppacumbalong and Tharwa. He married Mary Harkin in 1868.

Tong's initial selections comprised two portions (84 and 87) totalling 77 acres, gained under conditional purchase in 1872 and situated immediately south of the proposal site. Portion 84 appears to have served as a residential focus for the rest of the holding given that the 1872 Crown survey plan for the selection notes the presence of a 'well' and a 'hut' to the value of £20. This evaluation suggests a not insubstantial structure, and it is probable that it was more than a token structure. Tong's holding increased up until 1878 with the subsequent conditional purchase of five adjacent portions to the north and west, totalling a further 236 acres. This included the selection of Portion 161 in 1874 and Portion

200 in 1878. The Crown Survey plans for portions 161 and 200, conducted in 1878, show no residential structures. A log fence to the value of £7 is noted along the eastern road boundaries of portion 161 . Portions 161 and 200 are described as 'good open forest' (Crown surveys for portion 161, Parish of Tuggeranong, County of Murray, and portion 200, Parish of Tuggeranong, County of Murray, both of 1878).

Freehold title to all of Tong's conditional purchases was gained in the name of George Campbell by 1905.

Fletcher (1993) notes that Thomas and Mary's second child; John Thomas Tong was born in 1872 at 'Woden'. John Thomas is also noted to have been born in a stone built dwelling (now a ruin and called 'Stoneyhurst Cottage} off Narrabundah Road (now Mugga Lane) on old portion 92 (Boot 1990, Barrow 1998). This 40 acre portion of land is roughly 600 metres north east of the current proposal site. The building was present when the portion was surveyed in 1878 and originally selected under conditional purchase by Joseph Harris. It has been proposed that the cottage was built in the 1850s (Boot 1990). The surveyor noted the value of the building to be £100. Freehold title to the portion was gained in the name of George Campbell by 1905.

Boot (1990) theorises that the 'Stoneyhurst Cottage' was constructed by the Campbells as an outstation or overseers house for the Duntroon Estate. If true, this would suggest that Harris was acting on behalf of Campbell when he selected this valuable asset. Boot quotes oral information from Mr Laurie Tong that Tong family members resided in the home prior to its sale to Harris in the late 1870s (Boot 1990). This suggests that Tong may have been an employee of the Campbells in the 1870s. This may also have been true for Harris.

The fact that there was already a not insignificant residential dwelling owned by Thomas Tong on portion 84, further to the south, in 1872, presents a problem. Either the Tong family had two residences in the 1870s, or the oral tradition may have become confused. It is conceivable that both Harris and Tong were employed by the Campbells and each operated on behalf of their employers to select neighbouring lands to the Duntroon Estate, prior to their eventual purchase by the Campbells. The Tong's may have resided in 'Stoneyhurst Cottage' until its selection by Harris in, or before 1878, and subsequently changed residence to portion 84 in the Tong selections, perhaps as early as the early 1870s, following his marriage to Mary Harkin in 1868.

The ACT was established from land ceded by New South Wales in 1911. Initial development of the ACT was slow, and management of the existing NSW infrastructure was continued by the Commonwealth with only gradual changes. The last ‘freehold’ properties were not resumed until the 1980s. Names already in use in 1911 such as natural features and locality names were retained. Although some localities have disappeared as a result of urban development, their names have usually been retained in some form.

6.2 Related Reports and Information

The proposal site was previously surveyed for historical sites in 2000 as part of Barbers cultural resource survey of Hume and surrounds. During the course of that survey twelve sites were located. These sites were comprised of a stone bank, windmill, machinery shed and dump, erosion control measures, Massey-Harris tractor, Travelling Stock Reserve (TSR), Mugga Land fill woodland, fenced excavations, Long Gully Road, ‘Couranga” homestead, old ‘Tralee’ slab house and Block 1543. The old ‘Tralee’ slab house and machinery shed, and dump were assessed as being of high significance, Long Gully Road, ‘Couranga” homestead, and the TSR were assessed as being of moderate significance, and it was recommended that further study be undertaken at these sites. The rest of the sites were deemed to be of low significance and did not meet the threshold for listing on the heritage register.

Erosion control measures (HH4) in Dog Trap Creek (referred to as ‘Woden’ creek in Barbers report) were recorded 170 metres from the current proposal site, see **Figure 6-1**. The control measures were built by the government prior to 1969 in an attempt to stop erosion of the creek bank (Barber, 2000, pg. 22). This site was assessed as being of low historic significance as it did not meet any of the schedule 2 criteria of heritage significance (Barber, 2000, pg. 29).

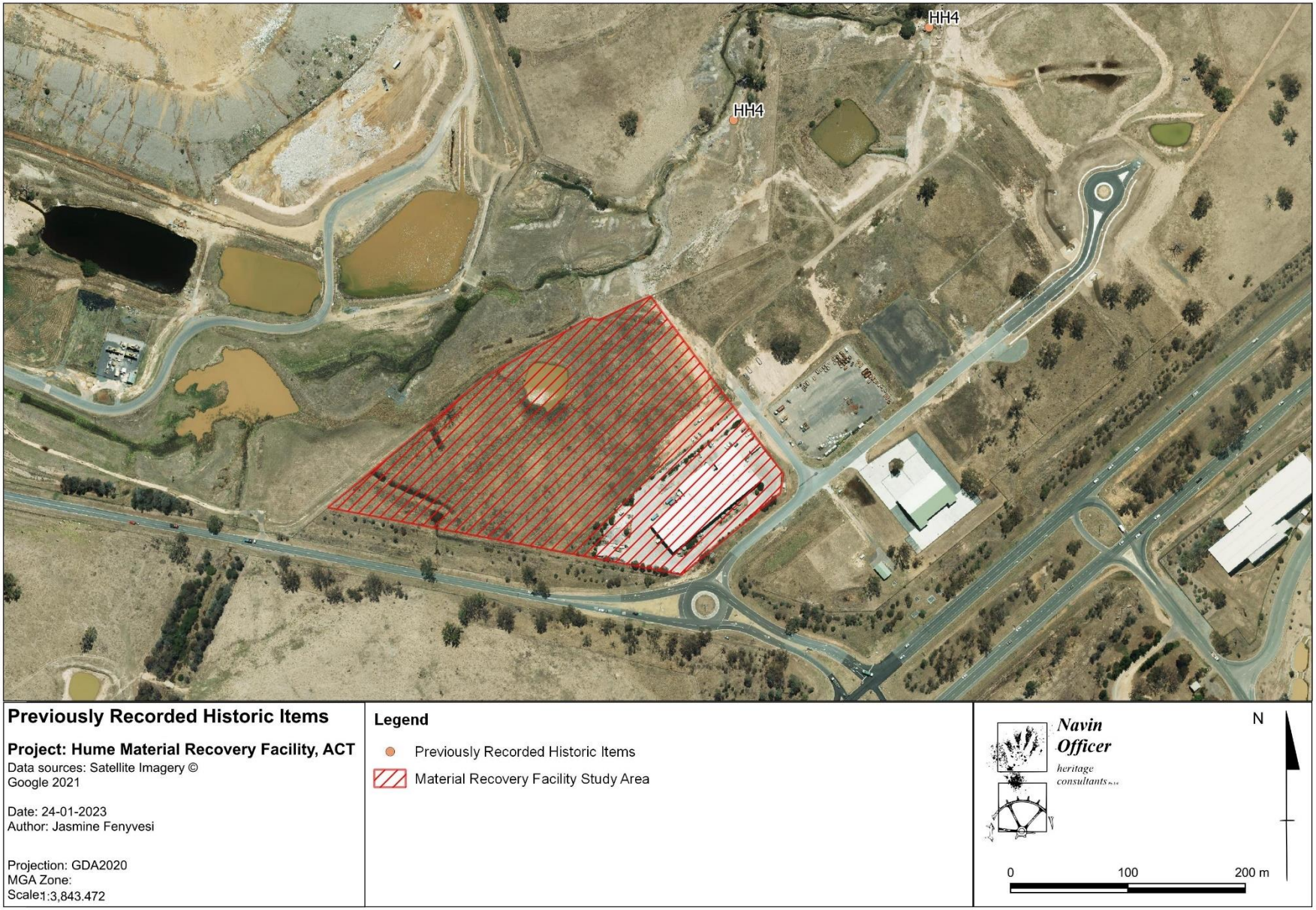


Figure 6-1 Map of previously recorded historic items within the vicinity of the proposal site

6.3 Predictive Archaeological Model – Historical Heritage

Unrecorded historic sites and features of heritage significance that may occur within the proposal site include:

- Old fence lines, such as post and rail fencing; these may occur along road easement boundaries and farmlands.

- Indications of field systems, such as drainage channels and ridge and furrow ploughlands; these are likely to survive in low lying agricultural ground.

- Traces of agricultural and industrial processing or extractive sites, such as dairies, factories, and quarries; these may be found throughout agricultural lands on valley floors and adjacent low ranges;

- Archaeological sites, such as the occupation remains of former dwellings including homesteads, houses and huts; these will be distributed in close association with land settlement patterns, and correlated with favourable agricultural lands, trading nodes and transport corridors;

- Nineteenth-century structures, such as farm dwellings, outbuildings, selector's and timber-getters huts; these may survive as standing buildings, ruins or archaeological deposits and are most likely to survive on less developed rural properties, on early portion numbers, and in or near established farm building complexes;

- Sites associated with early roads; these will be closely associated with early cadastral road reserves, watershed ridgelines, and related to early river and creek crossing points.

Structures of historical interest and heritage significance may be standing, ruined, buried, abandoned or still in use.

7 PHYSICAL INVESTIGATIONS

7.1 Summary

One previously recorded Aboriginal heritage site (NW1/PAD1) is located within the study area. One Aboriginal artefact scatter (HMRF01) discovered during the survey by NOHC was found within the [redacted] of the study area.

There is one previously recorded Aboriginal heritage sites (NW2/PAD 2) and two areas of archaeological potential (Hume PAD 4, MPAD2) located within [redacted] of the study area. [redacted]

7.2 Aboriginal Sites

7.2.1 Previously recorded sites

NW1 and PAD 1

Grid Reference: [redacted]

Located within the current study area, site NW1/PAD1 was located by CHMA in 2011(a) as a small artefact scatter of two flaked stone artefacts in area [redacted] PAD 1. This site is located within the current proposal boundary.

PAD 1 was described by CHMA as an elevated, north facing rise 100 m south of Dog Trap Creek, measuring approximately 100 m x 70 m. At the time of recording there was very low surface visibility across the PAD.

A subsurface testing program was undertaken at PAD 1 by CHMA later in 2011(b). Fifteen 50 x 50 cm test units were excavated, see Figure 5-2, during which a single lithic artefact was located. The artefact was a quartzite flake (24 x 21 x 4 mm).

Surface salvage collection was also undertaken at NW1 during the test excavation program. A total of nine lithic artefacts were collected consisting of five silcrete flakes, two chert flakes, and one quartz flake over an area of 30 m x 10 m.

NW2 and PAD2

Grid Reference: [redacted]

In 2011 CHMA described site NW2 as an artefact scatter of 20 flaked stone artefacts that form part of the previously identified site Hume 1, see description below, located [redacted] of the present proposal site. However later in 2011 CHMA changed the designation of NW2 to be associated with the single artefact located during subsurface testing at PAD2.

PAD 2 was described by CHMA as a defined, flat-topped rise south of Dog Trap Creek with a north easterly aspect, approximately 50m x 25m in area. At the time of recording there was very low surface visibility across the PAD.

A subsurface testing program was undertaken at PAD2 by CHMA in 2011(b). Ten 50 x 50cm test units were excavated, see Figure 5-2, during which a single lithic artefact was located. The artefact was a quartz flaked piece (38x31x17mm).

This site is located [redacted] of the current study area. This site was revisited by NOHC in 2022 and was assessed as having no further subsurface potential due to the low numbers of artefacts identified by previous investigations and a high level of disturbance in the area.

Hume PAD 4

Grid Reference: [redacted]

According to information provided on the ACT Heritage Register, Hume PAD 4 is located on an elevated sandy terrace. Site investigation and salvage have decreased the size of Hume PAD 4 down to several conservation zones; MPAD1 is one such conservation zone. It was also noted on the ACT Heritage Register that these conservation zones have produced some of the densest artefact quantities in the Territory (Kayandal, 2015, pg 32).

Jacobs later noted that the recorded location of Hume PAD 4 is inaccurate (2022, pg. xxvii) and that Hume PAD 4 is located adjacent to Dog Trap Creek, north of the Monaro Highway, as mapped by Barber when reporting the survey which identified this area of PAD (Barber 2000, Figure 11).

These site descriptions seem to imply that Hume PAD 4 is associated with sites HID1395, HAC2, and HA12, of which HAC2 and HA12 are designated conservation zones.

The mapped location of Hume PAD 4 is located [redacted] from the proposal site.

MPAD2

Grid Reference: [redacted]

No description provided by ACT Heritage; location provided on mapping. This site is not referred to in any previous assessment. The mapped location of this site is located 100 metres from the current study area.

[redacted]

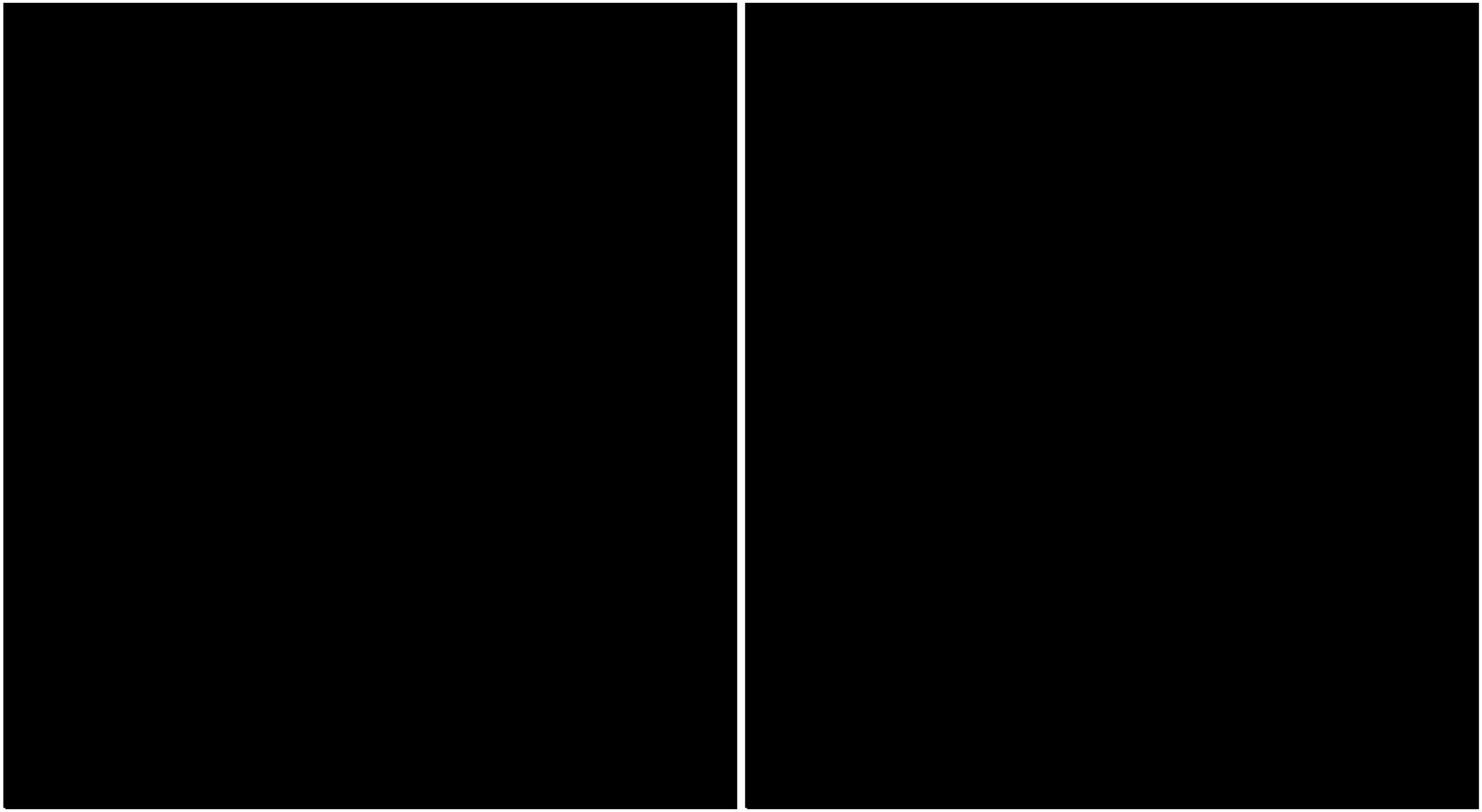
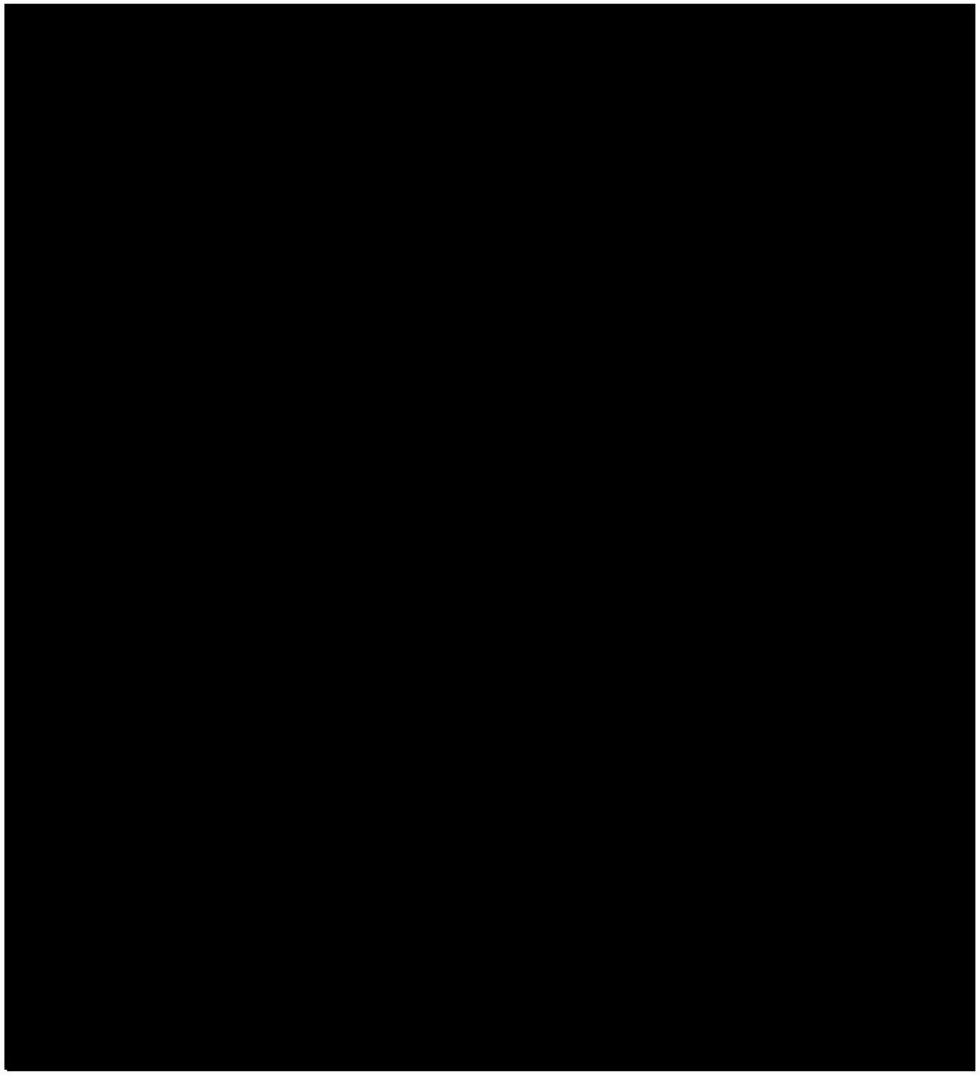


Figure 7-1



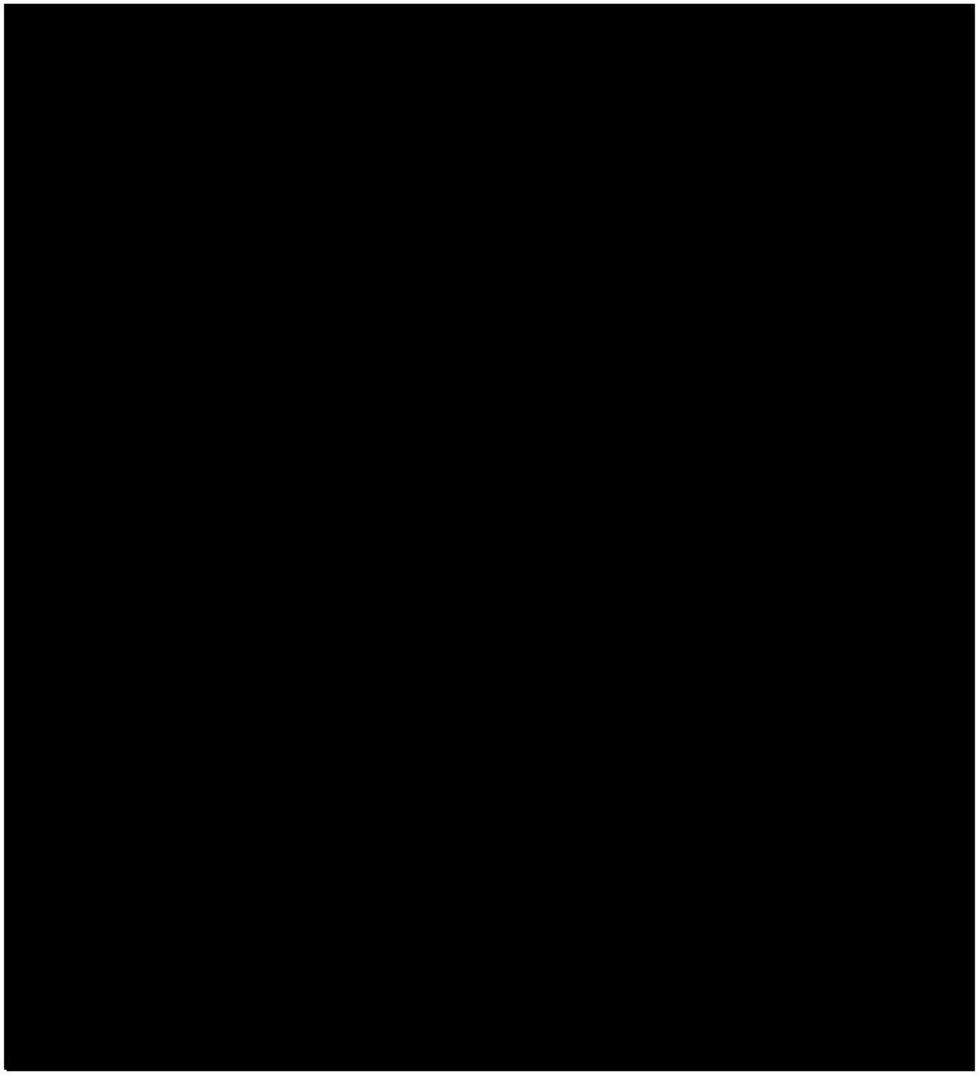


Figure 7-2

Figure 7-3

7.2.2 Sites Recorded During the Current Assessment

HMRF01

GDA (Zone 55): [redacted]

This site is an artefact scatter consisting of three lithic artefacts, one of which was a conjoin flake in two pieces, located [redacted]. There are a considerable number of introduced gravels in the area as well as various refuse materials, likely blown over from the nearby waste facilities. Disturbance at this site is extremely high, impacts include [redacted], surface water wash, erosion, and dumping of refuse. The exposure incidence within the [redacted] was at 95% with visibility of 85%. Exposure incidence and visibility outside of the [redacted] in the grassed areas was extremely low, <10% due to high vegetation coverage from introduced weeds and grasses. The potential for there to be additional artefacts is moderate, and there is low potential for there to be any subsurface archaeological deposit.

Artefacts included:

1. Chert core, 35% cortex, 47 x 52 x 19mm
2. Quartzite flake, 30% cortex, 29 x 28 x 15mm
3. Chert spilt flake, 50% cortex, piece 1 = 13 x 34 x 10mm and piece 2 = 55 x 53 x 11mm

Figure 7-4 HMRF01, facing north west

Figure 7-5 Chert split flake and quartzite flake at HMRF01

Figure 7-6 Chert core at HMRF01

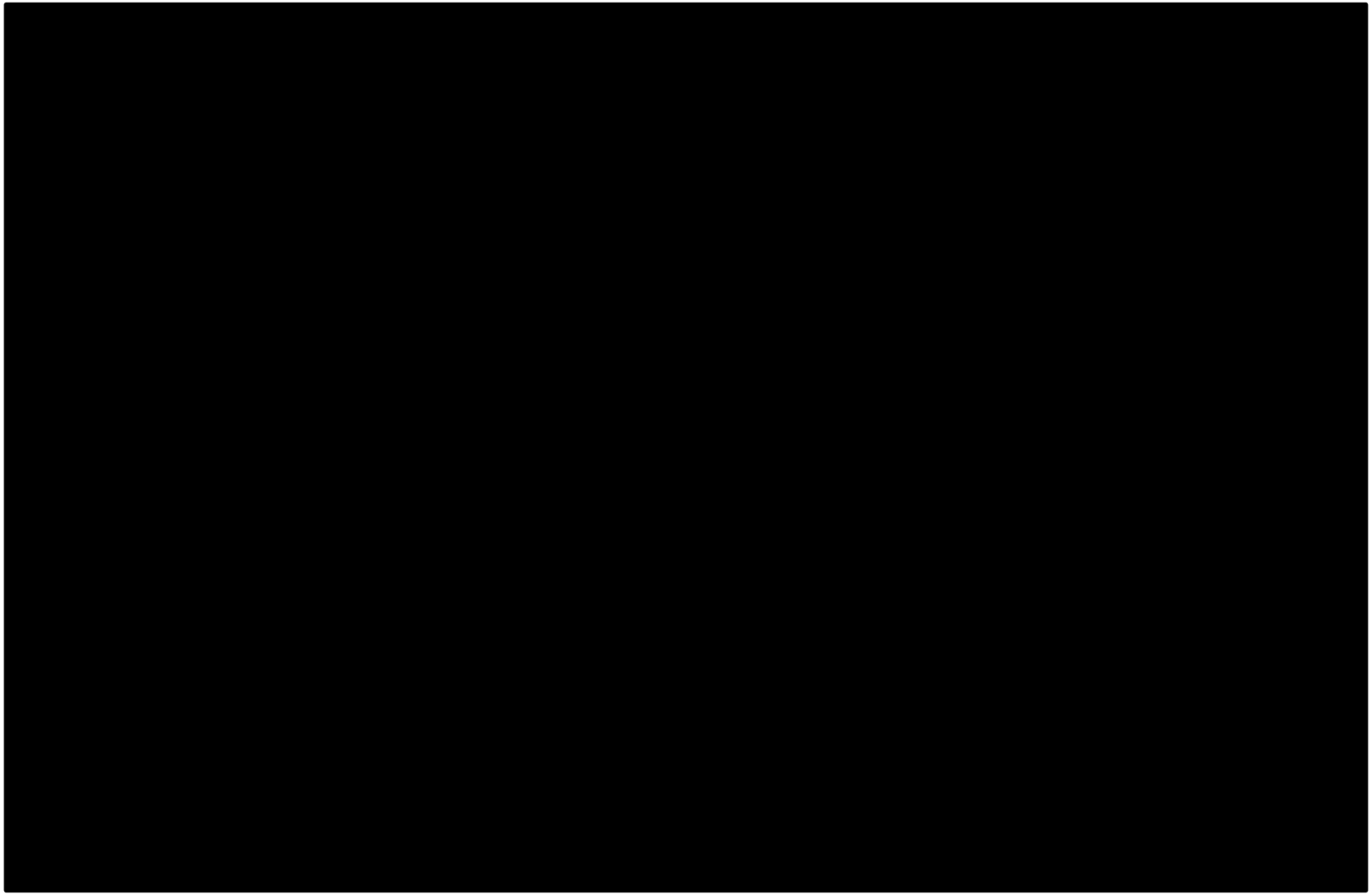


Figure 7-7 Location of HMRF01

Figure 7-8 Mapping of results including previously recorded sites

7.3 Survey Coverage and Visibility Variables

The effectiveness of archaeological field survey is to a large degree related to the obtrusiveness of the sites being looked for and the incidence and quality of ground surface visibility. Visibility variables were estimated for all areas of comprehensive survey within the proposal site. These estimates provide a measure with which to gauge the effectiveness of the survey and level of sampling conducted. They can also be used to gauge the number and type of sites that may not have been detected by the survey.

Ground surface visibility is a measure of the bare ground visible to the archaeologist during the survey. There are two main variables used to assess ground surface visibility, the frequency of exposure encountered by the surveyor and the quality of visibility within those exposures. The predominant factors affecting the quality of ground surface visibility within an exposure are the extent of vegetation and ground litter, the depth and origin of exposure, the extent of recent sedimentary deposition, and the level of visual interference from surface gravels.

The ground visibility in the proposal area was extremely low with patchy to thick vegetation covering most sections of the study area. Higher visibility was restricted to exposures associated with vehicle tracks and informal animal tracks. Overall exposure of the study area was 10% and visibility within those exposures was 30%.

7.4 Discussion

The area of archaeological sensitivity (Barber, 2000) in the east of the study area has undergone a number of archaeological investigations. Three PADs have been subject to test excavation, PAD1 (AASC, 2003), NW1/PAD1 and NW2/PAD2 (CHMA, 2011c) two of which are located in the current study area (PAD1 and NW1/PAD1), resulting in the location of three subsurface artefacts, one at each PAD. It was concluded by CHMA that the testing of NW1/PAD1 and NW2/PAD2 indicates an outlying scatter associated with the main site complex to the east. Though a small untested portion of the area of archaeological sensitivity intersects with the current proposal site, due to the high level of disturbance observed in this area during survey and in aerials (see Figure 7-9**Error! Reference source not found.** to Figure 7-11) and the low density of artefacts located by previous investigations (AASC, 2003., CHMA, 2011c), it was determined that further testing in this area was unnecessary.

The study area as a whole is assessed to have low Aboriginal and historic archaeological potential. This assessment is based on the high level of disturbance in the study area within areas assessed as having archaeological potential. The western portion of the study area has been subject to less disturbance than the east, however the archaeological potential of this area is considered to be low based on landform and the results of past assessments. The contained nature of the study area and low ground surface visibility means that no more detailed conclusions can be drawn.

Figure 7-9 Location of Hume MRF in relation to 2014 aerial (sourced from ACTMapi)

Figure 7-10 Location of Hume MRF in relation to 2019 aerial (sourced from ACTMapi)

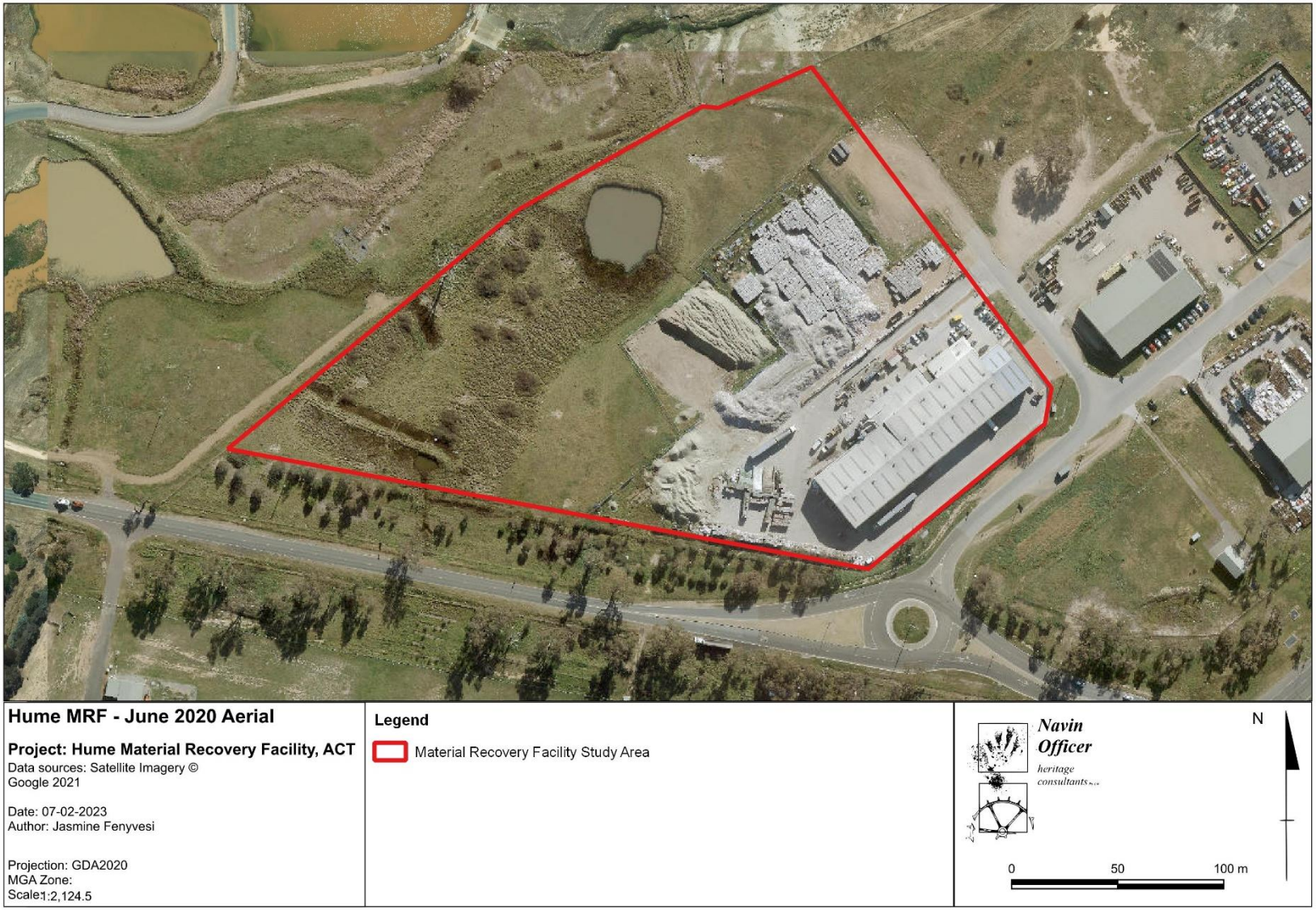


Figure 7-11 Location of Hume MRF in relation to 2020 aerial (sourced from ACTMapi)

8 ASSESSMENT OF HERITAGE SIGNIFICANCE

8.1 Assessment Criteria

Criteria suitable for the assessment of the heritage values and significance of the archaeological resource within the ACT have been defined in Section 10 of the *Heritage Act 2004* (Republication No. 18).

A place or object has heritage significance if it satisfies one or more of the following criteria:

(a) importance to the course or pattern of the ACT's cultural or natural history;

(b) has uncommon, rare or endangered aspects of the ACT's cultural or natural history;

(c) potential to yield important information that will contribute to an understanding of the ACT's cultural or natural history;

(d) importance in demonstrating the principal characteristics of a class of cultural or natural places or objects;

(e) importance in exhibiting particular aesthetic characteristics valued by the ACT community or a cultural group in the ACT;

(f) importance in demonstrating a high degree of creative or technical achievement for a particular period;

(g) has a strong or special association with the ACT community, or a cultural group in the ACT for social, cultural or spiritual reasons;

(h) has a special association with the life or work of a person, or people, important to the history of the ACT.

The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance defines cultural significance as 'aesthetic, historic, scientific, social or spiritual value for past, present or future generations' (Australia ICOMOS Burra Charter, 2013).

Assessing the Aboriginal cultural significance of a place involves identifying the range of values that are present and assessing them against relevant criteria, in order to define why a place is important and inform future planning and management. Table 8.1 provides definitions of these values and outlines the criteria for assessment.

Table 8.1 Criteria used to assess the cultural significance of a place

Definition of value	Assessment criteria
Historic value refers to the associations of a place with a historically important person, event, phase or activity in an Aboriginal community.	Is the subject area important to the cultural or natural history of the local area and/or region and/or state?

Definition of value	Assessment criteria
Scientific (or archaeological) value refers to the information content of a place and its ability to reveal more about an aspect of the past through examination or investigation of the place, including the use of archaeological techniques (Australia ICOMOS 2013). Sites may meet this criterion because they: contain intact archaeological deposits, have potential to answer research questions on past human behaviour, are very old or contain significant time depth, contain large artefactual assemblages or material diversity, are well preserved, or form part of a larger site complex or cultural landscape.	Does the subject area have potential to yield information that will contribute to an understanding of the cultural or natural history of the local area and/or region and/or state?
Aesthetic value refers to refers to the sensory and perceptual experience of a place—that is, how we respond to visual and non-visual aspects such as sounds, smells and other factors having a strong impact on human thoughts, feelings and attitudes. Aesthetic qualities may include the concept of beauty and formal aesthetic ideals (Australia ICOMOS 2013).	Is the subject area important in demonstrating aesthetic characteristics in the local area and/or region and/or state?
Social (or cultural) value refers to the spiritual, traditional, historical or contemporary associations and attachments the place or area has for Aboriginal people. Social or cultural value is how people express their connection with a place and the meaning that place has for them. Spiritual value is included in the definition of social value and refers to the intangible values and meanings embodied in or evoked by a place which give it importance in the spiritual identity, or the traditional knowledge, art and practices of Aboriginal people (Australia ICOMOS 2013).	Does the subject area have a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons?

8.1.1 Thresholds

In understanding the significance of a place or object, there are two key interrelated steps:

1. **determine whether the place has value in relation to a criterion** (this is the basic test). This will sometimes imply the historical or other context of the place or object and might determine whether the place or object is of personal, interest group, local, territory, national or World Heritage significance (its historical context and the community group for whom it is important); and,

2. **apply threshold indicators, to 'test' the degree to which the place or object is significant** and, hence whether it meets a criterion and warrants registration— is it sufficiently rare, unique, important, etc. in the context of the ACT when compared to other places?

8.2 The Proposal site

8.2.1 Social or cultural value

All Aboriginal archaeological objects and sites have cultural value for present-day Aboriginal people, as they were created by prehistoric, ancestral Aboriginal people and provide tangible evidence of past occupation of the landscape. All Aboriginal sites within the ACT are regarded by the RAOs as having cultural significance as locations that have direct evidence of the past Aboriginal occupation of the area. It has been communicated to NOHC by the RAOs represented in the field survey that the sites within the Hume Material Recovery Facility proposal site have cultural value to Aboriginal people.

It should be noted that some objects and places might have cultural value that was not communicated to NOHC. This could be the case for objects or places that are associated with information that is culturally restricted.

8.2.2 Scientific (archaeological) value

HMRF01–Artefact Scatter

HMRF01 is a new Aboriginal site and is an artefact scatter that was recorded during the current assessment. This site type is common throughout the Canberra region and is evidence of Aboriginal occupation within the area, however due to the lack of rare or defining characteristics this site provides little further archaeological information. This site has no subsurface archaeological potential. The site is assessed as having low scientific significance.

8.2.3 Assessment against the assessment criteria

Based on the assessment conducted is considered that site HMRF01 has heritage significance according to criterion g.

Criterion g has a strong or special association with the ACT community, or a cultural group in the ACT for social, cultural or spiritual reasons;

Based on past assessments by the ACT Representative Aboriginal Organisations (RAOs), and comments made by field representatives during the field program, the site is considered important to the RAOs as part of local Aboriginal tradition due to the archaeological record they contain and the evidence this record represents for traditional and past patterns of Aboriginal occupation. The site symbolically represents past patterns of Aboriginal occupation which contributes to a sense of identity for the Aboriginal community.

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

9 STATUTORY CONTEXT[1]

9.1 Heritage Act 2004

This Act provides for the protection, management and conservation of heritage places and objects in the ACT. The Act establishes a Heritage Register of heritage places and objects and establishes procedures for both provisional and full listing to the Register. The Act establishes the ACT Heritage Council to function as the main advisory body to the Minister on heritage issues. The Council receives administrative support from ACT Heritage, Environment ACT, Department of Territory and Municipal Services. The Council has the power to register Heritage places and objects provisionally and fully. Under the Act, the ACT Heritage Council is responsible for the Heritage Register and the heritage registration process.

An 'Aboriginal Place' and 'Aboriginal Object' are defined as 'a place/object of particular significance to Aboriginal people because of either or both:

(a) Aboriginal Tradition; and/or

(b) The history, including contemporary history, of Aboriginal people (s9).

Under s74 and s75 of the Act a person commits an offence if they engage in conduct that diminishes the heritage significance of a place or object or engage in conduct that causes damage to an Aboriginal place or object. These offences are graduated according to whether an offender was reckless or negligent 'about whether the conduct would diminish the heritage significance' or 'cause damage' to an Aboriginal Object of Place. To 'cause damage' is inclusive of disturbing or destroying.

The Heritage Council may issue a direction to a person or corporation who owns, looks after, or who does work that damages a heritage place or object to repair any damage to that place or object, if it can be repaired. It is an offence, incurring fines of $80,000 for an individual and $405,000 for a corporation, to disobey a repair damage direction (s67A).

Fines of $1000 to an individual or $5000 to a corporation can incur for damage to heritage places or objects or Aboriginal places or objects, regardless of whether they can be repaired.

It is an offence to contravene a heritage direction, incurring fines of $160,000 to an individual and $810,000 to a corporation. Failure to comply with a direction can be grounds for a Heritage Order made by the Supreme Court (s62).

A person also commits an offence under the Act if they do not report an Aboriginal place to the Heritage Council and has 5 working days to do so (s51). The reporting and offence provisions of the Act apply irrespective of land status or whether registration to the Heritage Register occurs.

The Act provides for the development and application of Heritage Guidelines. These are to be formulated by the Heritage Council and will set the policy for how places and objects are to be conserved, including registered places and objects. The guidelines may control how development is to take place in an area which is a heritage place or contains a heritage object. They will be performance-based but may include mandatory provisions (Part 5). During the transitional phase of the Act a heritage or conservation requirement for a place is taken to be a heritage guideline under the Heritage Act (s129).

The only provisions for legally sanctioned disturbance to an Aboriginal place or object, or the diminution of the heritage value of a Heritage Place or Object is to conform to one of the exceptions listed in s76 of the Act. According to this section, the offence provisions of the Act (s74 and s75) do not apply if conduct is engaged in accordance with the following:

---

[1] The following information is provided as a guide only. Readers are advised to seek qualified legal advice relative to legislative matters.

(i) a heritage guideline;
(ii) a heritage direction;
(iii) a heritage agreement;
(iv) a conservation management plan approved by the council;
(v) development approval under the Planning and Development Act 2007, chapter 7;
(vi) an excavation permit;
(vii) a statement of heritage effect approved by the council.

Heritage recordings which occur on National Land under the National Land Ordinance 1989 (or subsequent amendments), or which occur in Designated Areas under the National Capital Plan are subject to development approval processes which may be in addition to, or instead of requirements identified as management requirements under the *Planning and Development Act 2007.*

Development approval processes within the ACT can be summarised as follows:

- Work carried out on National Land in Designated Areas is subject to the approval of the National Capital Authority (NCA);

- Work carried out on Territory Land in Designated Areas is generally subject to approval by the NCA, but Territory requirements may also apply to development where the Territory is the approving Authority;

- Work carried out on National Land outside of Designated Areas must be in accordance with a Development Control Plan agreed by the NCA that reflects the requirements of the Territory Plan; and

- Work carried out on Territory Land outside Designated Areas is subject to the Territory Plan and Territory Approval processes.

[redacted]

[redacted]

[redacted]

9.3 Implications for the proposed Material Recovery Facility

There is the possibility that the construction of the proposal may ‘cause damage’ to an Aboriginal place or Aboriginal objects (HMRF01, NW1/PAD 1), see Figure 9-1.

[redacted]

Aboriginal site HMRF01 recorded during the current study, is not yet listed on the ACT Heritage Register.

Figure 9-1 Proposed Impacts for the Hume Material Recovery Facility

10 IMPACTS AND RECOMMENDATIONS

10.1 Discussion of Impacts

The construction of the Hume Material Recovery Facility may directly impact site HMRF01 and NW1/PAD 1. Half of the listed site boundary for HMRF01 is located within the proposed impact area for the Hume MRF and site NW1/PAD 1 is contained wholly within the proposed impact area, see Figure 9-1.

Impacts have already occurred at site NW1/PAD 1 as allowed for under past heritage assessments, and as such no further works are required at this site.

Partial impacts are proposed for HMRF01. Within impact areas the site is likely to be completely destroyed and is considered likely that the remaining area of the site would also be subject to impacts through [redacted] and construction.

[redacted]

[redacted]

Table 10.1 Impact Assessment

Site Number	Type of Harm	Degree of Harm	Consequence of Harm
HMRF01	Harm	Partial	Partial loss of value
NW1/PAD 1	Harm	Total	Total loss of value
[redacted]	[redacted]	[redacted]	[redacted]

10.2 Consideration of Alternatives

No alternatives are required at sites NW1/PAD 1 and [redacted].

Partial harm is proposed at HMRF01, and additional impacts are considered likely in the area outside of the study area. Site HMRF01 is subject to impacts from [redacted], surface erosion, and weed coverage which has had damaging effects on the archaeological material at the site, as evidenced by the breakage of the chert flake located during survey.

Due to the ongoing impacts to the site, following advice from ACT Heritage, it was proposed that a collection of the site be undertaken as soon as possible to mitigate any further harm. A letter supporting this action can be found in . Following approval from ACT Heritage, a collection survey was undertaken

on 3rd of March 2023, a description of the artefacts located during this collection survey can be found in .

10.3 Mitigation Strategies

The artefacts associated with HMRF01 have been collected and are currently stored in a temporary keeping place at the NOHC laboratory in Fyshwick ACT. The long-term management outcomes for the artefacts collected during this survey will be developed following the completion of the assessment for the neighbouring Hume FOGO project and may include a Return to Country program or another appropriate outcome. This program will be developed in consultation with the RAOs.

[redacted] All proposal workers will be made aware of the fenced area and that it should not be removed or disturbed during construction.

10.4 Recommendations

It is recommended that:

2. No further works are required at site HMRF01. All artefacts collected in association with HMRF01 should follow the long-term management outcomes developed for the Hume FOGO project.

3. No further works are required at site NW1/PAD 1.

4. HMRF01 should be added to the Heritage Register as a site of Aboriginal heritage.

5. All proposal personnel, including contractors, should be made aware of the heritage status of these sites prior to impacts.

6. The protocols for the unanticipated discovery of archaeological material and suspected human remains (presented in Appendix 5) shall be adopted and complied with during construction activities involving ground surface disturbance and excavation.

[redacted]

8. A copy of this report should be provided to ACT Heritage

9. A copy of this report should be provided to each of the ACT RAOs.

11 LIST OF REFERENCES

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~ o0o ~

APPENDIX 1

RECORD OF ABORIGINAL CONSULTATION

Survey Invitation for Material Recovery Facility, Hume

Reply | Reply All | Forward

Mon 12/12/2022 9:48 AM

Jasmine Fenyvesi
To Wally Bell

You replied to this message on 21/12/2022 12:17 PM.

MRF site map with meeting area.png
1 MB

Hi Wally,

NOHC have been engaged by GHD and ACT NoWaste to conduct a survey for a proposed Material Recovery Facility in Hume. As part of this project NOHC would like to invite a representative of your organisation to participate in in the survey and to provide your organisation's views regarding any Aboriginal sites or cultural heritage issues.

We propose to conduct the works on Wednesday 21st December and to meet at the carpark off John Cory Road at 10:00am, see highlighted (yellow) area in attached map. The survey is likely to take about 1-2 hours.

We would greatly appreciate the participation of your organisation in this program and hope that you will have a representative available for this time period. Could you please contact me on 02 6282 9415 (mobile 0418 621 588) or by return email, to confirm the attendance of one of your representatives (if you have not already done so), or if you have any questions or issues relating to this program.

Cheers,

Jasmine Fenyvesi
Senior Archaeologist

Navin Officer heritage consultants pty ltd

NOHC is a proud sponsor of the Corroboree Frog conservation and captive breeding program

Canberra, ACT
Sydney, NSW
Cairns, QLD

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RE: Survey Invitation for Material Recovery Facility, Hume

Reply | Reply All | Forward

Tue 13/12/2022 10:51 AM

Jasmine Fenyvesi
To tina brown
Cc adrianbrown.ngunnawal@hotmail.com; Nevada Brown

Thanks Tina, see you there!

From: tina brown <tina.kingbrown@gmail.com>
Sent: Tuesday, 13 December 2022 9:36 AM
To: Jasmine Fenyvesi <jfenyvesi@nohc.com.au>
Cc: adrianbrown.ngunnawal@hotmail.com; Nevada Brown <nevadabrown@yahoo.com.au>
Subject: Re: Survey Invitation for Material Recovery Facility, Hume

Hi Jasmine

Thanks for your email I will be in attendance.

Tina

On Mon, 12 Dec 2022, 9:49 am Jasmine Fenyvesi, <jfenyvesi@nohc.com.au> wrote:

> Hi Adrian, Tina, and Nevada,
>
> NOHC have been engaged by GHD and ACT NoWaste to conduct a survey for a proposed Material Recovery Facility in Hume. As part of this project NOHC would like to invite a representative of your organisation to participate in in the survey and to provide your organisation's views regarding any Aboriginal sites or cultural heritage issues.
>
> We propose to conduct the works on Wednesday 21st December and to meet at the carpark off John Cory Road at 10:00am, see highlighted (yellow) area in attached map. The survey is likely to take about 1-2 hours.
>
> We would greatly appreciate the participation of your organisation in this program and hope that you will have a representative available for this time period. Could you please contact me on 02 6282 9415 (mobile 0418 621 588) or by return email, to confirm the attendance of one of your representatives (if you have not already done so), or if you have any questions or issues relating to this program.
>
> Cheers,

Record of Aboriginal Representative Participation*

Project Name: **Material Recovery Facility, Hume, ACT**

Archaeologist name & address: Jasmine Fenyvesi
Navin Officer Heritage Consultants Pty Ltd
4/71 Leichhardt Street KINGSTON ACT 2604

Name of Representative	Organisation	Date	Start time	Finish time	Sign off
Wally Bell	BNAC	21/12/22	10:00	11:30	Wally Bell
Reuben House	Mirrabee	21.12.22	10:00	11:30	[illegible]

Signed ***(archaeologist)***: ..... **Date** .....

* *please note this form is not an invoice. For payment, please send an invoice from your organisation to the client name and address provided above.*

FW: Hume Material Recovery Facility Artefact Collection

Nicola Hayes
To Jasmine Fenyvesi

From: Nicola Hayes
Sent: Thursday, February 23, 2023 3:05 PM
To: Nicola Hayes <nhayes@nohc.com.au>
Subject: Hume Material Recovery Facility Artefact Collection

Good afternoon

ACT Heritage Council have granted an emergency SHE approval for the collection of the artefacts that were found at the Hume Material Recovery Facility in December last year.

See attached SHE application letter and the approval.

We would like to complete the collection of the artefacts next week. At this stage it is looking like either Thursday or Friday depending on site access.

I will give you a call early next week to confirm date and meeting place with you.

Kind regards

Nicola Hayes
Archaeologist

Navin Officer
heritage consultants pty ltd

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Kingston Warehouse
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From: Nicola Hayes
Sent: Tuesday, February 28, 2023 9:06 AM
To: Nicola Hayes <nhayes@nohc.com.au>
Subject: RE: Hume Material Recovery Facility Artefact Collection

Good morning

Confirming that we have access to site on Friday. Can we please meet at 9am at the end of Recycling road Hume

Kind regards

Nicola Hayes
Archaeologist

Navin Officer
heritage consultants pty ltd

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4/71 Leichhardt St
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APPENDIX 2

[redacted]

APPENDIX 3

DECLARATION OF RESTRICTED INFORMATION

APPENDIX 4

SUPPORTING LETTER FOR COLLECTION OF HMRF01

22 February 2023

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Re: Material Recovery Facility
SHE Supporting letter for Collection of HMRF01

Navin Officer Heritage Consultants (NOHC) have been commissioned by GHD to complete a cultural heritage assessment for the proposed Hume Material Recovery Facility (MRF). This letter is written is support of an urgent Statement of Heritage Effects (SHE) application for the removal of artefacts at recently recorded site HMRF01, that are subject to current and ongoing impacts from heavy vehicles.

Description of the proposal area

The study area is roughly 5 hectares and covers an area of roughly 325 metres by 236 metres and is contained within Blocks 6 and 10, Section 25, Hume, see Figure 5 and Figure 6. The proposal site is bounded by Dog Trap Creek to the north, Mugga Lane to the southwest, and John Cory Road to the northeast.

Description of the activity

The proposal entails upgrades to the existing Hume MRF, including the construction of additional warehouse structures and hardstand facilities, as well as other associated works to augment current operations, see Figure 7. The proposed impact area is roughly 2.4 hectares. The upgraded MRF is expected to have a capacity of 115,000 tonnes per annum.

Field Survey

Site surveys were undertaken by Navin Officer Heritage Consultants (NOHC) staff on the 21st of December 2022 (Jasmine Fenyvesi and Robert Bogdanek). This involved a walk over of the area proposed to be impacted by the proposed Hume Material Recovery Facility. NOHC was accompanied by Wally Bell, and Reuben House, from the Representative Aboriginal Organisations (RAOs) Buru Ngunnawal Aboriginal Corporation (BNAC), and Mirrabei.

Description of the Site

One Aboriginal artefact scatter (HMRF01) discovered during the survey by NOHC was found within the northeast section of the study area (Figure 8).

HMRF01

GDA (Zone 55): [redacted]

This site is an artefact scatter consisting of three lithic artefacts, one of which was a conjoin flake in two pieces, located [redacted]. There are a considerable number of introduced gravels in the area as well as various refuse materials, likely blown over from the

nearby waste facilities. Disturbance at this site is extremely high, impacts include [redacted], surface water wash, erosion, and dumping of refuse. The exposure incidence within the [redacted] was at 95% with visibility of 85%. Exposure incidence and visibility outside of the [redacted] in the grassed areas was extremely low, <10% due to high vegetation coverage from introduced weeds and grasses. The potential for there to be additional artefacts is moderate, and there is low potential for there to be any subsurface archaeological deposit.

Artefacts included:

1. Chert core, 35% cortex, 47 x 52 x 19mm
2. Quartzite flake, 30% cortex, 29 x 28 x 15mm
3. Chert spilt flake, 50% cortex, piece 1 = 13 x 34 x 10mm and piece 2 = 55 x 53 x 11mm

Figure 2 HMRF01, facing north west

Figure 3 Chert split flake and quartzite flake at HMRF01

Figure 4 Chert core at HMRF01

Heritage Significance

Based on the assessment conducted is considered that site HMRF01 has heritage significance according to criterion g.

> **Criterion g** has a strong or special association with the ACT community, or a cultural group in the ACT for social, cultural or spiritual reasons;

Based on past assessments by the ACT Representative Aboriginal Organisations (RAOs), and comments made by field representatives during the field program, the site is considered important to the RAOs as part of local Aboriginal tradition due to the archaeological record they contain and the evidence this record represents for traditional and past patterns of Aboriginal occupation. The site symbolically represents past patterns of Aboriginal occupation which contributes to a sense of identity for the Aboriginal community.

Impact assessment

The area of the site is subject to ongoing and current impacts through [redacted]. As stated above HMRF01 is located [redacted]. In addition, partial impacts are proposed for HMRF01 from the construction of the MRF. Within the impact areas the site is likely to be completely destroyed.

RAO consultation

A discussion occurred with the RAOs present regarding the artefacts associated with site HMRF01. The RAOs expressed that the artefacts should be recovered as soon as possible to prevent further impact.

Measures to reduce risk of diminishing the heritage significance

The artefacts associated with HMRF01 will be collected as soon as possible. The collection will be undertaken by representatives of the RAOs and a suitably qualified archaeologist. Collection will involve removing all visible artefacts from the site area and will include taking a GPS co-ordinate of each artefact removed. the artefacts will be bagged and labelled appropriately.

The artefacts will be stored at NOHC laboratory in Fyshwick ACT until a suitable return to country has been consulted on with RAOs and approved by the ACT Heritage Council.

A short letter report will be compiled documenting the collection which will be provided to ACT Heritage.

There are no reasonably practical ways of avoiding further harm to this site.

Yours faithfully,

N. Hayes

(Ms) Nicola Hayes
Associate Director

Figure 5 Hume Material Recovery Facility Proposal site

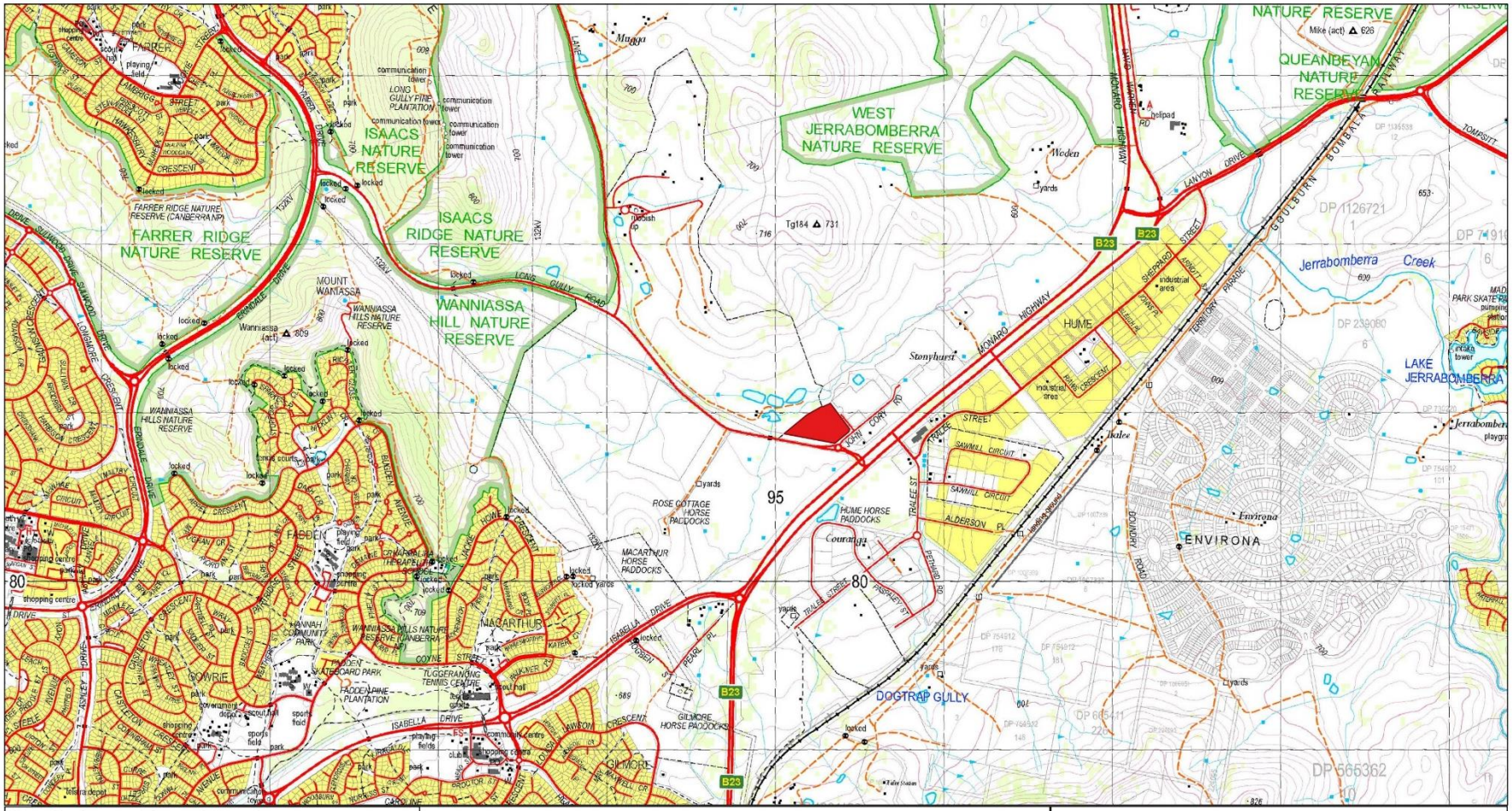


Figure 6 Hume Material Recovery Facility Proposal site within wider region

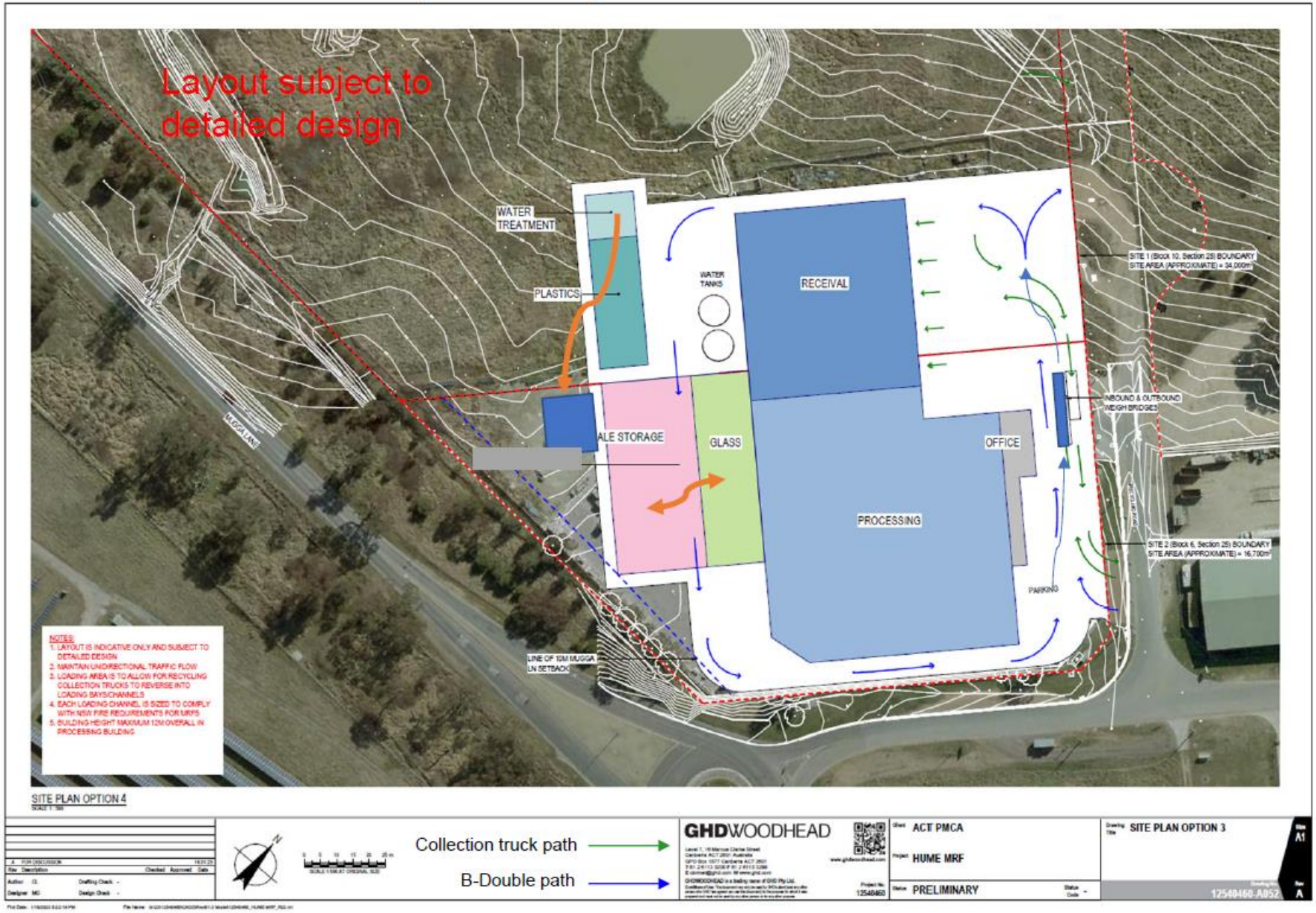


Figure 7 Hume Material Recovery Facility Proposed Layout provided by GHD

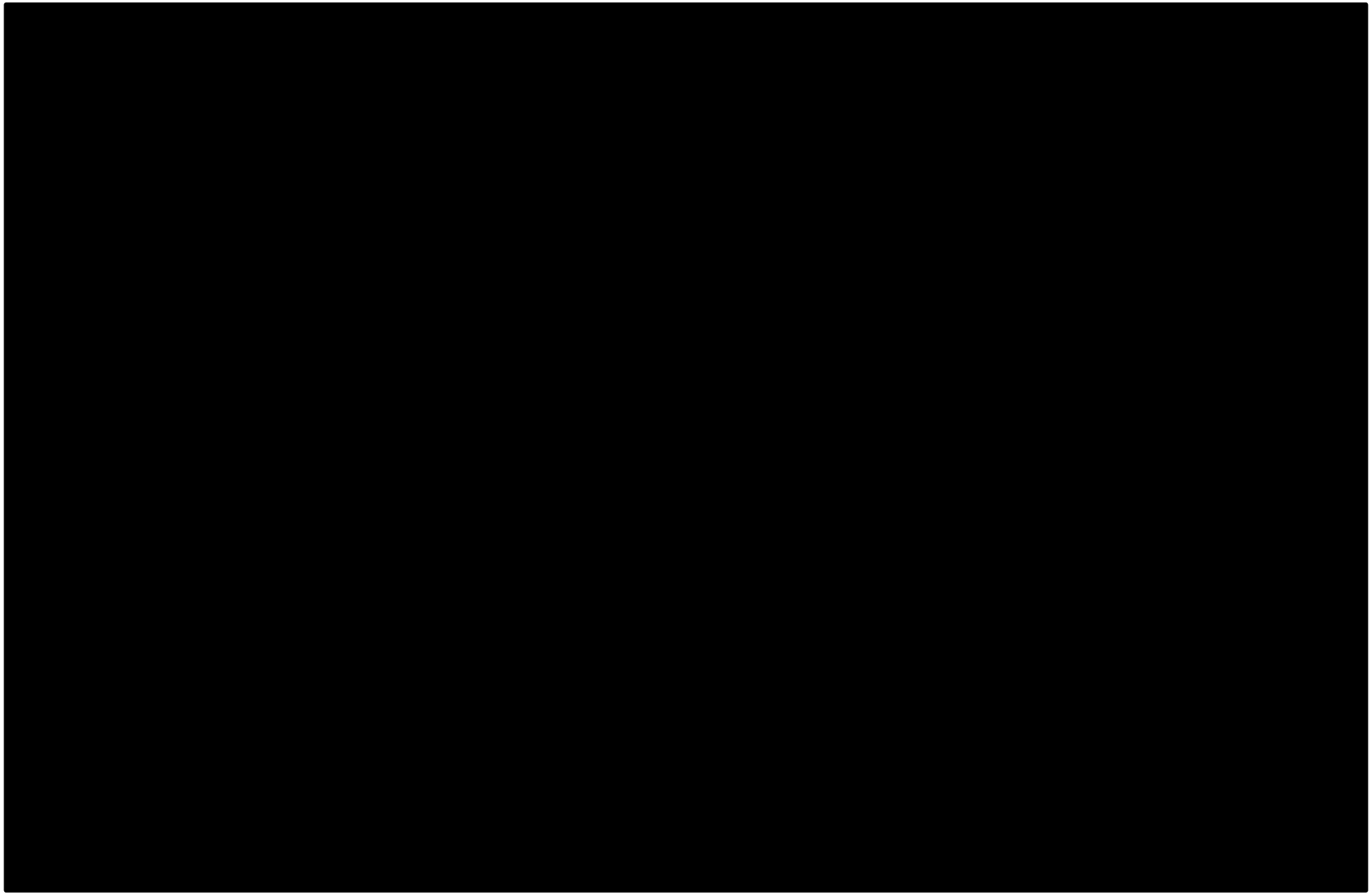


Figure 8 Location of HMRF01

APPENDIX 5

HMRF01 SITE COLLECTION

HMRF01 Site Collection

Following SHE approval by ACT Heritage, on the 3rd of March 2023, Nicola Hayes (NOHC), Kelsie Brown (KBTG) and Judy Bell (Mirrabei) conducted a collection survey for site HMRF01 to avoid further physical impacts to the site and its contents.

This site is an artefact scatter located [redacted]. There are a considerable number of introduced gravels in the area as well as various refuse materials, likely blown over from the nearby waste facilities. Disturbance at this site is extremely high, impacts include [redacted], surface water wash, erosion, and dumping of refuse.

Between December 2022 and March 2023 site HMRF01 had been affected by a high level of surface water wash from major rain events, this combined with [redacted] had created ruts and sediment banking at the edges of the site, see Figures A5.1 to A5.3. Due to the fire that occurred within the existing facility in December operations at the facility had shifted, including a rework of the fencing and layout of the outside areas neighbouring [redacted]. The long grass that surrounded the site had also been mowed in this time leading to higher levels of visibility around the outside of the [redacted]. The exposure incidence within the [redacted] was at 90% with visibility of 85%. Exposure incidence outside of the [redacted] was 20% with 50% visibility.

Four artefacts were collected as part of the survey. The three artefacts originally recorded in December 2022 were unable to be refound, this is likely due to the high level of surface water wash at the site causing artefact movement.

Artefacts collected:

1. Red silcrete core, 30% cortex, single platform 27x23x13mm
   GDA (Zone 55): [redacted]

2. Grey coarse grain silcrete proximal flake, single platform, 25x23x6mm
   GDA (Zone 55): [redacted]

3. Quartz angular fragment 19x14x9mm
   GDA (Zone 55): [redacted]

4. Quartz broken core 25x21x14mm
   GDA (Zone 55): [redacted]

Figure A5.1 HMRF01 facing northwest

Figure A5.2 HMRF01 facing northeast

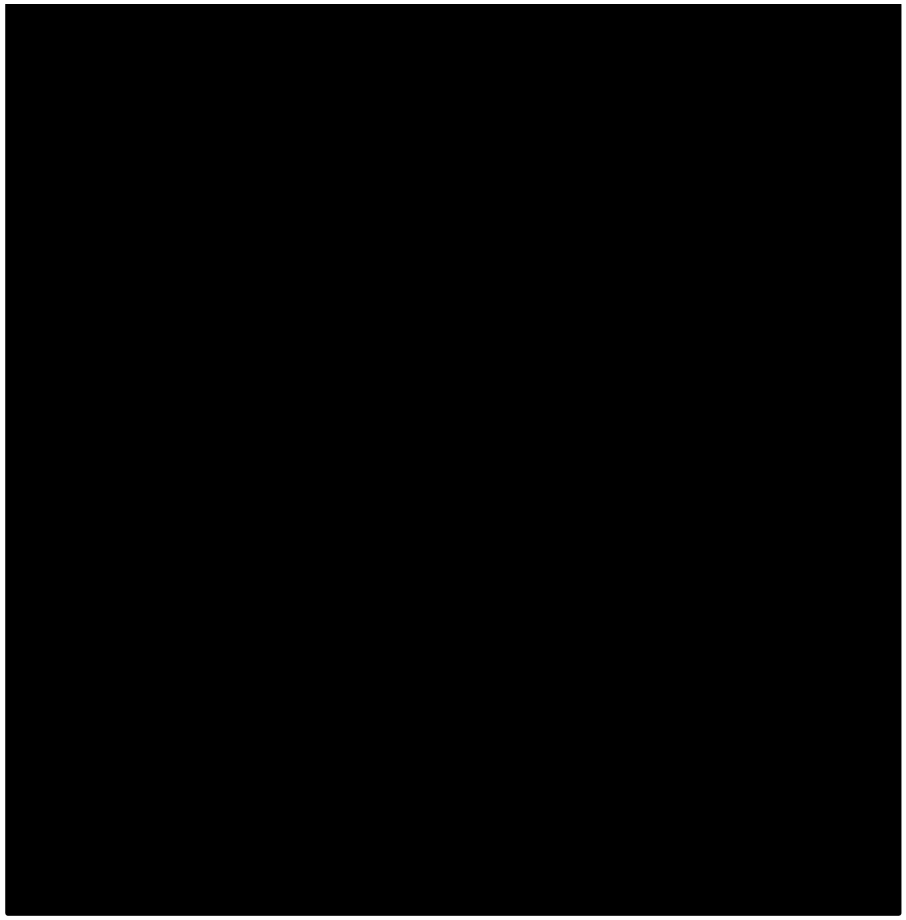


Figure A5.3 HMRF01 facing south

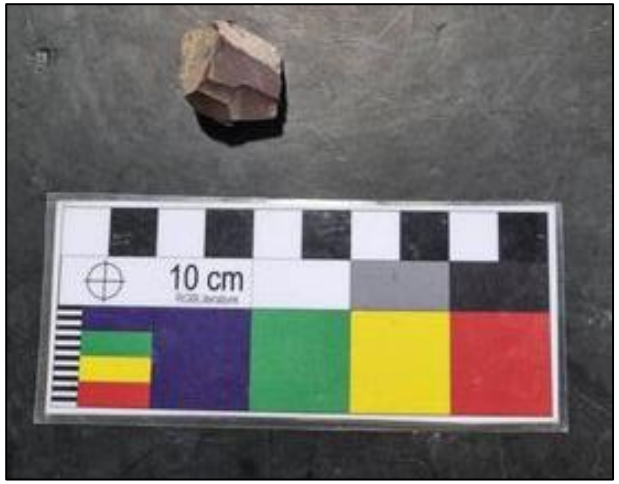


Figure A5.4 Red silcrete core

Figure A5.5 Grey coarse grain silcrete proximal flake

Figure A5.6 Quartz angular fragment

Figure A5.7 Quartz broken core

Figure A5.4 Artefacts collected at site HMRF01

APPENDIX 6

UNANTICIPATED DISCOVERY PROTOCOLS

Protocol to be followed in the event that previously unrecorded or unanticipated Aboriginal or non Aboriginal archaeological material (objects, artefacts, deposits or relics) are encountered

1. All ground surface disturbance in the area of the finds should cease immediately the finds are uncovered.

    a. The discoverer of the find(s) will notify machinery operators in the immediate vicinity of the find(s) so that work can be halted; and

    b. The site supervisor and the development proponent will be informed of the find(s).

2. If there is substantial doubt regarding a human or Aboriginal or historical European origin for the finds, then consider if it is possible to gain a qualified opinion (such as from the project archaeologist) within a short period of time. If feasible, gain a qualified opinion (this can circumvent proceeding further along the protocol for remains which turn out not to be archaeological). If a quick opinion cannot be gained, or the identification is positive, then proceed to the next step.

3. Immediately notify the following authorities or personnel of the discovery:

    a. The ACT Heritage Council (within five working Days);

    b. Representatives from the Representative Aboriginal Organisations (RAOs) (where appropriate); and

    c. The project archaeologist (if not already present).

4. Facilitate, in co-operation with the appropriate authorities and stakeholders:

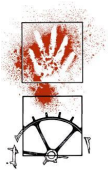
    a. The recording and assessment of the finds by a suitably qualified heritage professional (either the project archaeologist). This will include determining if the find(s) are from a new or previously recorded site, and lodgement of site information for all new recordings with the Heritage Unit;

    b. Fulfilling any legal constraints arising from the finds. This will include complying with Heritage Council advice, any Statement of Heritage Effects (SHE) requirements in the case of a previously recorded site; and

    c. The development and conduct of appropriate management strategies. Strategies will depend on stakeholder requirements and the assessed significance of the find(s).

5. Where the management of find(s) involves the salvage excavation or collection of artefacts, this material will be curated according to the provisions of any relevant SHE, or as directed by the Heritage Council.

6. Any re-commencement of construction related ground surface disturbance may only resume in the area of the find(s) following compliance with any consequential legal requirements and gaining written approval from the ACT Heritage Council.



Protocol to be followed in the event that suspected human remains are encountered

1. All ground surface disturbance in the area of the finds should cease immediately the finds are uncovered.

    a. The discoverer of the find(s) will notify machinery operators in the immediate vicinity of the find(s) so that work can be temporarily halted; and

    b. The site supervisor and the development proponent will be informed of the find(s).

2. If there is substantial doubt regarding a human origin for the remains, then consider if it is possible to gain a qualified opinion within a short period of time. If feasible, gain a qualified opinion (this can circumvent proceeding further along the protocol for remains which turn out to be non-human). If conducted, this opinion must be gained without further disturbance to any remaining skeletal material and its context as possible (Be aware that the site may be considered a crime scene containing forensic). If a quick opinion cannot be gained, or the identification is positive, then proceed to the next step.

3. Immediately notify the following people of the discovery:

    a) The local Police (this is required by law);

    b) The ACT Heritage Council (within five working Days);

    c) Representatives from the Representative Aboriginal Organisations (RAOs) (where appropriate); and

    d) The project archaeologist (if not already present).

4. Facilitate the evaluation of the find(s) by the statutory authorities and comply with any stated requirements. Depending on the evaluation of the find(s), the management of the find(s) and their location may become a matter for the Police and/or Coroner.

5. Construction related works in the area of the find(s) may not resume until the development proponent receives written approval from the relevant statutory authority: from the Police or Coroner in the event of an investigation; and from the ACT Heritage Council in the case of human remains outside of the jurisdiction of the Police or Coroner.

6. In the event that the proponent continues an active role in the evaluation and/or management of the find(s), via a direction or advice from the Police, Coroner and/or Heritage Council, then all or some of the following steps may be conducted:

7. Facilitate, in co-operation with the appropriate authorities, the definitive identification of the skeletal material by a specialist (if not already completed). This must be done with as little further disturbance to any remaining skeletal material and its context as possible.

8. If the specialist identifies the bone as non-human then, where appropriate, the protocol for the discovery of historical or Aboriginal artefacts (above) should be followed.

9. If the specialist determines that the bone material is human, then the proceeding course of action may be of three types:

    a. The bone(s) are of an Aboriginal and non-Aboriginal person who died less than 100 years ago and where traumatic death is suspected. Such remains come under the jurisdiction of the *ACT Coroner's Act* 1997. All further decisions and responsibilities regarding the remains and find location rest with the ACT Police, and/or the ACT Coroner.

b. The bone(s) are of a non-Aboriginal person who died more than 100 years ago. In this case, and where the Police have indicated that they have no interest in the find(s), the following steps may be followed:

   i. Ascertain the requirements of the ACT Heritage Council, the development proponent, the project archaeologist, and the views of any relevant community stakeholders;

   ii. Based on the above, determine and conduct an appropriate course of action. Possible strategies could include one or more of the following:

      1. Avoiding further disturbance to the find and conserving the remains *in situ* (this option may require relocating the development and this may not be possible in some contexts);

      2. Conducting (or continuing) archaeological salvage of the finds following receipt of any required statutory approvals;

      3. Scientific description (including excavation where necessary), and possibly also analysis of the remains prior to reburial;

      4. Recovering samples for dating and other analyses; and/or

      5. Subsequent reburial at another place and in an appropriate manner determined by the Heritage Council and in consultation with other relevant stakeholders.

c. The bone(s) are of an Aboriginal person who died more than 100 years ago. In this case the following steps may be followed:

   i. Ascertain the requirements of the local RAOs, the ACT Heritage Council, the development proponent, and the project archaeologist;

   ii. Based on the above, determine and conduct an appropriate course of action. Possible strategies could include one or more of the following:

      1. Avoiding further disturbance to the find and conserving the remains *in situ*, (this option may require relocating the development and this may not be possible in some contexts);

      2. Conducting (or continuing) archaeological salvage of the finds following receipt of any required statutory approvals;

      3. Scientific description (including excavation where necessary), and possibly also analysis of the remains prior to reburial;

      4. Recovering samples for dating and other analyses; and/or

      5. Subsequent reburial at another place and in an appropriate manner determined by the RAOs and the Heritage Council.

Protocol to be followed in the event that palaeontological material, or suspected palaeontological material, is encountered

[redacted]

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