ABORIGINAL CULTURAL HERITAGE ASSESSMENT

Bomen Stage 3

May 2021

Project Number: 20-308

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ACRONYMS AND ABBREVIATIONS

AASC	Australian Archaeological Survey Consultants
ACHA	Aboriginal Cultural Heritage Assessment
ACHAR	Aboriginal Cultural Heritage Assessment Report
ACHCRP	Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010
Access Archaeology	Access Archaeology & Heritage
Activation Precincts SEPP	State Environmental Planning Policy (Activation Precincts) 2020
AECOM	AECOM Australia Pty Ltd
AHIMS	Aboriginal heritage information management system
AHIP	Aboriginal Heritage Impact Permit
BAC	Bundyi Aboriginal Cultural Knowledge Group
Bidya Marra	Bidya Marra Consultancy
BOM	Australian Bureau of Meteorology
CHMP	Cultural Heritage Management Plan
cm	centimetre
Council	Wagga Wagga City Council
CWAHS	Central West Archaeological and Heritage Services
DECCW	Refer to OEH
DEM	Digital Elevation Modelling
DPIE	(NSW) Department of Planning, Industry and Environment
eb	East Bomen
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)
ESD	Ecologically Sustainable Development
ha	hectares
Heritage Act	Heritage Act 1977 (NSW)
Heritage NSW	Heritage NSW of the Department of Premier & Cabinet (formerly BCD)
HLA	HLA Envirosciences
IBRA	Interim Biogeographic Regionalisation for Australia

km	kilometres
KNC	Kelleher Nightingale Consulting Pty Ltd
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LES	Local Environmental Study
LGA	Local Government Area
m	Metres
mm	millimetres
NBN	National Broadband Network
NGH	NGH Pty Ltd
NOHC	Navin Officer Heritage Consultants
NPW Act	National Parks & Wildlife Act 1974
NPWS	National Parks & Wildlife Service
NSW	New South Wales
PAD	Potential Archaeological Deposit
REF	Review of Environmental Factors
SAP	Special Activation Precinct

EXECUTIVE SUMMARY

Introduction

NGH Pty Ltd (NGH) has been contracted by Wagga Wagga City Council (Council) to undertake an Aboriginal Cultural Heritage Assessment (ACHA) to investigate and examine the presence, extent and nature of any Aboriginal heritage sites within the proposed Bomen Stage 3 industrial precinct in the Wagga Wagga Local Government Area (LGA). The Proposal Area includes portions of Lots 14 and 15 DP1229343, Lots 11 and 12 DP1223041, Lot 41 DP1215424, Lot 16 DP1223064 and Lot 1 DP592928 which is bordered by Olympic Highway to the west, Trahairs Road to the north, Byrnes Road to the east, and pastoral land to the south

Given that the Bomen Stage 3 works would involve ground disturbance there is potential to impact on Aboriginal heritage sites and objects, which are protected under the NSW National Parks and Wildlife Act 1974 (NPW Act). The purpose of this report is to investigate the presence of any Aboriginal sites within the Proposal Area, assess the impacts to Aboriginal sites within the Proposal Area and provide management strategies that may mitigate any impacts.

Throughout the assessment, the following codes and guides were followed in relation to Aboriginal heritage assessment.

- Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011)
- Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW (DECCW 2010a)
- Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (ACHCRP) (DECCW 2010b)

It should also be noted that there are currently two active and valid Aboriginal Heritage Impact Permits (AHIP), AHIP C0003609 and C0002180, within the eastern portion of the Proposal Area.

Project Proposal

The proposed works for the Bomen Stage 3 industrial precinct will form part of the Wagga Special Activation Precinct (Wagga SAP). The Bomen Stage 3 works would include but are not limited to works associated with the construction of the Regional Enterprise Zone within the Wagga SAP. The Regional Enterprise Zone area would be zoned for a mix of Industrial, Rural, Infrastructure, Recreation, Environmental and Residential land uses. The Regional Enterprise Zone would have many land uses ranging from rail terminals, warehouses for manufacturing and food processing businesses; the Rail Intermodal Freight and Logistics (RIFL) Hub and associated industry and logistics works.

Aboriginal Consultation

The consultation with Aboriginal stakeholders was undertaken in accordance with Section 60 of the National Parks and Wildlife (Aboriginal Objects and Aboriginal Places) Regulation 2019 following the consultation steps outlined in the ACHCRP guide.

The full list of consultation steps, including those groups and individuals that were contacted and a consultation log is provided in Appendix B.

As a result of this process, four Aboriginal groups and an individual registered their interest in the proposal. No other party registered their interest, including the entities and individuals recommended by statutory bodies and government heritage departments. The fieldwork components of this assessment included the participation of Aboriginal community representatives.

A copy of the draft report was provided to all the registered parties for comment.

Archaeological Context

A total of ten previously recorded AHIMS sites listed as valid are within the Proposal Area which were initially recorded by NGH in 2016. While all the previously recorded AHIMS sites within the Proposal Area are listed as valid NGH believes that all these sites have been impacted as per the works permitted in AHIP C0003609 and C0002180. The eastern portion of the Proposal Area has previously been assessed and surveyed by NGH in 2016, while the western portion of the Proposal Area was surveyed by OzArk in 2019.

NGH has previously also undertaken a subsurface testing programme within the Proposal Area. The results of the past survey and subsurface testing within the Proposal Area indicated that there is discreet low-density artefact scatters and isolated finds across the area with artefacts and site distribution not restricted to a single or dominate landscape. The previous archaeological assessment results within the Proposal area indicated that the area in general was traversed and used occasionally by small groups of Aboriginal people.

Survey Results

The survey strategy objective was to cover the entirety of the proposed Bomen Stage 3 area outside the areas which currently have active AHIPs over them and areas which have previously been subject to survey with the Aboriginal community during previous assessments undertaken by NGH and OzArk. On average, visibility within the surveyed area was low, averaging between 5 to 15%, with visibility in exposures averaging between 40 to 80%.

Nil Aboriginal objects were recorded during the assessment. NGH consider that the low visibility encountered during this assessment likely hindered the ability of the survey team to identify any low density and isolated Aboriginal objects that may have been present on the ground surface.

Taking into consideration the results of all previous surveys and testing programmes within the Proposal Area a single area of PAD, Dukes Creek PAD 1, was identified which is located on the western side of Dukes Creek along the western boundary of the Proposal Area near the Olympic Highway. Dukes Creek PAD 1 is an elevated flat area adjacent to Dukes Creek just north of the intersection of Merino Street and the Olympic Highway.

No other areas of PAD were identified in the Proposal Area that warrant subsurface testing. This was determined based on consideration of the results of the previous testing programme of works undertaken by NGH within the Proposal Area which sampled all landforms present including crest, spurs, slopes, lower slopes and drainage depressions. While it is likely that low densities quartz Aboriginal objects will be present across the entirety of the Proposal Area all other landforms have previously been sufficiently tested with low density artefacts recovered. As such it was determined that additional testing programmes are not deemed to be warranted.

None of the previously recorded AHIMS sites within the Proposal Area were relocated and all previously recorded sites are approved for impacts under AHIP number C0002180 and C0003609. NGH believe that these sites have now all been impacted and are not valid however no impact site

cards have been submitted to AHIMS by Council or the Aboriginal community to note the sites as completely impacted

Potential Impacts

No new Aboriginal objects were located within the Proposal Area. The previously recorded ten AHIMS sites within the Proposal Area are also all noted to have been salvaged and/or completely impacted by the works approved under AHIP number C0002180 and C0003609 however the site cards have not been updated to list these sites as impacted. Given this the assessment of harm for the previously recorded AHIMS sites within the Proposal Area is nil.

A single PAD, Dukes Creek PAD 1, has been identified within the Proposal Area that requires further archaeological research to be undertaken in the form of subsurface testing in order to establish the presence or absence sub surface deposits and Aboriginal objects. It was assessed that subsurface testing was only warranted within Dukes Creek PAD 1 as all other landforms within the Proposal Area have been subject to a testing programme with only low density artefact scatter or isolated stone artefacts recovered.

The presence of previously recorded surface and subsurface stone artefacts within the Proposal Area shows that despite nil new sites being recorded during the current assessment there is Aboriginal archaeological material present within the Proposal Area which has been previously recorded. It is consequently considered likely that there will be other stone artefacts, predominately manufactured from quartz, present across the Proposal Area, although in similar low densities or as isolated objects.

The proposed level of disturbance for the Bomen Stage 3 works would therefore likely impact stone artefacts that may be present within the Proposal Area which have not been recorded to date. The impact to these unrecorded Aboriginal objects is likely to be most extensive where earthworks will occur such as grading, levelling and trenching, which may involve the removal, breakage or displacement of artefacts. This is considered a direct impact on any Aboriginal objects by the development in its present form.

The impact to the scientific values of other low density and isolated stone artefact which may be within the balance of the Proposal Area outside the PAD is considered low.

Recommendations

It is recommended that:

1. Wagga Wagga City Council updates all AHIMS sites cards immediately for any sites which have been impacted to date as approved under AHIP number C0002180 and C0003609.
2. If the PAD identified in this assessment, Dukes Creek PAD 1, is unable to be avoided, a limited program of subsurface test excavation is required to determine the archaeological nature and extent of the deposits within the raised flat landform adjacent to a named watercourse within the Proposal Area. All subsurface testing must be undertaken in line with the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales.
3. All cultural material recovered from the subsurface testing programme will be in temporary care at the NGH Canberra and/or Wagga office for analysis until an appropriate time when it can be returned to site. This material must be buried in line with Requirement 26 of the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales and in

an appropriate location within the Proposal Area that will not be subject to any ground disturbance. The burial location will be submitted to the AHIMS database.

4. Given the high likelihood of low density stone artefacts across the entire Proposal Area the proponent must apply to Heritage NSW and receive an Aboriginal Heritage Impact Permit (AHIP) to allow harm to the land to which the AHIP area applies. The AHIP area land should contain the entirety of the Proposal Area (excluding the PAD until a subsurface testing programme is completed).
5. This report must accompany any AHIP application for the Proposal Area, as outlined in Applying for an Aboriginal Heritage Impact Permit: Guide for Applicants.
6. Should any of the previously recorded sites within the Proposal Area be confirmed by Council as currently not impacted all recommendations and impact assessments from the NGH (2016a and 2018a) ACHAs would replace the identified risk to known sites within Table 7-1 within this report and included in the AHIP application.
7. No further archaeological investigation or subsurface testing is warranted or required for the areas outside Dukes Creek PAD 1 within the Proposal Area.
8. In the unlikely event that human remains are discovered during any of the proposed works, all work must cease in the immediate vicinity. Heritage NSW and the local police should be notified. Further assessment would be undertaken to determine if the remains were Aboriginal or non-Aboriginal. If the remains are deemed to be Aboriginal in origin the Registered Aboriginal Parties should be advised of the find as directed by Heritage NSW. Heritage NSW would advise Council on the following appropriate actions required.
9. Further archaeological assessment would be required if the proposal activity extends beyond the area assessed in this report. This would include consultation with the registered Aboriginal parties and may include further field survey.

The Wagga Wagga City Council are reminded that it is an offence under the National Parks and Wildlife Act to harm an Aboriginal object without a valid AHIP.

1. INTRODUCTION

NGH Pty Ltd (NGH) has been contracted by Wagga Wagga City Council (Council) to undertake an Aboriginal Cultural Heritage Assessment (ACHA) to investigate and examine the presence, extent and nature of any Aboriginal heritage sites within the proposed Bomen Stage 3 industrial precinct in the Wagga Wagga Local Government Area (LGA) (see Figure 1-1). The Proposal Area includes portions of Lots 14 and 15 DP 1229343, Lots 11 and 12 DP 1223041, Lot 41 DP 1215424, Lot 16 DP 1223064 and Lot 1 DP 592928, covering approximately 362 hectares (ha) of largely undeveloped cleared pastoral land (Figure 1-2). The Proposal Area is bordered by Olympic Highway to the west, Trahairs Road to the north, Byrnes Road to the east, and pastoral land to the south.

Council is seeking to undertake work that may impact Aboriginal heritage objects, as defined under the NSW National Parks and Wildlife Act 1974 (NPW Act). To undertake the proposed development work, they may need to apply for an Aboriginal Heritage Impact Permit (AHIP). The ACHA report may accompany the AHIP application and would provide the Heritage NSW with information about the nature, extent and significance of any Aboriginal sites and values. The ACHA would also assess the impacts to Aboriginal sites within the Proposal Area and provide management strategies that may mitigate any impacts.

The proposed development will involve ground disturbance that may impact on known Aboriginal heritage sites and objects located within the Proposal Area. Aboriginal objects are protected under the NSW National Parks and Wildlife Act 1974 (NPW Act). The purpose of an ACHA report is to investigate the presence of any Aboriginal sites and to assess the impacts and provide management strategies that may mitigate any impact.

Throughout the assessment, the following codes and guides were followed in relation to Aboriginal heritage assessment.

- Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH 2011)
- Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW (DECCW NSW 2010a)
- Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (ACHCRP) (DECCW NSW 2010b)

The above codes and guides are followed for most Aboriginal heritage assessments in NSW. The approach being undertaken by NGH will therefore be consistent with other heritage assessments undertaken in the state.

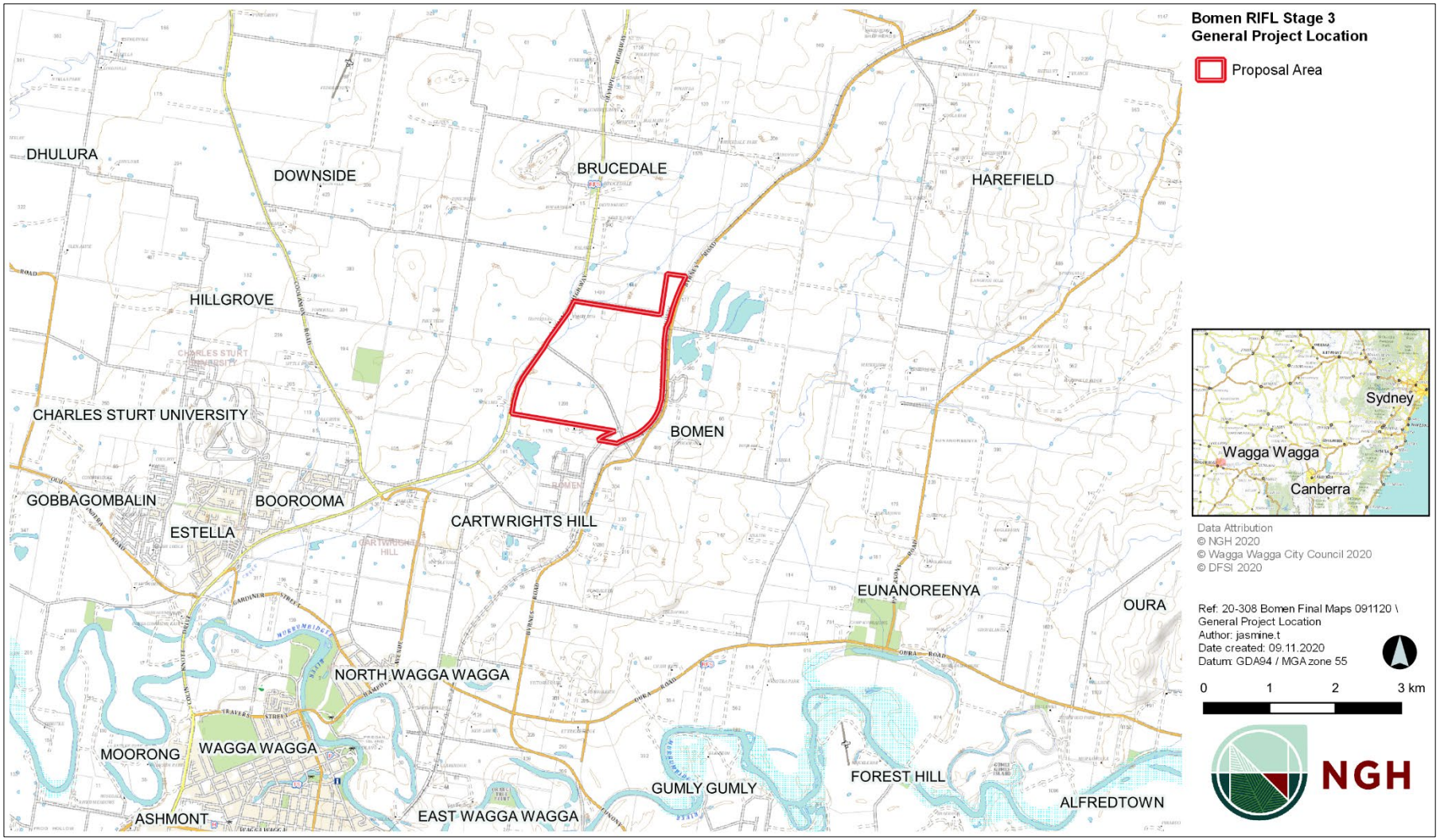

Figure 1-1 Overview of the Proposal Area

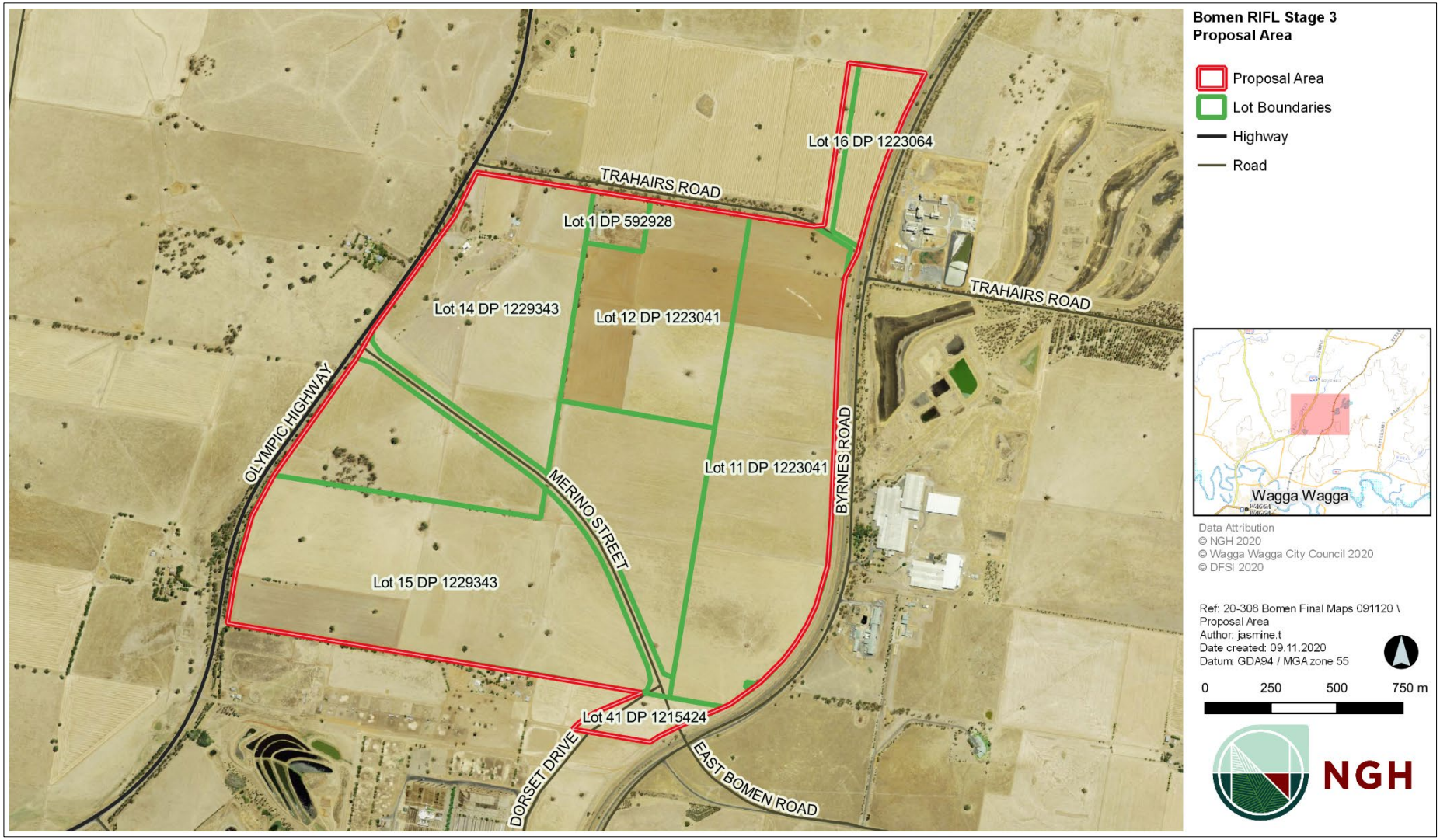

Figure 1-2 Proposal Area

1.1. Development Context

The proposed works for the Bomen Stage 3 industrial precinct are the result of the proposed amendment to the State Environmental Planning Policy (Activation Precincts) 2020 (Activation Precincts SEPP), which specifically identifies the Wagga Wagga Special Activation Precinct (Wagga SAP). The current Proposal Area forms a portion of the proposed Wagga SAP. The Wagga Wagga SAP area covers approximately 4,494 ha and is located to the north of Wagga Wagga which encompasses the area of Bomen.

Land within the Wagga SAP would be an addition to the Activation Precincts SEPP, which will effectively "turn off" the Wagga Wagga Local Environmental Plan 2010 (Wagga Wagga LEP 2010) and the Activation Precincts SEPP will become the primary environmental planning instrument for that land. The Activation Precincts SEPP will establish new land use zones, new controls relating to Exempt, Complying and Designated Development and introduce some new streamlined development application processes for land within the Wagga SAP (NSW Department of Planning, Industry and Environment 2020).

The NSW government has committed to supporting the economic development and job creation in regional NSW and the purpose of the Wagga SAP is to create streamlined planning pathways and secure investment in infrastructure, to create economic opportunity and growth in region. The Wagga SAP is a proposed employment precinct in regional NSW that has been identified by the NSW Government as having potential for growth, and as a region where planning and investment will be prioritised. The Wagga SAP is an important part of the NSW Government's 20-Year Economic Vision for Regional NSW (NSW Department of Planning, Industry and Environment 2020).

In 2019 Oz Ark completed a study for the Wagga SAP on behalf of the NSW Department of Planning, Industry and Environment (DPIE). The study identified that a portion of the Bomen Stage 3 Proposal Area, as shown Figure 1-3, required further assessment prior to development and as part of the approvals process. The current assessment is therefore in line with the recommendations provided in the initial Wagga SAP study undertaken by OzArk (OzArk Environmental and Heritage 2019).

1.2. Project Background

The Proposal Area for the Stage 3 industrial precinct at Bomen is approximately 362 ha and is largely undeveloped cleared pastoral land. Approximately 96 ha has already been assessed in previous ACHAs undertaken by NGH in 2016 and 2018 (see NGH 2016a, 2018a). The areas assessed in these previous studies has subsequently been approved for development with active and valid Aboriginal Heritage Impact Permits (AHIP) over the majority of the eastern portion of the Proposal Area. As noted above, in 2019 OzArk completed a study for the Wagga SAP on behalf of DPIE with surveys undertaken which encompassed the majority of the western portion of the Proposal Area. Given the previous assessment over the majority of the western and eastern portion of the Proposal Area by NGH and OzArk, this assessment will primarily address any potential impacts to Aboriginal heritage objects within remaining previously unassessed areas of the Proposal Area (in particularly the central portion of the Proposal Area) as show in Figure 1-3 and Figure 1-4.

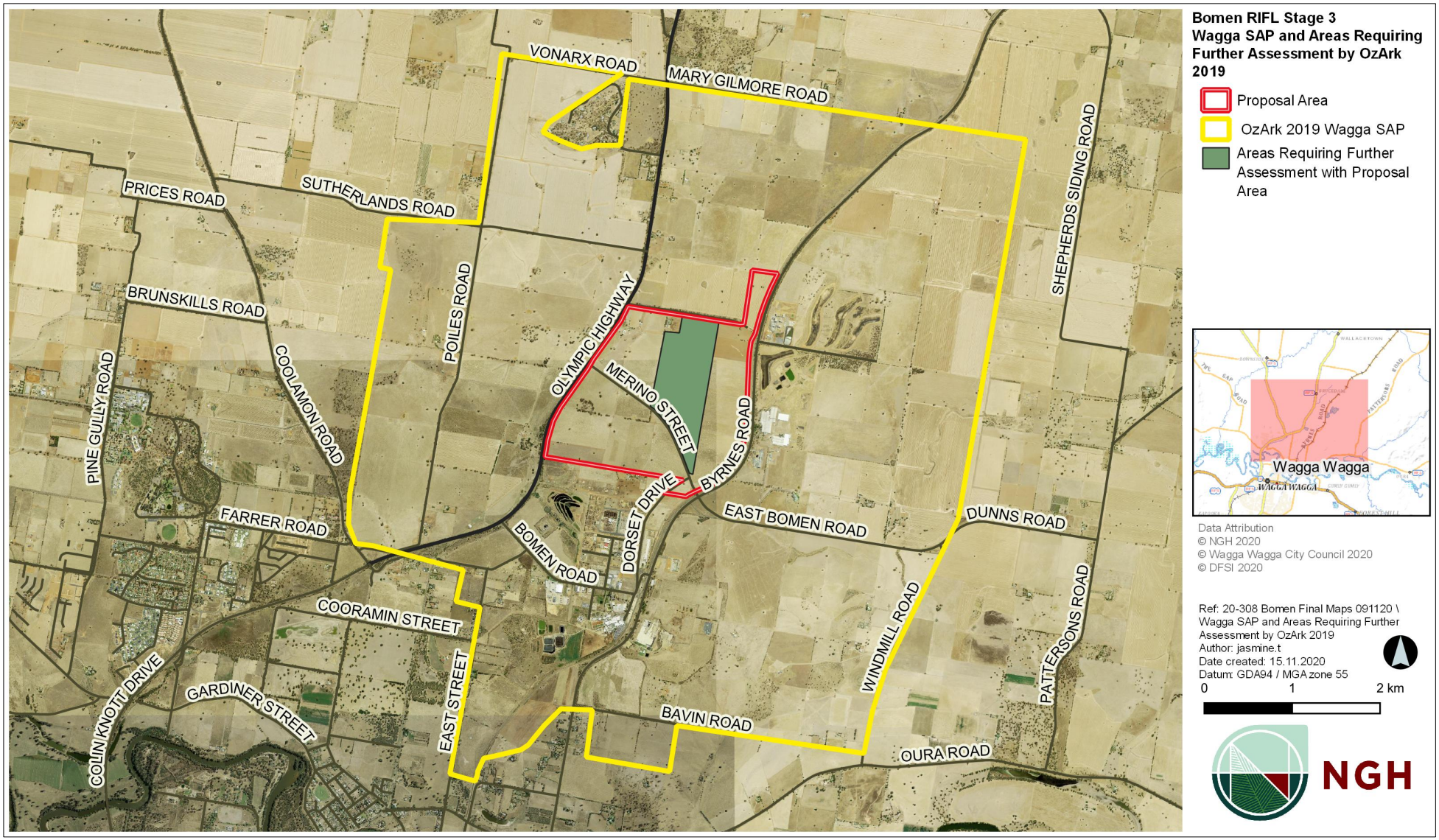

Figure 1-3 Wagga SAP and areas requiring further assessment within the Proposal Area by OzArk (2019)

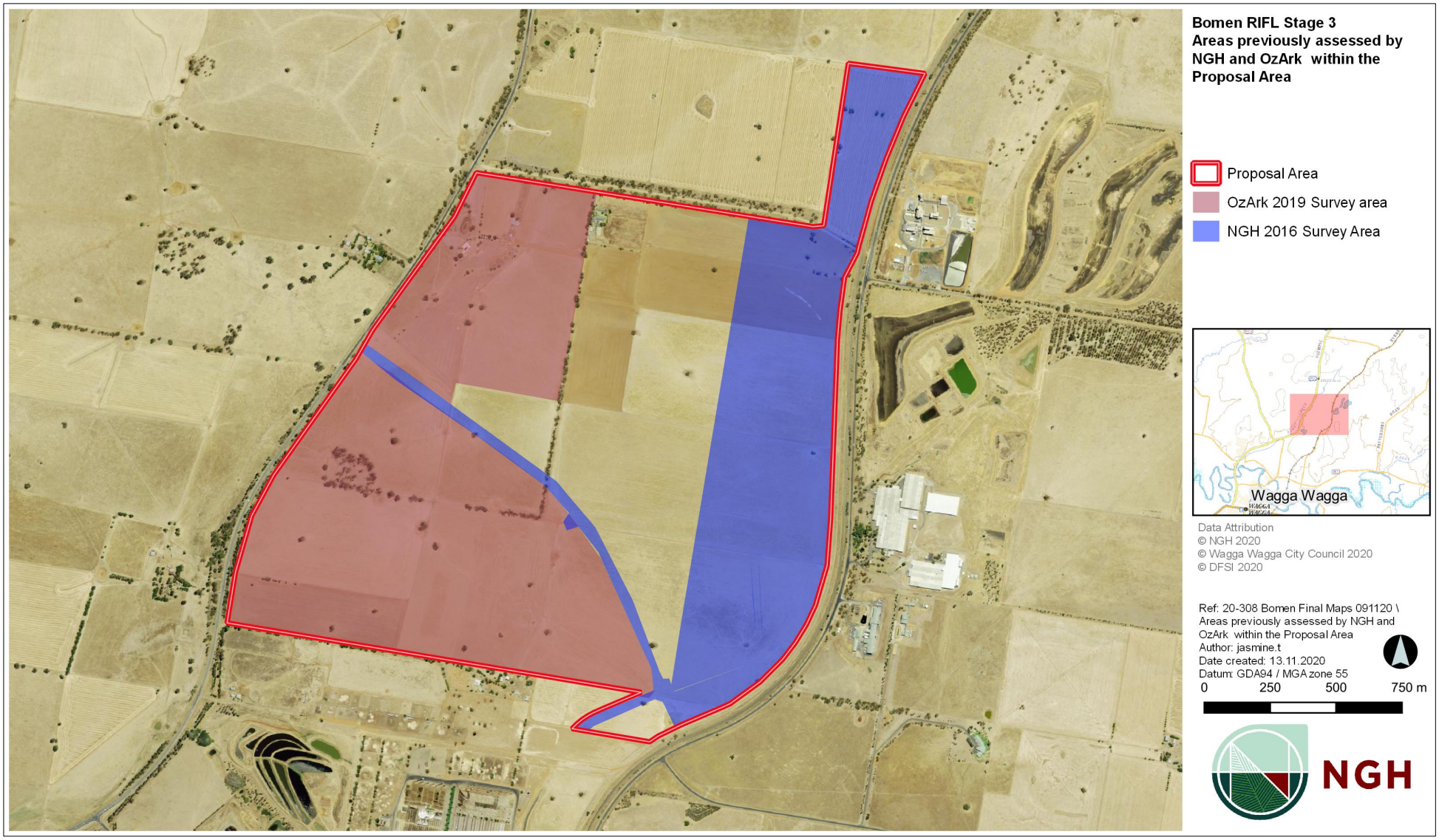

Figure 1-4 Areas previously assessed by NGH (2016a & 2018a) and Oz Ark (2019) within the Proposal Area

1.2.1. Valid AHIPs within the Proposal Area

In 2016 NGH undertook an ACHA that encompassed the Stage 1 (Enabling works) and Stage 2 (the construction of the rail infrastructure) works for the proposed Riverina Intermodal Freight and Logistics (RIFL) hub at Bomen intersecting the current Proposal Area (NGH Environmental 2016a). A program of subsurface testing was undertaken as part of this study. Following the completion of the testing program it was recommended that Council applied to the Office of Environment and Heritage (OEH, now Heritage NSW) to receive an AHIP to allow harm to the Aboriginal archaeological sites and objects identified within the proposed development area. The AHIP application was likely to be sought in two stages, the first for the road construction and the second for the rail line. The report also noted that no further archaeological investigation was required for the development area assessed.

The ACHA completed by NGH in 2016 was used in support of a AHIP application for the Bomen RIFL Hub Stage 1 works. An AHIP (AHIP number C0002180) was issued on the 30 September 2016, which is valid for a duration of 5 years, until 2021 (see Appendix A.1). This permit (AHIP number C0002180) facilitated the Stage 1 works, which included:

- Construction of a grade separated underpass of the main north-south line
- Associated road work to facilitate the underpass construction near East Bomen Road
- Closure of the level crossing on Dampier Street.
- Construction of a link road between Bomen Business Park to the underpass running north from Bomen Road intersection to Dampier Street.
- A link for B Triple heavy vehicles between the eastern side of the main line (near Byrnes Road) to the Olympic Highway.

The AHIP for the Stage 1 works noted that the sites Bomen RIFL ST 1 and Bomen RILF IF 4 must not be harmed. It also facilitated the movement of eight sites within the works area, which included Bomen RIFL IF1 to Bomen RIFL IF2, Bomen RIFL IF5, Bomen RIFL AS1 to Bomen RIFL AS4.

In 2018 NGH completed an additional ACHA for the Bomen RIFL Hub Stage 2 works (2018a) and a Cultural Heritage Management Plan (CHMP) for the Bomen Scarred Tree (2018b), which were used in support of an AHIP application for the Bomen RIFL Hub Stage 2 works. An AHIP (AHIP number C0003609) was issued on the 24 April 2018, which is valid for a duration of 5 years, until 2023 (see Appendix A.2). This permit (AHIP number C0003609) facilitated the Stage 2 works, which included the removal of the scar section of Bomen RIFL ST1 and the relocation of the scarred portion of the tree to the Bomen Axe Quarry Aboriginal Place. Additionally the permit approved the movement of Bomen RIFL IF4 if able to be relocated, or in the case that it could not, IF4 was authorised for destruction as part of the Stage 2 developments.

A modification application of AHIP number C0003609 was submitted in 2020 to include a small portion of land previously assessed between the AHIP areas initially granted for the Stage 1 and Stage 2 works. Since the initial Stage 1 and Stage 2 assessments for the Bomen RIFL Hub by NGH (2016a, 2018a), Council has acquired additional land at Bomen that will play a role in development of the Stage 3 works area and forms part of the current Proposal Area.

While there is overlap of AHIP C0003609 and C0002180 with the Proposal Area as shown in Figure 1-5 , Council has yet to finalise the works under these AHIPs. If an AHIP application is required for the Stage 3 works area, as assessed in this report, it would be recommended that this is a standalone AHIP and that AHIP C0003609 and C0002180 are not surrendered until the completion of the works they authorise.

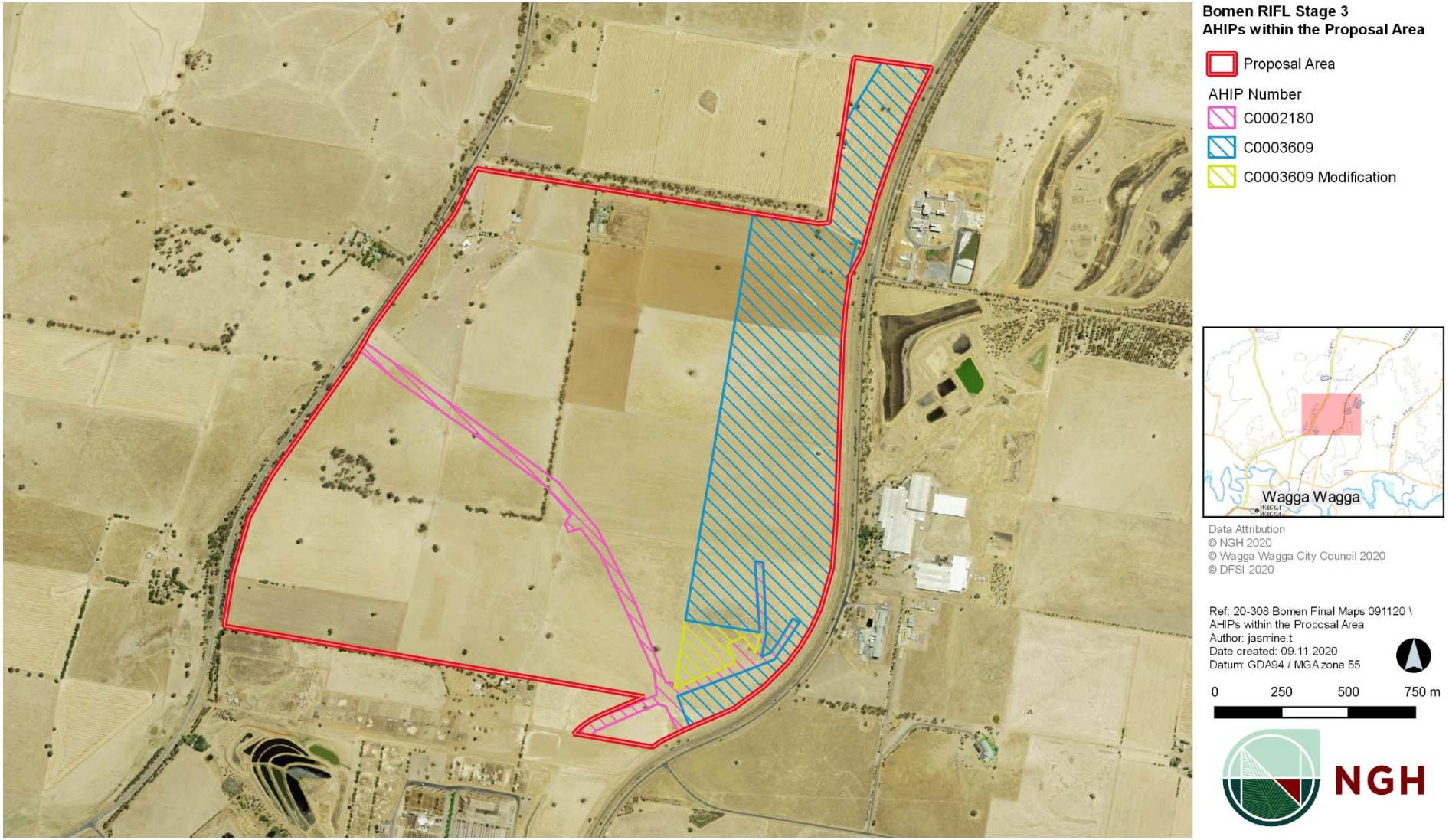

Figure 1-5 Valid AHIPs within the Proposal Area

1.3. Project Proposal

The proposed works for the Bomen Stage 3 industrial precinct will form part of the Wagga SAP. Land within the Wagga SAP would be an addition to the Activation Precincts SEPP. The Activation Precincts SEPP will establish new land use zones, new controls relating to Exempt, Complying and Designated Development and introduce some new streamlined development application processes for land within the Wagga SAP (NSW Department of Planning, Industry and Environment 2020).

The Bomen Stage 3 works would include but are not limited to works associated with the construction of the Regional Enterprise Zone. The Regional Enterprise Zone area would be zoned for a mix of Industrial, Rural, Infrastructure, Recreation, Environmental and Residential land uses. The Regional Enterprise Zone would have many land uses ranging from rail terminals, warehouses for manufacturing and food processing businesses; the RIFL Hub and associated industry and logistics works.

The Lot and DP numbers relevant to this heritage assessment for the Bomen Stage 3 works include portions of Lots 14 and 15 DP 1229343, Lots 11 and 12 DP 1223041, Lot 41 DP 1215424, Lot 1 DP 592928 and unnamed Lot/road reserves.

The desired land uses for the Regional Enterprise Zone that encompasses the entirety of the Bomen Stage 3 works includes but is not limited to:

- Agricultural Produce Industry (e.g. advanced manufacturing of agricultural products);
- Intensive plant agriculture (e.g. glass houses);
- Depot facility;
- Electricity Generating Works (small scale with negligible off-site air, noise and odour impacts;
- or anaerobic digester related to intensive livestock agriculture;
- Emergency Services facility;
- General Industry (e.g. advanced manufacturing of non-agricultural products);
- Liquid Fuel Depot facility;
- Local Distribution facility;
- Road Transport Depot (e.g. container maintenance, refuelling, mechanics workshop etc.);
- Truck Depot (e.g. parking, provisioning, maintenance, refuelling);
- Warehouse and/or Distribution Centre;
- Customs inspection facility; and
- Livestock processing industry on existing sites (abattoirs and knackeries).

1.4. Project Personnel

The ACHA report was completed by NGH archaeologists Kirsten Bradley and Amy Ziesing, including research, GIS mapping and report preparation. Archaeologists Tom Knight and Amy Ziesing participated in the fieldwork. Amy Ziesing also undertook the Aboriginal community consultation and Jasmine Tearle assisted with GIS mapping.

Senior Archaeologist Emily Dillon and NGH Principle Archaeologist Matthew Barber reviewed the report for quality assurance purposes.

Consultation with the Aboriginal community was undertaken following the process outlined in the Aboriginal cultural heritage consultation requirements for proponents 2010.

Four Aboriginal groups and an individual registered their interest in the proposal.

The Registered Aboriginal Parties (RAPs) for this project were:

- Bundyi Aboriginal Cultural Knowledge (BAC);
- Bidya Marra Consultancy (Bidya Marra);
- Warrabinya Cultural Heritage and Assessment Group (Warrabinya);
- Miyagen Culture & Heritage; and
- Yalmambirra.

In line with the Aboriginal cultural heritage consultation requirements for proponents 2010, Council chose to engage the four Aboriginal groups who had registered their interest in the project. The Aboriginal community representatives who participated in the survey fieldwork were:

- Mark Saddler (Representing BAC),
- Dylan Ingram (representing Bidya Marra)
- Brett Whyman (Representing Warrabinya) and
- Robert Carroll (Representing Miyagen).

Further details and an outline of the consultation process is provided in Section 2.

1.5. Report Format

This ACHA Report was prepared in line with the following guides:

- *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011);
- *Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW NSW 2010a); and
- *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW NSW 2010b).

The purpose of this ACHA report is therefore to provide an assessment of the Aboriginal cultural values associated with the Proposal Area and to assess the cultural and scientific significance of any Aboriginal heritage sites identified.

The objectives of the assessment were to:

- Conduct Aboriginal consultation as specified in Section 60 of the National Parks and Wildlife Regulation 2019, using the consultation process outlined in the ACHCRP;
- Undertake a field survey of the Proposal Area to identify and record any Aboriginal heritage objects and/or areas of potential significant archaeological deposits;
- Undertake an assessment of the archaeological and cultural values of the Proposal Area and any Aboriginal sites therein;
- Assess the cultural and scientific significance of any archaeological material, and
- Provide management recommendations for any objects found.

2. ABORIGINAL CONSULTATION PROCESS

The consultation with Aboriginal stakeholders was undertaken in accordance with Section 60 of the National Parks and Wildlife Amendment (Aboriginal Objects and Aboriginal Places) Regulation 2019 following the consultation steps outlined in the ACHCRP guide. The guide outlines a four-stage process of consultation as follows:

- Stage 1 – Notification of project proposal and registration of interest.
- Stage 2 – Presentation of information about the proposed project.
- Stage 3 – Gathering information about cultural significance.
- Stage 4 – Review of draft cultural heritage assessment report.

The full list of consultation steps, including those groups and individuals that were contacted and a consultation log is provided in Appendix B.1. A summary of actions carried out in following these stages are as follows.

Stage 1. Letters outlining the development proposal and the need to carry out an ACHA were sent to the Wagga Wagga Local Aboriginal Land Council (LALC) and various statutory authorities including Heritage NSW, as identified under the ACHCRP. An advertisement was placed in the local newspaper, the Daily Advertiser on the 17th of July 2020, seeking registrations of interest from Aboriginal people and organisations. A further series of letters were sent to other organisations identified by Heritage NSW in correspondence with NGH. In each instance, the closing date for submission was 14 days from receipt of the letter.

As a result of this process, four Aboriginal groups and an individual registered their interest in the proposal.

These were:

- Bundyi Aboriginal Cultural Knowledge (BAC);
- Warrabinya Cultural Heritage and Assessment Group (Warrabinya);
- Bidya Marra Consultancy (Bidya Marra);
- Miyagen Culture & Heritage (Miyagen); and
- Yalmambirra.

No other party registered their interest.

As a courtesy to all the registered parties we have only included brief summaries of correspondence for this project. However, detailed information and correspondence logs can be provided on request to Heritage NSW.

Stage 2. On 31 August 2020, an Assessment Methodology document for the project was sent to all the RAPs as listed above. This document provided details of the background to the proposal, a summary of previous archaeological surveys and the proposed heritage assessment methodology for the proposal. The document invited comments regarding the proposed methodology and sought any information relating to known Aboriginal cultural significance values associated with the subject area and/or any Aboriginal objects contained therein. A minimum of 28 days was allowed for a response to the document.

No comments were received on the methodology from any of the registered parties; however, BAC, Bidya Marra, Miyagen and Warrabinya all expressed an interest in participating in fieldwork.

Stage 3. The Assessment Methodology outlined in Stage 2 included a written request to provide any information that may be relevant to the cultural heritage assessment of the study area. It was noted

that sensitive information would be treated as confidential. No response regarding cultural information was received in response to the methodology.

At this stage, the fieldwork was organised, and BAC, Bidya Marra, Miyagen and Warrabinya were asked to participate in the fieldwork, which was undertaken from the 13th to the 14th of October 2020 by two NGH archaeologists and four local Aboriginal representatives.

Representatives who participated in the survey fieldwork were:

[redacted]

Stage 4. In March 2021 a draft version of this Aboriginal Cultural Heritage Assessment Report for the proposal (this document) was forwarded to the RAPs inviting comment on the results, the significance assessment and the recommendations. A minimum of 28 days was allowed for responses to the document.

2.1. Aboriginal Community Feedback

Community consultation occurred throughout the project. The draft report was provided to each of the Registered Aboriginal Parties (RAPs) and feedback was sought on the recommendations, the assessment and any other issues that may have been important.

Report comments were received from Mark Saddler (Representing BAC) and Yalmambirra.

Mark Saddler noted “all good” and did not raise any issues with the report or its recommendations.

Yalmambirra noted that the most appropriate people/s to comment on the project would be those who actually undertook the on-ground survey. He also noted the suggestion that all surveys undertaken on Wiradjuri Country should include subsurface testing as whilst surface artefacts may or may not be located during the survey there will always be the possibility that test pitting would uncover such items. While NGH do no disagree in principle with Yalmambirra comments we believe they have been sufficiently addressed in this report that only testing of the new PAD area is warranted given that a testing programme has previously been undertaken over the area. Given the possibility of subsurface items as low density scatters and/or isolated finds in the area an AHIP over the land which is the Proposal Area has been recommended.

No comments on the draft ACHA were received from the other RAPs and the report was finalised.

3. BACKGROUND INFORMATION

3.1. Review of Landscape Context

Understanding the landscape context of the Proposal Area may assist us to better understand the archaeological modelling of the area and assist in identifying local resources which may have been used by Aboriginal people in the past. This information can then potentially be used to predict the nature of Aboriginal occupation across the landscapes within the Proposal Area.

Factors that are typically used to inform the archaeological potential of landscapes include the presence or absence of resources that would have been used by Aboriginal people including water, animal and plant foods, stone and other resources. The landscape context assessment for the Proposal Area is based on a number of classifications that have been made at national, regional and local levels to help us better understand the archaeological modelling of the area based on the geology, topography, hydrology, flora and fauna and past land disturbances within and adjacent to the Proposal Area.

The landscape context of the Proposal Area is based on a number of classifications that include the National Interim Biogeographic Regionalisation for Australia (IBRA) system, Mitchell landscapes, NSW soil landscapes and geological maps. The combination of these differing resolutions of landform data provides a comprehensive and multi scaled understanding of the landscape within the Proposal Area and its immediate surroundings.

3.1.1. Topography

The Proposal Area is north of the Murrumbidgee River in the South Western Slope Bioregion in the Riverina region of NSW. The base geology comprises Silurian Wantabadgery granites. The wider Bomen area, a northern suburb of Wagga Wagga, is characterised by undulating hills with low to moderate gradient slopes mostly descending in elevation from the east to west.

There are wide drainage depressions separated by low ridges or spurs. The drainage depressions are not considered defined water courses, as each of the depressions consists of a wide, rounded base with gentle to moderate side slopes leading up to spur and hill slopes.

The Proposal Area is devoid of all naturally occurring bedrock outcrops that might have provided a source of stone material for Aboriginal people. The lack of naturally occurring rocks suitable for flaking indicates stone material would have to be brought into the area. Soils within the Proposal Area are typically a reddish-brown silty clay.

3.1.2. NSW 1:1,500,000 simplified surface geology

The NSW 1:1,500,000 simplified surface geology (available via the seed online portal) notes a single type of surface geology across the Proposal Area:

- I-S trans -type granites, which are Silurian and include granites of the extensive Koetong Supersuite that extends from West Wyalong into Victoria.
- Includes S-type granite with quartz, feldspar, muscovite, biotite, and cordierite.
- Some granite may be porphyritic - where larger crystals (typically feldspar) are surrounded by smaller ones.

3.1.3. Interim Biogeographic Regionalisation for Australia

The national IBRA system identifies the Proposal Area as being located in the South Western Slopes Bioregion (DE&E 2016). The South Western Slope Bioregion covers an extensive area of foothills and isolated ranges comprising the lower inland slopes of the Great Dividing Range extending from Albury in the south to Dunedoo in the northeast. Towns located in the bioregion include Wagga Wagga, Mudgee, Cootamundra, Narrandera, Parkes, Gundagai and Young. The bioregion includes parts of the Murray, Murrumbidgee, Lachlan and Macquarie River catchments.

The Wagga Wagga area is characterised by a semi-arid climate, with long hot summers and cool winters. The mean maximum temperature is 31.90 in January and the mean minimum is 2.80 in July. Rainfall is typically highest in October (56.3 mm) and lowest in January and April (40.1 mm) but the spread is relatively even across the year (Bureau of Meteorology 2020).

The South Western Slopes Bioregion lies wholly in the eastern part of the Lachlan Fold Belt, which consists of a complex series of north to north-westerly trending folded bodies of Cambrian to Early Carboniferous sedimentary and volcanic rocks. Granites are common and mostly located in large scale upfolded bodies of rock. Granite landscapes occur either as central basins surrounded by steep hills formed on contact metamorphic rocks or as high blocky plateau features with rock outcrops and tors.

The overall pattern of soils in these landscapes is one where shallow, stony soils are found on the tops of ridges and hills. Moving downslope, texture contrast soils are the norm with subsoils derived from the underlying weathered rock and the topsoils being a homogenised surface mantle of coarser material derived from all parts of the slope.

The South Western Slopes Bioregion contains two subregions: Upper slopes and Lower Slopes. A description of these subregion is provided in Table 3 1 below.

Table 3-1 Upper and Lower slope subregions of the South Western Slope Bioregion (DPIE 2016).

Subregion	Geology	Landforms	Soils
Upper Slopes	Ordovician to Devonian folded and faulted sedimentary sequences with inter-bedded volcanic rocks and large areas of intrusive granites.	Steep, hilly and undulating ranges and granite basins. Occasional basalt caps, confined river valleys with terrace remnants.	Shallow stony soils on steep slopes, texture contrast soils grading from red subsoils on upper slopes to yellow subsoils on lower slopes. Alluvial sands, loams and clays.
Lower Slopes	As for the Upper Slopes but with larger areas of Tertiary and Quaternary alluvium.	Undulating and hilly ranges and isolated peaks set in wide valleys at the apices of the Riverina alluvial fans.	Similar to the Upper Slopes but with more extensive red-brown earths on undulating plains and more extensive grey clays on alluvium.

3.1.4 Mitchell Landscapes

Further landscape mapping as part of the Mitchell landscapes system (DECC 2002) shows the Proposal Area is located in the Junee Hills and Slopes within the Lower Slopes Granites in the NSW South West Slopes Bioregion. The Mitchell Landscape description relevant to the Proposal Area is provided in Table 3-2.

Table 3-2 Description of the Mitchell Landscapes relevant to the Proposal Area (DECC 2002)

Mitchell Landscape	Description (DECC 2002)
Junee Hills and Slopes	Rolling hills, low ranges and undulating plain on Silurian-Devonian massive granite and granodiorite, general elevation 300 to 450 m, local relief 60 m. Coarse siliceous sands amongst rock outcrop and tors, thin gritty red and yellow texture-contrast soils on slopes with harsh blocky subsoil. Woodland of Dwyer's red gum (*Eucalyptus dwyeri*) and red ironbark (*Eucalyptus sideroxylon*) on high rocky areas. On slopes open forest of; grey box (*Eucalyptus microcarpa*), red stringybark (*Eucalyptus macrorhyncha*) with patches of black cypress pine (*Callitris endlicheri*) in rocky outcrops. River red gum (Eucalyptus camaldulensis) and river oak (*Casuarina cunninghamiana*) along streams.

3.1.5 Soil Landscapes

Soil landscape mapping shows the Proposal Area falls into the East Bomen soil landscape, as described in Table 3-3 below.

Table 3-3 Descriptions of soil landscapes in the Proposal Area (State of NSW and Department of Planning, Industry and Environment 2020)

Soil Landscape	Landscape	Soils	Geology and Regolith
East Bomen (eb)	Undulating rises and minor low hills. Slope gradients are mostly 3 - 10%. Local relief is 15 - 40 m within an elevation range of 200 - 280 m. Landform elements include broad (up to 500 m) crests and ridges, long (>400 m) waning slopes and shallow drainage lines. Almost completely cleared. Isolated very small areas of extensively cleared tall woodland remains in Crown reserves and along a few roads. Most common tree species include white box, grey box and yellow box and white cypress pine. Understorey species include kangaroo grass, tussock grass, plains grass, spear grass and wallaby grass.	Shallow to moderately deep (40 - 150 cm) Eutrophic Red Dermosols on crests and ridges; deep (80 - 200 cm) Eutrophic Brown Dermosols on slopes; and moderately deep (80–150 cm) Eutrophic Brown Dermosols in drainage lines	Silurian granites, mainly Wantabadgery Granodiorite and Collingullie Granite, with small parts of Burrandana Granite. Thick (>2m) clay sequences, with significant windblown (aeolian) clay additions ("parna"), deposited on most sideslopes and in drainage depressions.

3.1.6 Hydrology

The western portion of the Proposal Area is intersected by Dukes Creek and its associated drainage depressions. These associated drainage depressions are not considered defined water courses, as each of the depressions consists of a wide, rounded base with gentle to moderate side slopes leading up to spur and hill slopes. Farm dams have also been constructed in some of the depressions, but

water flow is considered minimal and no natural standing water or pools are present. The Proposal Area is, therefore, considered to have little in the way of semi-regular or permanent water.

The Proposal Area is located in the Murrumbidgee catchment with the Murrumbidgee River located approximately 2 km south of the Proposal Area. The Murrumbidgee River generally runs east-west along the northern boundary of the urban centre of the township of Wagga Wagga.

3.1.7 Flora and Fauna

The natural vegetation across the Proposal Area has been completely cleared and it is considered a modified environment. There are few native tree species present within the pastoral landscape within the Proposal Area. Some isolated trees are present within the paddocks and remnant roadside vegetation.

The natural vegetation of the area would most likely have consisted of River Red Gum (*Eucalyptus camaldulensis*) on the low flats, Yellow Box (*Eucalyptus melliodora*) trees with a midstory of occasional wattles (*Acacia sp*.) and a ground cover of native grasses on the slopes.

Given that the Proposal Area is located near to the confluence of a variety of resources, the area may have been targeted for the exploitation of terrestrial resources by Aboriginal people.

3.1.8 Historic Land Use and Disturbance

The Wagga Wagga region has a long history of intensive agricultural and pastoral use. The majority of the area has been utilised for grazing and crop production since European settlement in the early 1800's. The location of the proposed Bomen Stage 3 works is within pastoral and agricultural fields and, therefore, has been subject to considerable impacts from farming over many decades. Overall, the Proposal Area would be categorised as highly disturbed through long-term consistent farming practices, including ploughing.

3.1.9 Landscape Context

Most archaeological surveys are conducted in situations where there is topographic variation, and this can lead to differences in the assessment of archaeological potential and site modelling for the location of Aboriginal objects. The Proposal Area is situated within undulating to rolling low hills with open depressions, which would have allowed the movement or occupation of the area by Aboriginal people in the past. Prior to European land modifications, this area as a whole would have provided resources, shelter, water, and food for Aboriginal people. However, disturbances arising from past land-use have resulted in localised, significant changes to the landscape, which range from the continued ploughing and cultivation of the area through to the construction of a new road (Merino Road) through the Proposal Area.

The landforms within the Proposal Area have been determined based on topographic identification through the inspection of contour data and Digital Elevation Modelling (DEM). Five landforms were identified within the Proposal Area, which are shown in Figure 3-1 and listed below:

- Spurs and hill crests;
- Slopes;
- Low Slopes;
- Open depressions and drainage lines; and
- Disturbed road corridors.

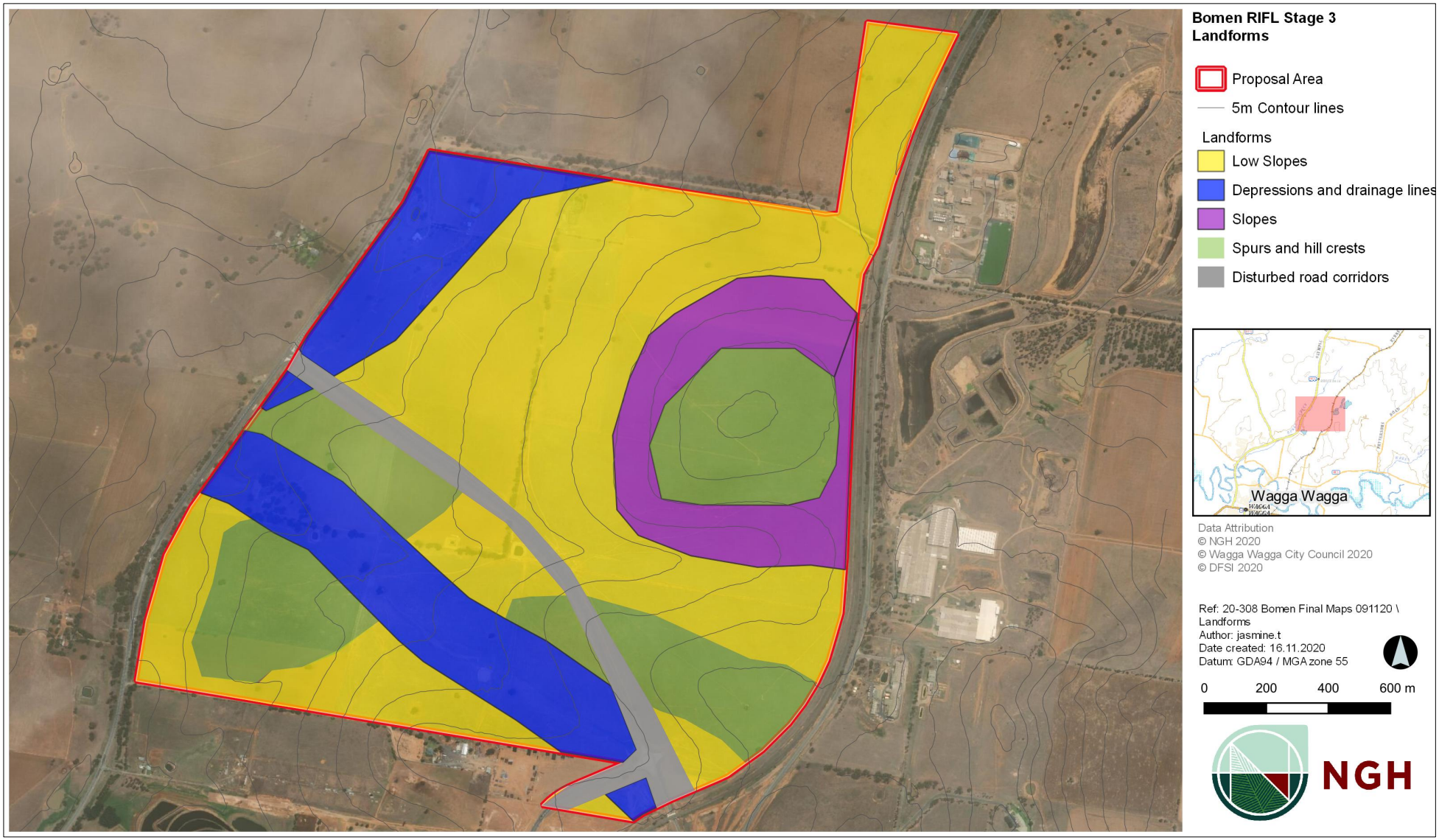

Figure 3-1 Landforms within the Proposal Area.

4. REVIEW OF ABORIGINAL ARCHAEOLOGICAL CONTEXT

4.1. Ethnohistoric Setting

There are several ethnographic recordings of Aboriginal life in the Riverina region from the 1800s that notably focus on the prevalence of Aboriginal people around waterways in the region. It is important to consider that the Aboriginal people alive at the time of such observations were survivors of serious epidemics of infectious disease such as smallpox, brought by Europeans, that greatly affected the population sizes and distribution of people within the landscape. Consequently, European records may not necessarily reflect pre-contact population distributions and traditional ways of life (Dowling 1997; Littleton & Allen 2007).

The dispossession from traditional lands and acts of violence against the Aboriginal people caused great social upheaval meaning that access to traditional resource gathering and hunting areas, religious life, marriage links and sacred ceremonial sites was disrupted or prevented. Despite this, Aboriginal people continued to maintain their connections to sites and the landscape in a variety of ways. The Aboriginal people of the region continue to have a strong connection to their land.

Tribal Boundaries

Cultural areas are difficult to define and "must encompass an area in which the inhabitants have cultural ties, that is, closely related ways of life as reflected in shared meanings, social practices and interactions" (Egloff, Peterson & Wesson 2005, p.8). Depending on the culture defining criteria chosen - i.e. which cultural traits and the temporal context (historical or contemporary) - the definition of the spatial boundary may vary. In Australia, Aboriginal "marriage networks, ceremonial interaction and language have been central to the constitution of regional cultural groupings" with the distribution of language speakers being the main determinant of groupings larger than a foraging band (Egloff, Peterson & Wesson 2005, pp.8 & 16)

The Proposal Area is within an area identified as part of the Wiradjuri language group. This is an assemblage of many small clans and bands speaking a number of similar dialects (Horton 1994; Tindale 1974; MacDonald 1983).

The Wiradjuri language group was the largest in NSW prior to European settlement. The borders were not static, but most likely fluid, expanding and contracting over time to the movements of smaller family or clan groups. Boundaries ebbed and flowed through contact with neighbours, the seasons, and periods of drought and abundance.

Social Structures and Colonisation

It was the small family group that was at the core of Aboriginal society and the basis for their hunting and gathering life. The immediate family camped, sourced food, made shelter and performed daily rituals together. The archaeological manifestations of these activities are likely to be small campsites, characterised by small artefact scatters and hearths across the landscape. Places that were visited more frequently would develop into larger site complexes with higher numbers of artefacts and possibly more diverse archaeological evidence.

These small family units were part of a larger band which comprised several families. They moved within an area defined by their particular religious sites (MacDonald 1983). Such groups might come

together on special occasions for ceremonies, rituals or simply if their paths happened to cross. They may also have joined together at certain times of the year at certain places where resources were known to be abundant. The archaeological legacy of these gatherings would be larger sites rather than small family camps. They may include large hearth or oven complexes, contain several grinding implements and a larger diversity of stone tools and raw materials.

Identification and differentiation of such sites are difficult in the field. A family group and their antecedents and descendants occupying a campsite repeatedly over a long period of time may leave a similar pattern of archaeological signatures as a large group camped over a shorter period.

European settlers started arriving in the district in the 1820s. At this point the Aboriginal population was in decline, due to disease such as smallpox and influenza as well as dispossession from traditional lands and acts of violence against the Aboriginal people.

This meant there was great social upheaval and partial disintegration of the traditional way of life. The dramatic increase in the number of non-indigenous settlers around Wagga Wagga from the 1850s to the 1870s, during the gold rush resulted in the further displacement of the Aboriginal population and acts of violence (Burless 1997). This meant that access to traditional resource gathering and hunting areas, religious life and marriage links and access to sacred ceremonial sites were disrupted or destroyed.

Material Culture, Food and Resources

Early settlers and others who wrote about the Wiradjuri people and customs differentiated between the origin of some groups, referring to people as the Lachlan or Murrumbidgee tribes, or the Levels tribe for those between the two major rivers (Woolrych 1890). The extent of the Wiradjuri group means there were many different environments exploited for natural resources and food. Like everywhere in Australia, Wiradjuri people were adept at identifying and utilising resources either on a seasonal basis or all year round.

Terrestrial and arboreal animals such as the possum were noted by many early observers as a prime food source and the skins were made into fine cloaks that evidently were very warm (Oxley 1820; Mitchell 1839; Evans 1815). Kangaroos were also eaten, and their skins made into cloaks as well. A range of reptiles and other mammals were food sources. Fish and mussels would have been prevalent from the rivers and creeks, and insects were also a common food type, in particular grubs, ants and ant eggs (Pearson 1981; Fraser 1892). Birds, including emus, were common as a food source, often being caught in nets made from fibres of various plants such as flax, rushes and kurrajong trees. Bird hunts were also often undertaken as group activities, with emus, ducks and other birds targeted through groups of people flushing them out and driving them into pre-arranged nets (Ramson 1983).

Plant foods were equally as important and mostly consisted of roots and tubers, such as Typha or Cumbungi whose tubers were eaten in late summer and the shoots in early spring. Other edible plants from the Wiradjuri region include the Yam Daisy or Murnong, eaten in summer and autumn, the Kurrajong seeds and roots, Acacia seeds and other rushes (Gott 1982).

Some of the early settlers and pastoralists, surveyors, explorers, administrators and others observed traditional Aboriginal activities, including ceremonies, burial practices and general way of living, and recorded these in letters, journals and books. These early records of Aboriginal lifestyle and society within the region assist in understanding parts of the traditional Aboriginal way of life, albeit already heavily disrupted at the time of the observations and through the eyes of largely ignorant and uninformed observers.

The early observations note that some weapons and tools were carried, some made from wood such as spears, spear throwers, clubs, shields, boomerangs, digging sticks, bark vessels and canoes. Other materials were observed in use such as stone axes, shell and stone scrapers and bone needles.

In an archaeological context, few of these items would survive, particularly in an open site context. Any item made from bark, timber and animal skins would decay quickly in an open environment. However, other items, in particular those made of stone would survive where they were made, placed or dropped. Shell material may also survive in an archaeological context. Sources of raw materials, such as the extraction of wood or bark leave scars on the trees that are archaeologically visible, although few trees of sufficient age survive in the modern context. Outcropping stone sources also provide clues to their utilisation through flaking, although pebble beds may also provide sources of stone which leave no archaeological trace.

4.2. AHIMS Search

The Aboriginal Heritage Information Management System (AHIMS) provides a database of previously recorded Aboriginal heritage sites in NSW. A search provides basic information about any sites previously identified within a search area. However, a register search is not conclusive evidence of the presence or absence of Aboriginal heritage sites, as it requires that an area has been inspected and details of any sites located have been provided to the register to be added. As a starting point, the search will indicate whether any sites are known within or adjacent to the Proposal Area.

A search of the AHIMS database over an area approximately 5 km x 5 km with a 50 m buffer centred on the Proposal Area was undertaken on 23 July 2020 (AHIMS Client Service ID: 522417). There were 74 Aboriginal sites recorded within the search area and two (2) declared Aboriginal Places.

Table 4 1 shows the breakdown of site types and Figure 4-1 and Figure 4-2 show the location of the AHIMS sites within and adjacent to the Proposal Area.

Table 4-1 Breakdown of previously recorded Aboriginal sites in the region.

Site Type	Number
Artefact	60
Culturally Modified Tree	9
Stone Quarry; Artefact	2
Stone Quarry	1
Artefact & Culturally Modified Tree	1
Aboriginal Ceremony & Dreaming	1
TOTAL	74

The search results show there are a number of sites recorded in this area, with the dominant site types stone artefacts (81.1%), followed by culturally modified trees (12.2%). As previous surveys

have been conducted within the current assessment area and in the Bomen area, the AHIMS results provide a relatively accurate representation of site types and their distribution across this region.

Two Aboriginal Places are located within proximity to the Proposal Area which are summarised below.:

- The Bomen Axe Quarry is highly significant to the local Aboriginal community as a manufacturing site and also for inferring technological information, trade routes and land management practices. This Aboriginal place is situated approximately 500 m south-east of the north west corner of the Proposal Area.
- Bomen Lagoon is a highly significant landform to the local Aboriginal community due to the waterbody being a valuable fishing resource place (Go Green Services 2013, p.1). During the earliest European exploration of the area by Captain Charles Sturt, the lagoon was the site of the first contact between the expedition party and the Wiradjuri inhabitants of the area. In recent times, the lagoon has been valued by the local Aboriginal community as a recreation and learning place, particularly in relation to native birdlife and cultural and aesthetic values. The Bomen Lagoon is also located on part of the Bomen Travelling Stock Reserve. Evidence of Aboriginal occupation in the low sandhills near the lagoon and the nearby Eunonyhareenyha homestead also demonstrate the Aboriginal occupation of this area, including former cooking oven sites, which remained present until at least the 1960s (Go Green Services 2013, p.2). This Aboriginal place is situated approximately 4 km south of the Proposal Area.

A total of ten previously recorded AHIMS sites listed as valid are within the Proposal Area as listed in Table 4-2 and shown in Figure 4-2.

Table 4-2 AHIMS Sites within the Proposal Area.

AHIMS ID	Site Name	Site Type	Site Validity	Distance to Proposal Area
56-1-0433	Bomen RIFL IF1	Artefact (1 or more)	Valid	Within Proposal Area but likely destroyed by works permitted under AHIP
56-1-0432	Bomen RIFL IF2	Artefact (1 or more)	Valid	Within Proposal Area but likely destroyed by works permitted under AHIP
56-1-0434	Bomen RIFL IF3	Artefact (1 or more)	Valid	Within Proposal Area but likely destroyed by works permitted under AHIP
56-1-0457	Bomen RIFL IF4	Artefact (1 or more)	Valid	Within Proposal Area but likely destroyed by works permitted under AHIP
56-1-0458	Bomen RIFL IF5	Artefact (1 or more)	Valid	Within Proposal Area but likely destroyed by works permitted under AHIP
56-1-0459	Bomen RIFL ST1	Modified Tree (Carved or Scarred)	Valid	Within Proposal Area but likely destroyed by works permitted under AHIP

AHIMS ID	Site Name	Site Type	Site Validity	Distance to Proposal Area
56-1-0460	Bomen RIFL AS1	Artefact (1 or more)	Valid	Within Proposal Area but likely destroyed by works permitted under AHIP
56-1-0461	Bomen RIFL AS2	Artefact (1 or more)	Valid	Within Proposal Area but likely destroyed by works permitted under AHIP
56-1-0462	Bomen RIFL AS3	Artefact (1 or more)	Valid	Within Proposal Area but likely destroyed by works permitted under AHIP
56-1-0463	Bomen RIFL AS4	Artefact (1 or more)	Valid	Within Proposal Area but likely destroyed by works permitted under AHIP

4.3. Brief Summary of AHIMS Sites Previously Recorded within the Proposal Area

A brief summary of the ten previously recorded AHIMS sites which are shown in Figure 4-2 within the Proposal Area are provided below.

Bomen RIFL IF1 AHIMS 56-1-0433

A sandstone grindstone fragment found on the interface between a spur side slope and a broad open depression. Slope was between 5-8 degrees and visibility was excellent at 40% along exposure from stock tracks. The artefact dimensions were 35 mm in length, 25 mm in width and 18 mm in thickness.

While this site is currently listed as valid, NGH believe Council has engaged representatives from the local Aboriginal community to undertake the surface salvage of this site, which is now destroyed as per the approvals granted in AHIP number C0002180 for the Bomen Stage 1 works.

Bomen RIFL IF2 AHIMS 56-1-0432

A fine grained siliceous manuport was found on the gentle side slope of a spur. The piece was a broken pebble with 40% cortex. Its identification as an Aboriginal artefact is not conclusive but it is foreign to the area with no other pebbles observed in the vicinity. The pebble measured 45 mm in length, 40 mm in width and 20 mm in thickness.

While this site is currently listed as valid, NGH believe Council has engaged representatives from the local Aboriginal community to undertake the surface salvage of this site, which is now destroyed as per the approvals granted in AHIP number C0002180 for the Bomen Stage 1 works.

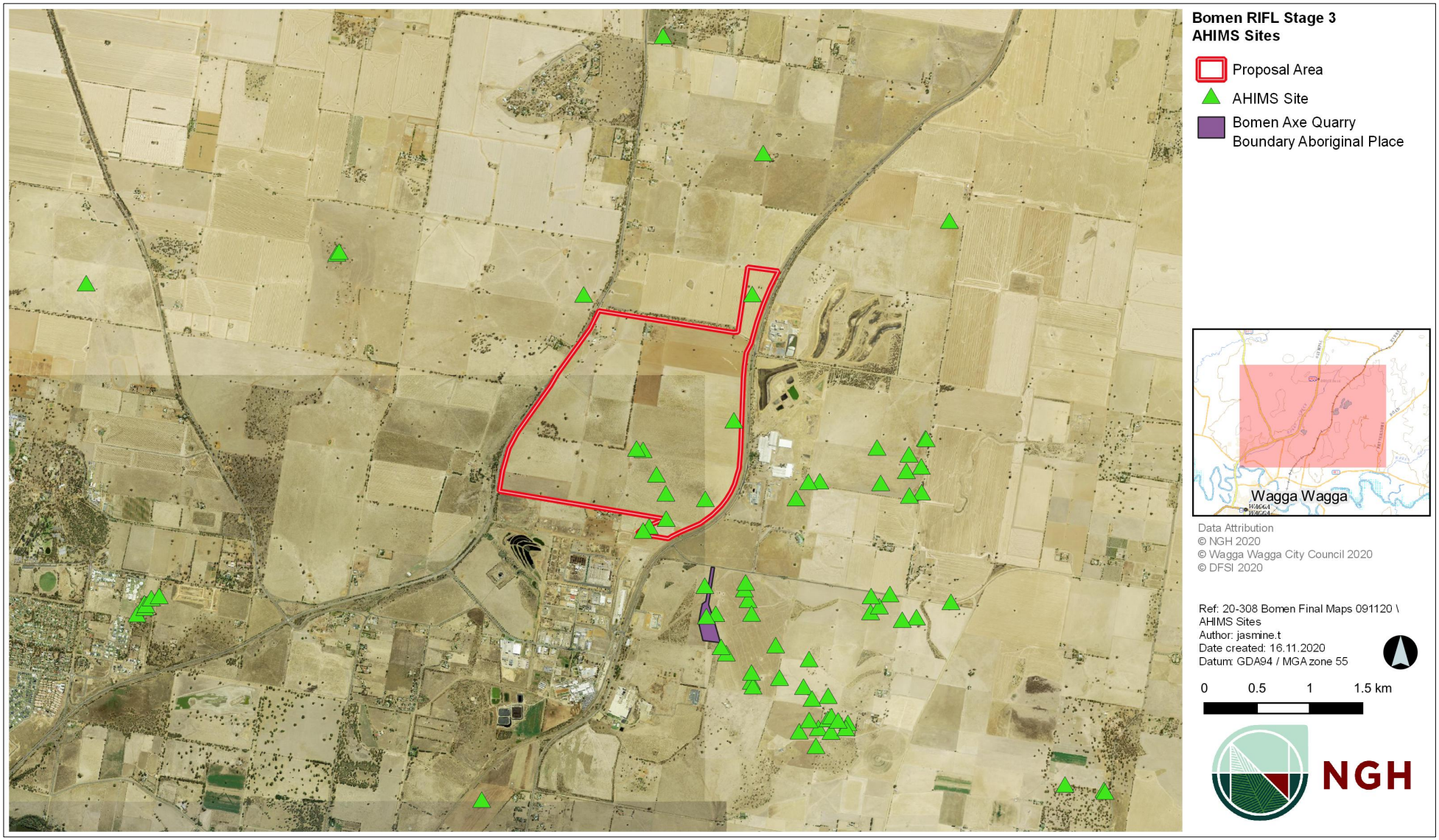

Figure 4-1 AHIMS Sites.

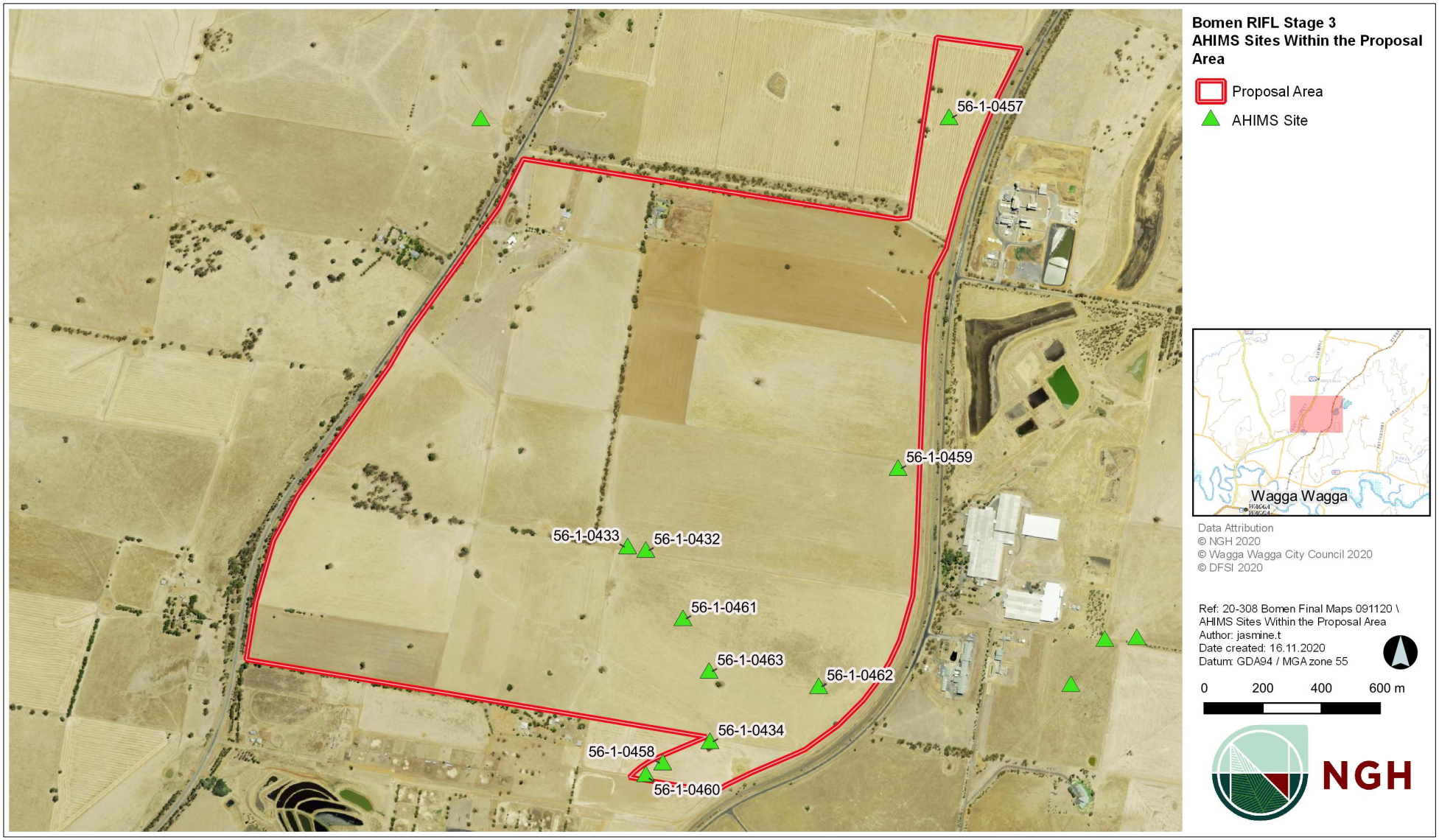

Figure 4-2 AHIMS Sites within the Proposal Area

Bomen RIFL IF3 AHIMS 56-1-0434

This fine-grained siliceous pebble with one negative scar was found on the edge of a broad open drainage depression at the base of a spur slope. The item was in a recently ploughed paddock and visibility was good at about 15%. The pebble measured 80 mm in lengths, 70 mm wide and 30 mm thick.

While this site is currently listed as valid, NGH believe Council has engaged representatives from the local Aboriginal community to undertake the surface salvage of this site which is now destroyed as per the approvals granted in AHIP number C0002180 for the Bomen Stage 1 works.

Bomen RIFL IF4 AHIMS 56-1-0457

A quartz flake found on an open recently ploughed paddock on a simple spur slope with a gradient of 5-8 degrees. Visibility was excellent at about 80% but no further artefacts were found. The artefact dimensions were 21 mm in length, 18mm in width and 6mm in thickness. There is low potential for subsurface archaeological deposits to be present in this area.

While this site is currently listed as valid, Council has permission to undertake the surface salvage of this site as per the AHIP C0003609 for the Bomen Stage 2 works. NGH understands the salvage of this site has yet to take place.

Bomen RIFL IF5 AHIMS 56-1-0458

A single subsurface artefact was recovered from the subsurface testing program undertaken by NGH in 2016. The artefact was a quartz flake.

While this site is currently listed as valid, NGH believe Council has engaged representatives from the local Aboriginal community to undertake the surface salvage of this site, which is now destroyed as per the approvals granted in AHIP number C0002180 for the Bomen Stage 1 works.

The initial subsurface artefact is currently in temporary care of NGH in a locked cabinet in their Canberra office.

Bomen RIFL ST1 AHIMS 56-1-0459

The scarred tree was a living mature Eucalyptus tree (most likely Yellow Box, *E. melliodora*) near the fence line of a paddock. The tree has a height of approximately 15 m and a trunk circumference of 4 m approximately 1 m from the ground, with the trunk diverging into a number of thick, vertical branches. The scar was situated 1.45 m above the ground and was orientated to the south-east. The scar was oval in shape with the following dimensions: 46 cm length x 14 cm width x 11 cm in depth. The scar was oval in shape, typical of a carrying dish or shield in outline. There were some indications of tree pathology with evidence of partial dieback and a few fallen limbs but no obvious signs of branch tears on the scar side of the tree. The age of the tree is difficult to estimate but it was a mature specimen with hollows and considerable diameter and height. There was some evidence of the regrowth of the original scar but this was not attributable to any obvious pathology. It was determined that as no obvious natural causes could be firmly established, the scar was most likely cultural and given size and morphology of the scar and the lack of European causes such as survey marking, on balance the scar was probably Aboriginal.

While this site is currently listed as valid, NGH understands the salvage of this site has taken place in accordance with the conditions of AHIP C0003609 for the Bomen Stage 2 works (per comms. Mark Saddler 2020).

Bomen RIFL AF1 AHIMS 56-1-0460

A total of nine subsurface artefacts were recovered from the subsurface testing program undertaken by NGH in 2016 from two test pits. The artefacts were flakes and flake pieces of chert and quartzite.

While this site is currently listed as valid, NGH believe Council has engaged representatives from the local Aboriginal community to undertake the surface salvage of this site, which is now destroyed as per the approvals granted in AHIP number C0002180 for the Bomen Stage 1 works.

The initial subsurface artefacts are currently in temporary care of NGH in a locked cabinet in their Canberra office and will be reburied onsite once the AHIP works are completed.

Bomen RIFL AF2 AHIMS 56-1-0461

A total of eight subsurface artefacts were recovered from the subsurface testing program undertaken by NGH in 2016 from six test pits. The artefacts were all quartz flakes and flake pieces.

While this site is currently listed as valid, NGH believe Council has engaged representatives from the local Aboriginal community to undertake the surface salvage of this site, which is now destroyed as per the approvals granted in AHIP number C0002180 for the Bomen Stage 1 works.

The initial subsurface artefacts are currently in temporary care of NGH in a locked cabinet in their Canberra office and will be reburied onsite once the AHIP works are completed.

Bomen RIFL AF3 AHIMS 56-1-0462

A total of eight subsurface artefacts were recovered from the subsurface testing program undertaken by NGH in 2016 from four test pits. The artefacts were all quartz with a total of six flakes, a flaked piece and a core.

While this site is currently listed as valid, NGH believe Council has engaged representatives from the local Aboriginal community to undertake the surface salvage of this site, which is now destroyed as per the approvals granted in AHIP number C0002180 for the Bomen Stage 1 works.

The initial subsurface artefacts are currently in temporary care of NGH in a locked cabinet in their Canberra office and will be reburied onsite once the AHIP works are completed.

Bomen RIFL AF4 AHIMS 56-1-0463

A total of two subsurface artefacts were recovered from the subsurface testing program undertaken by NGH in 2016 from a single test pit. The artefacts were both quartz flakes.

While this site is currently listed as valid, NGH believe Council has engaged representatives from the local Aboriginal community to undertake the surface salvage of this site, which is now destroyed as per the approvals granted in AHIP number C0002180 for the Bomen Stage 1 works.

The initial subsurface artefacts are currently in temporary care of NGH in a locked cabinet in their Canberra office and will be reburied onsite once the AHIP works are completed.

4.4. Additional Searches

Other heritage register searches were undertaken to identify any heritage items or places adjacent to or within the Proposal Area. The following resources were used as part of this assessment:

- The Australian Heritage Database, this includes items on the National and Commonwealth Heritage Lists.
- The NSW State Heritage Inventory (SHI), this includes items on the State Heritage Register and items listed by state agencies and local Government.
- The Wagga Wagga Local Environmental Plan 2010, Schedule 5 Environmental Heritage.

The results of the Australian Heritage Database search indicated there are nil items listed within the suburb of Bomen on the Register of National Estate (a non-statutory list).

The results of the Register of National Estate search indicated there are no items listed within the suburb of Bomen.

The results of the State Heritage Register search indicated there are five Aboriginal Places located within the Wagga Wagga LGA. These include:

- Bomen Axe Quarry;
- Bomen Lagoon;
- Flowerdale Lagoon;
- Wiradjuri Reserve and Gobba Beach; and
- Wollundry Lagoon and Tony Ireland Park.

The two Aboriginal Places, the Bomen Axe Quarry and Bomen Lagoon are outside the Proposal Area and summarised in Section 4.2.

There are four items listed under the Heritage Act within the Wagga Wagga LGA with the nearest item being the Bomen Railway Station which is located outside the Proposal Area.

A search for NSW heritage within the Wagga Wagga LGA on the SHI indicated there are four items listed under the NSW Heritage Act by the Heritage Council of NSW and 17 Agency listed items. Only one place listed under the NSW Heritage Act is within the locality of Bomen. The nearest item is the Bomen Railway Station which is located outside the Proposal Area.

The SHI search also identified 437 local heritage items listed under the Wagga Wagga LEP. No items were identified within the Proposal Area. A single site is approximately 30 m from the western edge of the Proposal Area. This site is Hopevale residence, 1365 Olympic Highway, I26. The Bomen Railway Station and its associated Stationmaster Residence on Dampier Street at Bomen are also listed sites.

No other known previously recorded heritage sites are located within or adjacent to the Proposal Area.

The local heritage item listed adjacent to the Proposal Area is shown in Figure 4-3.

Figure 4-3 Local heritage item listed adjacent to the Proposal Area.

4.5. Regional Archaeological Studies

Aboriginal people have occupied what we now know as the Australian continent for at least 40,000 years and perhaps 60,000 years and beyond. There have been no known dated excavations in the Wagga Wagga area, although there is ample evidence of Aboriginal occupation dating back to at least 40,000 years ago across Australia. No regional synthesis of the archaeology has been completed for the Bomen or Wagga Wagga area. The following are summaries of those archaeological survey reports that have been completed in the Wagga Wagga area which have been primarily driven by development and infrastructure requirements.

In 1980 Witter carried out a survey for a gas pipeline between Wagga Wagga and Young. He recorded 14 artefact scatters, 21 isolated finds, a possible rock well and a modified tree. Most of the sites identified by Witter occurred in association with creeks or water courses within a range of landforms including flats, slopes and spurs. Witter recommended the excavation of some of these sites if they were unable to be avoided. One of these sites, artefact scatter BY/4, was salvaged by Kelly later that same year collecting 319 surface artefacts and excavating an additional 48 artefacts (Kelleher Nightingale Consulting 2008, p.4).

In 1983 Witter and Hughes surveyed a number of transmission line surveys including Stage 1 of the Murrumburrah to Yass and Murrumburrah to Wagga Wagga transmission lines during which they identified four artefact scatters, 13 isolated artefacts and a possible modified tree. The artefact scatters were large open camp sites with the dominate lithology quartz. In 1983 Hiscock also identified 13 isolated artefacts and nine modified trees during another transmission line survey from Wagga Wagga to Darlington Point. During the survey of Stage 2 of the Murrumburrah to Yass Transmission line in 1983 Packard and Hughes identified another 11 isolated finds, five artefact scatters and two modified trees (as cited in Oz Ark 2012, p.16-17).

In 1987 Silcox conducted a series of test excavations using a backhoe on the northern side of the Murrumbidgee River at Gumly Gumly (approximately 10 km east of Wagga Wagga) based on the results of a survey for a water augmentation project. The Potential Archaeological Deposit (PAD) named GG1 was proposed for test excavation due to its proximity to a reliable water source, its elevated, well-drained flat surface suitable for camping and the absence of previous ground disturbance activities. Seventeen test pits at seven locations were excavated and 52 artefacts were recovered. All of the artefacts were of quartz and were found mainly in the upper 25 cm of the deposits. He also identified the presence of a thin layer of mussel shell within one trench. The results indicated to Silcox that there is a low density scatter of artefacts across the lower Murrumbidgee floodplain.

In 1995 AASC conducted a study about 16 km east of Wagga for a proposed upgrade of the Sturt Highway. The majority of the survey area had been highly disturbed by activities associated with the previous construction of the highway. Despite good visibility, no sites were located and AASC concluded this was an accurate reflection of the Aboriginal use of this steep hill slope area with limited water availability in the area.

Navin Officer Heritage Consultants (NOHC) identified 65 Aboriginal sites while conducting surveys from 1996 to 1998 for the Wodonga-Wagga Wagga Natural Gas Pipeline. This consisted of 39 artefact scatters, 19 isolated artefacts and eight PADS. Based on these survey results it was reflected that artefact scatters are likely to be located in well drained contexts adjacent to water sources.

In 2002 Green compiled a comprehensive study of Wiradjuri heritage for the Wagga Wagga area. The study focused on Wiradjuri and non-indigenous heritage, oral histories, insight into pre-European Wiradjuri culture, a timeline of Wiradjuri history and highlighted potential tourism, education and employment opportunities. Green also identified a number of plant and animal resources in the Wagga Wagga area that the Wiradjuri people past and present utilise. During the study Green identified three scarred trees and an artefact scatter in association with either the Bomen Lagoon or Wollundry Lagoon.

In 2005 Kelton (as cited in CWAS 2007, p.15) conducted a primarily desktop study and brief field assessment of approximately 600 ha within the Henwood property, between Coolamon Road the Olympic Highway and Sutherlands Road, Wagga Wagga. While the survey visibility of the area was poor a number of areas of archaeological sensitivity and PADs were identified. The PADs were primarily located along the western banks and adjacent terraces of Dukes Creek and its surrounding low hillslopes. Hill crest and ridges in the area were also identified as archaeologically sensitive landforms in the area.

In 2007 Central West Archaeological and Heritage Services (CWAS) surveyed approximately 40 ha for the proposed extension to the Wagga Quarry on Roach road, Wagga Wagga. The quarry is on alluvial floodplain on the southern side of the Murrumbidgee River and while noted as an archaeologically sensitive area no sites or PADs were identified. The area was extensively disturbed and CWAS concluded that the flood prone nature of the survey area would have not been ideal for Aboriginal occupation on a regular basis.

In 2010 AECOM Australia conducted the Aboriginal and historic heritage study for Stage 1 of a 61 km pipeline project from Bethungra to Wagga Wagga. The survey methodology was designed to only target specific portions of landscapes where archaeological evidence was most likely to be found, resulting in 18 transects being surveyed. A total of 36 Aboriginal sites (30 artefact scatters and 6 isolated artefacts) were recorded along the propose pipeline route, including 24 previously unrecorded sites. The majority of sites identified during the survey were associated with, or in close proximity to an ephemeral water source with over two thirds of sites located within 50 m of a water source.

In 2012, OzArk undertook an assessment for the Wagga Wagga to Junee 132kV electricity transmission line (OzArk Environmental and Heritage 2019, p.41). The assessment focused on surveying the proposed transmission line easement with a 40 m buffer on each side. Several previously recorded AHIMS sites were located during the assessment including AHIMS# 50-5-0012 (Harefield Modified Tree); AHIMS# 56-1-0043 (East Bomen 1 and AHIMS# 56-1-0120 (APA36).

In 2014 Umwelt undertook excavations of the Wagga Wagga Courthouse in 2013 as part of the courthouse upgrades during which 23 artefacts were recovered from 18 test pits (Umwelt 2014). Following the subsurface testing program, the location was recorded as site Wiradjuri 1 (W1) and consisted of flakes, broken flakes and flaked pieces all manufactured from quartz. During the consultation process it was noted that the local Aboriginal community associated the location with a burial ground, although no human remains where identified during excavations.

In 2016 NGH investigated an area for the extension of Brunslea Park estate, 9.5 km south-east of Wagga Wagga (NGH 2016b). Nineteen stone artefacts, a single piece of mussel shell, pieces of burnt clay and eight lithic fragments were recovered from 40 test pits with an additional 17 surface artefacts recorded across the area. The majority of the subsurface artefacts were recovered from spit 2 (5-15 cm) below the surface. Flakes or portions of flakes were the dominate artefact typology for both the surface and subsurface finds with only a single core recovered. Quartz was the common lithology with the exception being a lithic fragment of a volcanic material. A single surface find flake

was also recorded as having retouch but it was not assigned a formal tool type, though it was noted to be similar in shape to a tula adze. Following the subsurface testing program, the location was recorded as sites Brunslea Park AS7 and Brunslea Park AS8, characterised by low density artefact scatters on low gradient slopes and along the crest of a broad ridgeline. The average density was 1.9 artefacts/m^2 with a leak of 28/m^2 in one test pit. The sites were deemed to have low scientific value however it was considered likely that the development area as a whole was likely to contain Aboriginal heritage objects and an AHIP was recommended for the entire proposed development area. The excavation results in this area supported Kelleher and Nightingale Consultants' (2008) predictive model of areas of archaeological sensitivity in the Wagga Wagga area and that archaeological sensitivity in the area will increase in areas with a gentle slope or raised above regular flood levels.

4.6. Bomen Archaeological Context

The following are summaries of those archaeological survey reports that have been completed in the Bomen area which have been primarily driven by development and infrastructure requirements.

In 1997 HLA Envirosciences completed an assessment for the proposed expansion of an effluent irrigation system at the Bomen Abattoir (HLA-Envirosciences Pty Ltd 1997). HLA examined the alignment of a proposed pipeline, holding dam and irrigated paddocks. HLA located a single isolated silcrete artefact (ISF BOM1), with grinding on one surface, in the upper floodplain area of a paddock devoid of any source material.

In 1992 Smith completed a preliminary archaeological survey for the proposed Optus fibre optic cable route from Albury to Cootamundra, passing through Wagga Wagga and along the western boundary of the current assessment area (Smith 1992). The purpose of the preliminary survey was to identify areas of archaeological sensitivity along the entire proposed cable route and recommend areas for further heritage investigation. In the Wagga Wagga region, these included the flats, banks, terraces and anabranches of the Murrumbidgee River and ephemeral creek lines. These areas have high potential to contain scarred trees, burials, artefact scatters and subsurface artefacts (Smith 1992, p.9). Recommendations suggested avoiding all trees along the proposed route, including damage to root systems, a systematic foot survey of any areas of archaeological potential, subsurface testing of areas of alluvial deposit along creek banks, creek flats and terraces and the relocation of registered sites of Aboriginal cultural heritage.

In 1998 NOHC surveyed an area for a proposed power plant site at Bomen identifying three Aboriginal sites, including the axe manufacturing and quarry site East Bomen 1 (AHIMS# 56-1-0043), also known as the Bomen Axe Quarry, and two isolated finds (as cited in Go Green Services 2011). The axe quarry itself is situated on the crest of a ridge line that consists of exposures of granite and basalt, approximately 500 m south east of the current assessment area. The basalt material was utilised for the manufacture of axe blanks, which were most likely carried off-site for final production. There were distinct working areas, with primary flaking areas close to the basalt outcrop and secondary working areas located a little further away (as cited in Go Green Services 2011, p.8). The site has been identified as highly significant to the local Aboriginal community and of high archaeological significance. The area has now been declared an Aboriginal Place under the NPW Act (Go Green Services 2011).

In 2011 Go Green Services completed an assessment report for the Aboriginal Place Nomination for the Bomen Axe Quarry and Manufacturing Site located south east of the Proposal Area (Go Green Services 2011). The report assessed the significance of the axe quarry based on the nomination made by the Waagan Waagan Project Group. The Bomen Axe Quarry was identified in 1998 during

an archaeological survey for a proposed power plant site. The surface hard rock quarry and axe manufacturing site is considered to have high scientific, educational and cultural value to the local Aboriginal community. The site is both rare and representative and large containing surface basalt rock, a distribution of stone cores, flakes and working areas covering approximately 1 ha (Go Green Services 2011, p.16). Aboriginal quarries are sites where people either took stone from the ground surface or rocky outcrops to make chipped or ground stone tools for many different purposes or dug for ochre. Sites, like Bomen, where stone tool manufacture occurred are called “reduction” sites.

In 2013 Go Green Services completed an assessment report for the Aboriginal Place Nomination for the Bomen Lagoon. The report assessed the significance of the lagoon based on the nomination made by the Waagan Waagan Project Group. The Bomen Lagoon was noted to be a valuable fishing resource place (Go Green Services 2013, p.1). During the earliest European exploration of the area by Captain Charles Sturt, the lagoon was the site of the first contact made between the expedition party and the Wiradjuri inhabitants of the area. In recent times, the lagoon has been valued by the local Aboriginal community as a recreation and learning place, particularly in relation to native birdlife, cultural and aesthetic values. The Bomen Lagoon is also located on part of the Bomen Travelling Stock Reserve. The lagoon contains an artefact scatter (AHIMS# 56-1-0011), recorded in 2002, on the original foreshore that would have existed during Wiradjuri occupation. The site contains mostly quartz flakes on the southern edge of the lagoon where a flood plain drainage channels intersects (Go Green Services 2013, p. 21). The area also contains traditional Wiradjuri medicinal and food resource plants, including old man weed and the bush plant nardoo (Go Green Services 2013, p.8). The presence of these plants suggests that short term campsites would have existed on the fringes of the lagoon (Go Green Services 2013, p. 21). Evidence of Aboriginal occupation in the low sandhills near the lagoon and the nearby Eunonyhareenyha homestead also demonstrate the Aboriginal occupation of this area, including former cooking oven sites, which remained present until at least the 1960s. The sandhills would have also been ideal for camping, meeting and burial sites (Go Green Services 2013, p. 21).

In 2014 OzArk carried out a desktop due diligence assessment for a proposed telecommunications tower as part of the National Broadband Network (NBN) in Bomen (OzArk 2014). While the exact location for the tower was not known at the time OzArk undertook the assessment, the general locality was Lot 22, on the southern side of East Bomen Road, near the access corridor for the Bomen Axe Quarry Aboriginal Place. Their assessment did not include a field component, but they assessed the location as having low archaeological potential due to the landform and previous disturbance from agricultural and road construction activities.

In 2016 NGH (NGH 2016c) conducted a due diligence assessment for the Bomen Solar Energy development. A single artefact scatter was recorded (Bomen Solar ISO1), consisting of two quartz flakes. The site was in pastoral land, approximately 90 m from a water source, within an area of high archaeological sensitivity within the northern Murrumbidgee floodplain (Kelleher Nightingale Consulting 2008). The area of archaeological sensitivity was recommended for subsurface testing if it could not be avoided by the proposed development. The testing was completed in 2018 by Access Archaeology & Heritage. A full due diligence report was not completed, as it was deemed necessary to undertake an ACHA for the proposed development.

In 2017 AECOM Australia Pty Ltd (AECOM conducted an Aboriginal and historic archaeological assessment for the Bomen Solar Farm (AECOM Australia Pty Ltd 2010). A total of nine sites were recorded during the field survey which included two isolated finds, two artefact scatters and one potential scarred tree. A further eight sites were also recorded by the RAPs during the survey. The field survey also located five previously recorded AHIMS sites. Following the survey, AECOM identified the likelihood of PADs by dividing the proposed Solar Farm area into nil, low and high

archaeological likelihood categories. A test excavation program was undertaken along an unnamed creek line at the eastern edge of the Solar Farm boundary and consisted of 20 test pits being excavated. During the field survey a total of 36 quartz artefacts were recorded with most located within 200 m of a watercourse or on lower slope landforms. The test excavation recovered a total of 29 artefacts with quartz the predominant raw material followed by fine grain silcrete. All the subsurface artefacts were noted to have been recovered from the test pits located on the western side of the creek line.

In 2018 Access Archaeology & Heritage (Access Archaeology) completed an ACHA for Stage 1 of the Wagga Wagga Solar Farm at Bomen (Access Archaeology & Heritage 2018). The ACHA and subsurface investigation undertaken by Access Archaeology was in line with the recommendations of the due diligence assessment initially undertaken in 2016 by NGH. Two artefact scatters, two isolated finds and two PADs were recorded in association with ephemeral creek lines and the junction of the northern border of the Murrumbidgee floodplain (Access Archaeology 2018, p. 36). The PADs were additional areas of sensitivity that were refined from the 2016 due diligence assessment. The subsurface testing focused on the two PAD areas (WWSF-PAD1 and WWSF-PAD2) and areas of sensitivity associated with an extensive artefact scatter along the creek line (WWSF-1), isolated find (WWSF-3) and a drainage line. A total of 55 test pits were manually excavated across these four areas, with 45 subsurface finds being recovered. Most of the subsurface material was recovered from spit 1 (n=15) or spit 2 (n=22), although small amounts of material were identified in both spit 3 (n=5) and spit 4 (n=3). Quartz was the dominant lithology within the subsurface assemblage, with one fine-grained volcanic artefact recovered. Moderate revisions to the KNC modelling (2008) were proposed based on these results. Higher archaeological sensitivity was identified in association with the higher order water courses and raised, level well-drained ground at the boundary of the northern Murrumbidgee floodplain. This sensitivity was again increased if these areas coincided with the junction of one or more creek or drainage lines (Access Archaeology 2018, p. 39) Areas of lower sensitivity were found further away from these water sources. Level terraces, spurs and rises close to low order drainage lines were assigned low to moderate archaeological sensitivity (Access Archaeology & Heritage 2018, p.39).

In 2019 NGH completed a due diligence and subsequent ACHA assessment, including test excavations of five PADs, for the Wagga Wagga Solar Farm South at Bomen (NGH Pty Ltd 2019a, 2019b). A total of four artefact scatters and five isolated artefacts were identified in fence line and track exposures along a north to south running ridgeline, a gentle slope, flat and spur associated with minor drainage lines and a hill crest. At the completion of the test pitting programme, which included the manual excavation of 49 test pits, a further four subsurface artefact scatters had been identified (NGH Pty Ltd 2019b, p.43). Most of the artefacts were manufactured from quartz and one hammerstone from basalt. The results of the investigations were in line with those found in the northern solar farm studies (Access Archaeology & Heritage 2018; NGH Pty Ltd 2019b).

4.7. Previous Studies Within the Proposal Area

The previous archaeological investigations and studies that intersect the Proposal Area are shown in Figure 4-4.

In 2008 Kelleher Nightingale Consultants (KNC) completed an ACHA as part of the Wagga Wagga City Council's Local Environmental Study (LES) to implement the strategic planning of the Wagga Wagga Spatial Plan 2007 (Kelleher Nightingale Consulting 2008). As part of this study, environmental assessments were undertaken for eight sites which were subject to rezoning. These included Lloyd, Bomen, Estella West, Edison Road, Hammond Avenue, Copland Street, Boorooma East and Moorong Street. The Bomen study area included the current Proposal Area. One isolated find (B IF1) was identified in the Bomen study area with low to moderate sensitivity of midslopes and moderate to high on outcrops, crests, flats and associated drainage lines. KNC determined that areas of low to moderate sensitivity occurred on crests and spurlines, particularly those associated with granite outcropping (moderate). Upper, mid- and lower slopes were also identified as having low to moderate sensitivity. Moderate to high archaeological potential occurred on undulating or flat colluvial deposits and in associated drainage lines. High archaeological sensitivity was given to areas of granite outcropping on upper slopes and crests (Kelleher Nightingale Consulting 2008, p.20). A summary table taken directly from the KNC study of these sensitive areas is provided in Table 4-3. The extrapolation of the archaeological sensitivity mapping of the Bomen study area produced by KNC is provided in Figure 4-5 below.

Table 4-3 Bomen study area archaeological sensitivity (KNC 2008, p.16).

Landform Type	Archaeological sensitivity	Description
Ridgeline crest	Moderate	Less exposed to prevailing winds, increased sensitivity with proximity to drainage lines/terraces
Granite outcrop along upper slope/crest	High	Increased sensitivity where potential artefact raw material present such as quartz
Upper/Mid hillslope	Low	Less possibility of intact archaeological deposits increased sensitivity with gentler slopes and proximity to open drainage lines/terraces
Lower hillslope	Low to Moderate	Increased sensitivity in association with alluvial/colluvial deposits associated with drainage lines
Undulating/Flat colluvial deposits	Moderate to High	Increased sensitivity in association with proximity to drainage lines/terraces
Drainage line and associated alluvial/colluvial deposits	Moderate to High	Increased sensitivity where gentle slopes or raised ground above regular floods

Figure 4-4 Previous archaeological investigations and studies that intersect the Proposal Area.

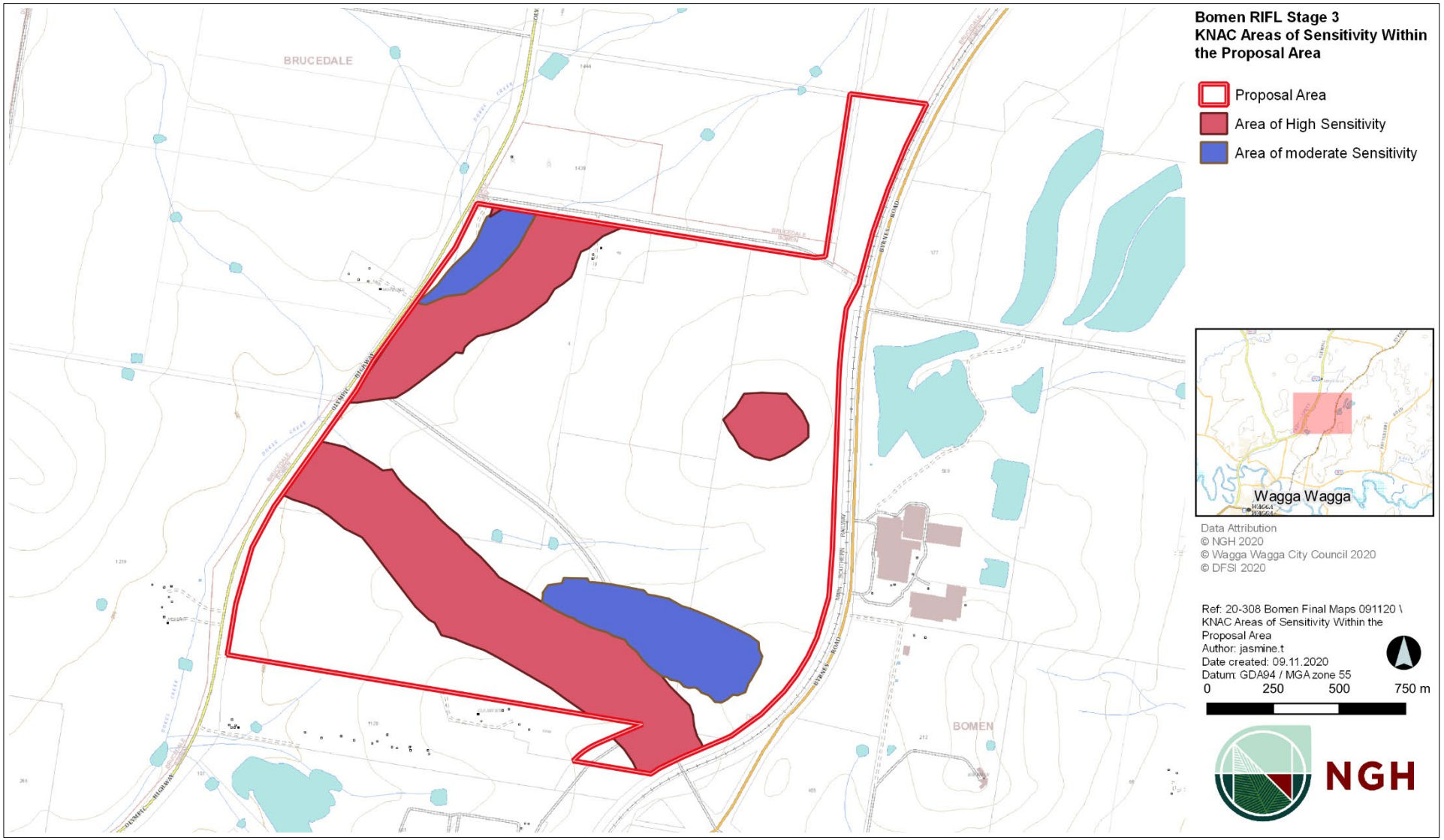

Figure 4-5 Areas of archaeological sensitivity as mapped by KNC for the Bomen area within the Proposal Area.

In 2015 NGH conducted a due diligence assessment for Stage 1 of the proposed Riverina Intermodal Freight and Logistics (RIFL) Hub at Bomen Park, which falls within the current Proposal Area (NGH 2015). Three isolated artefacts (Bomen RIFL IF1, Bomen RIFL IF2, and Bomen RIFL IF3) were identified within disturbed contexts. They also identified two PADs and areas of archaeological sensitivity that were recommended for subsurface testing to establish the archaeological potential and extent of sites if these areas could not be avoided by the proposed development

In 2016 NGH was contracted by Council to conduct subsurface testing and prepare an Aboriginal Cultural Heritage Assessment Report (ACHAR) for the proposed enabling works for the Riverina Intermodal Freight and Logistics (RIFL) hub Stage 1 and part of Stage 2 at Bomen which is within the current Proposal Area (NGH 2016a). This is in line with the recommendations provided in a Due Diligence (NGH Environmental 2015). In addition to the subsurface investigation for Stage 1 of the Bomen RIFL hub, Council requested a select part of Stage 2 for the construction of the rail infrastructure also be assessed. This included an 80-ha area adjacent to the proposed railway line. The survey and subsurface investigation for this project was carried out as part of a broader Review of Environmental Factors (REF) assessment being undertaken by NGH Environmental. In addition to the three isolated artefacts (Bomen RIFL IF1, Bomen RIFL IF2, Bomen RIFL IF3) previously identified during the due diligence survey, the assessment recorded an isolated surface find (Bomen RIFL IF4), a subsurface isolated find (Bomen RIFL IF5), four artefact scatters with subsurface deposit (Bomen RIFL AS1, Bomen RIFL AS2, Bomen RIFL AS3 and Bomen RIFL AS4) and a scarred tree (Bomen RIFL ST1). Field inspection of the landscape deemed the majority of the area to have negligible archaeological potential however two additional areas of archaeological sensitivity previously identified by KNC (2008) were identified and included in the subsurface test excavation program. A total of 73 test pits were excavated across eight areas of the Stage 1 and Stage 2 RIFL Proposal Areas, 14 contained stone artefacts with a total of 28 artefacts recovered. Typical of other assemblages in the area, the artefacts were predominantly quartz and no retouched items were found.

The subsurface testing programme undertaken by NGH found there were fewer artefacts than expected distributed throughout the proposed Bomen RIFL hub Stage 1 and Stage 2 development areas with only discreet low-density artefact scatters and isolated finds recovered. It was noted that it was clear that the artefacts and site distribution was not restricted to a single or dominate landscape with artefacts both absent and present across similar landforms tested within the project area with a number of the areas investigated containing no surface or subsurface cultural material. The results indicated that the area in general was traversed and used occasionally by small groups of Aboriginal people. While the presence and absence of cultural material was not restricted to a single landform there does appear to be a dominance of artefacts present along ridgeline crests and the upper/mid slopes in proximity to the drainage depressions. NGH noted that the KNC (2008) predictive model for the Bomen area which indicated that drainage lines have high to moderate archaeological sensitivity should be revised given that it is apparent from the results of the testing that the high sensitivity attributed to the drainage depressions by KNC was not completely accurate. The results of the testing programme have shown the broad, open depressions characteristic of this local area are not water courses in as much as they do not hold flowing water or pools of water, even after considerable rain. KNC attribute high sensitivity based on the availability of water but in the current landscape water was not readily available in the depressions and the testing program showed a lack of sites. It was concluded by NGH that should areas previously mapped as creek lines be observed to be drainage depressions in the wider undulating landscape, the archaeological sensitivity of that particular landform should be re-evaluated. The subsurface testing program undertaken by NGH identified that the generally level crests and low gradient upper hillslopes in the Bomen area have moderate archaeological sensitivity rather than moderate to low as predicted by KNC's modelling.

The research potential of the sites located during the assessment was considered to be generally low, as the scientific value for further research noted to be limited. The scarred tree Bomen RIFL ST1 was noted to have high value as a representative example of scarred trees in the Bomen area and it was noted to also be highly regarded by the local Aboriginal community. Given this the scarred tree Bomen RIFL ST1 was recommended to be avoided by development. The ACHA recommended that the Council applies and receives an AHIP to allow harm to the Aboriginal archaeological sites and objects identified within the proposed development area. The AHIP application was noted to likely to be sought in two stages, the first for the road construction and the second for the rail line. Each AHIP was noted that it should seek to cover the entire footprint of each component of the development.

In 2018 NGH was contracted by Council to complete an ACHA to focuses solely on the RIFL Stage 2 works for the construction of the rail infrastructure that also includes an 80 ha area adjacent to the proposed railway line (NGH 2018a). The development of the Bomen RIFL hub Stage 2 would involve ground disturbance that would impact on two Aboriginal heritage sites, Bomen RIFL IF4 and Bomen RIFL ST1 which were recorded during the previous assessment of the area. While various options to redesign the master rail siding to avoid the scarred tree where investigated Council had determined that the scarred tree cannot be avoided as recommended in the initial ACHAR for the Bomen RIFL (NGH 2016a). Given the proposed impact to the scarred tree additional consultation with the same registered parties was undertaken by Council and NGH in 2017 and 2018. Over the course of the consultation a few options for the relocation of the tree were discussed however it became clear that the consensus amongst the respondents was that the preferred location of the salvaged tree was as close to the original site as possible. The Bomen Axe Quarry (AHIMS# 56-1-0043) precinct was deemed to be the most suitable location and acceptable to the Aboriginal community. to maintain its significance in the wider Bomen cultural landscape. Given the additional consultation that was undertaken with the Aboriginal community regarding the impact to the scarred tree site Bomen RIFL ST1 it was recommend that Council applies and receives an AHIP to allow harm to the Aboriginal archaeological sites and objects identified within the proposed development area.

In 2019 OzArk completed an ACHA and historic heritage assessment for the Wagga SAP (OzArk Environmental and Heritage 2019). The Wagga SAP investigation area covered approximately 4,500 ha located to the north of Wagga Wagga. A pedestrian survey of the assessment area was undertaken by OzArk with representatives from two of the Registered Aboriginal Parties. During the survey, three Aboriginal sites were recorded: Wagga SAP IF-01 (AHIMS# 56-1-0609), Wagga SAP OS-1 (AHIMS# 56-1-0621), and Wagga SAP ST-01 (AHIMS# 56-1-0620). These sites were an artefact scatter and an isolated artefact in disturbed contexts, and one culturally modified tree. OzArk conducted a survey over a large portion of the current Proposal Area which falls within the OzArk survey areas 4 and 5 as shown in Figure 4-6. The pedestrian transects were noted to be undertaken by four people spaced at approximately 25 to 30 m apart and the visibility of the survey areas 4 and 5 which are within the Proposal Area are shown in Plate 4-1 and Plate 4-2.

While the locations of a number of the sites initially recorded by NGH for the RILF were inspected, no stone artefacts were relocated with a number of the sites noted to have been where Merino Road has since been constructed. Despite still being listed on AHIMS as valid, according to the RAP site officers, these sites have been salvaged and / or destroyed under an AHIP for the RILF Stage 1 works. None of the sites identified by Oz Ark were within the current Proposal Area and no areas of PAD were recorded. OzArk noted the results of the survey conformed to the predictive model as both sites were located on lower slopes and undulating flats in proximity to Dukes Creek. The three sites identified were in disturbed contexts and did not have any associated PADs. The low density

of artefacts and sites recorded inside the survey areas was noted to be reflective of the high levels of prior disturbance due to land use, as well as low ground surface visibility in some areas due to ground cover such as crops.

OzArk (2019) also noted there were areas in the Regional Enterprise for the Wagga SAP that warranted further assessment. This included areas which had not previously been surveyed, developed and/or heavily modified and have archaeological potential. The high number of sites recorded east of Byrnes Road, and the few recorded west of Byrnes Road, were noted to indicate the overall investigation area had archaeological potential. Given this, OzArk mapped areas recommended for further heritage assessment prior to development of the approval process. The current Proposal Area is intersected by a large area that was recommended by OzArk for further heritage assessment as shown in Figure 4-6.

Plate 4-1 View of OzArk (2019) Survey Area 4 which is within the Proposal Area.

Plate 4-2 View of OzArk (2019) Survey Area 5 which is within the Proposal Area.

4.8. Summary of Aboriginal Land Use

The results of these previous archaeological surveys in Bomen and the Wagga Wagga region show there are sites present in a range of landforms. However, there does appear to be a pattern of site location relating to the presence of potential resources for Aboriginal use. The quarry site known as the Bomen Axe Quarry Aboriginal Place was utilised due to the occurrence of useable raw material in the form of stone, which was an essential material for Aboriginal people. Other sites in the area tend to be within close proximity to water sources. The common characteristic of all sites identified and those that have been subject to subsurface testing is that the density of sites is generally relatively low. There have not been any high-density sites identified.

The Aboriginal land use of the Wagga Wagga area is little understood, as few in-depth studies have been completed and no sites have been dated. However, it is possible to ascertain that proximity to raw materials and resources was a key factor in the location of Aboriginal sites. It is also reasonable to expect that Aboriginal people ventured away from these resources to utilise the broader landscape, but the current archaeological record of that activity is currently limited.

Figure 4-6 OzArk (2019) areas recommended for further heritage assessment

4.9. Archaeological Site Location Model

KNC (2008) developed a predictive model of site location and distribution based on landscape features in the Bomen area. They identified that different landform areas had slightly different archaeological sensitivities. In general, spur and ridge crests had moderate archaeological sensitivity, lower, mid and upper hillslopes had low to moderate archaeological sensitivity, areas of undulating/flat colluvial deposits and drainage lines associated with alluvial/colluvial deposits had moderate to high archaeological sensitivity and areas with granite outcrops along crest or upper slopes also having high archaeological sensitivity.

The subsurface testing programme undertaken by NGH (2016a) added to the existing KNC (2008) archaeological model of the Bomen area by ground truthing and undertaking a programme of subsurface testing across a range of landforms. NGH found there were fewer artefacts than expected distributed throughout the proposed Bomen RIFL hub Stage 1 and Stage 2 development areas with only discreet low-density artefact scatters and isolated finds recovered. While the presence and absence of cultural material was not restricted to a single landform NGH concluded that there appears to be a dominance of artefacts present along ridgeline crests and the upper/mid slopes in proximity to the drainage depressions. NGH noted that the KNC (2008) predictive model for the Bomen area that indicated drainage lines have high to moderate archaeological sensitivity should be revised as the high sensitivity attributed to these drainage depressions in the modelling is not completely accurate. This is because the broad, open depressions characteristic of the local area do not hold flowing water or pools of water, even after considerable rain. KNC attribute high sensitivity based on the availability of water in the Bomen landscape; however, water was not readily available in these depressions and the testing program undertaken by NGH for the Bomen RIFL hub showed a lack of high-density sites in the area. Consequently, the sensitivity modelling for Bomen should only attribute defined major water courses, such as Dukes Creek, as creek lines and not associated unnamed drainage depressions. Generally level crests and low gradient upper hillslopes in the Bomen area are also noted to have moderate archaeological sensitivity rather than moderate to low as predicted by KNC's modelling.

Based on the previous archaeological investigations and knowledge of Wiradjuri cultural practices and traditional activities it is possible to predict the likely archaeological site types that may occur within the Proposal Area. These are outlined below.

Stone artefact scatters – representing camp sites can occur across the landscape, usually in association with some form of resource or landscape unit such as spur and ridge crests. Within the Bomen area, these landforms do occur, but they are typically broad, and extensive in area. While the use of such features by Aboriginal people is likely, the broad nature of them in this area would inhibit the concentration of cultural activity and consequently, the concentration of stone artefacts. Artefact scatters, if they do occur, are more likely to be characterised as low-density scatters across broad landforms. Artefact concentrations are more likely to occur where the terrain allows for this such as narrow crest or areas of limited level ground.

Likewise, smaller water bodies, such as ephemeral creeks can also be a focus of Aboriginal occupation, but only during the period in which they may flow. The close proximity of Dukes Creek in the western portion of the Proposal Area and the occurrence of broad landscape features within the Proposal Area suggests low density artefact scatters are likely to occur, possibly as surface and subsurface sites.

Scarred Trees – these require the presence of old growth trees and are likely to be concentrated along major waterways and around swamp areas. There are few mature trees remaining in the Proposal Area and this feature is therefore unlikely to occur, however a single previously recorded scar tree is noted to be present within previously assessed areas of the Proposal Area.

Isolated Artefacts – are present across the entire landscape, in varying densities. As Aboriginal people traversed the entire landscape for thousands of years, such finds can occur anywhere and indicate the presence of isolated activity, dropped or discarded artefacts from hunting or gathering expeditions or the ephemeral presence of short-term camps. It is therefore likely that this site type will occur.

Potential Archaeological Deposit (PAD)-Areas assessed as having the potential to contain Aboriginal objects. PADs are commonly identified on the basis of landform types, surface expressions of Aboriginal objects, surrounding archaeological material, disturbance, and a range of other factors. It is possible that this feature will occur.

Hearths/Ovens – are identified by burnt clay used for heat retainers. None are recorded in the district, but they could occur either independently or in association with other Aboriginal cultural features such as campsites, often in association with resource locations. Such places are not obvious within the Proposal Area and this feature is therefore unlikely to occur.

Stone resources – are areas where people used natural stone resources as a source material for flaking. This requires geologically suitable material outcropping so as to be accessible. The Proposal Area contains no natural outcropping stone of suitable material.

Shell Middens – are the agglomeration of shell material disposed of after consumption. Such places are found along the edges of significant waterways, swamps and billabongs. The Proposal Area contains no significant waterways, swamps and billabongs and this feature is therefore unlikely to occur.

Burials – are generally found in elevated sandy contexts or in association with rivers and major creeks. No such features exist with the Proposal Area and therefore such sites are unlikely to occur.

In summary, the topography and landscape features within the proposed Bomen Stage 3 development area indicate that this area would likely have been part of the Wiradjuri landscape, particularly with the Axe Quarry in close proximity. Nonetheless, given that Aboriginal people have lived in the region for tens of thousands of years, there is potential for archaeological evidence to occur throughout the area, this is most likely to be in the form of stone artefacts.

4.10. Comment on Existing Information

The AHIMS database is a record of those places that have been identified and had site cards submitted within NSW. It is not a comprehensive list of all places in NSW as site identification relies on an area being surveyed and on the submission of site forms to AHIMS. There are likely to be many areas within NSW that have yet to be surveyed and therefore have no sites recorded. However, this does not mean that sites are not present.

Within the Bomen and Wagga Wagga area there have been several archaeological investigations and studies. The information relating to site patterns and geomorphic context are therefore to some degree understood however in regard to their age little is known. The robustness of the AHIMS survey results are therefore considered to be only moderate for the present investigation. There are likely to be sites that exist that have yet to be identified although the scale of farming development

has altered the natural landscape in some places. This activity has also disturbed the archaeological record and there are unlikely to be many places that retain in situ archaeological material due to the scale of agricultural, pastoral and urban development. The current study in combination with the previous studies of the Proposal Area provides the most comprehensive assessment of this locality and therefore the results outlined in this report are the most thorough and up to date available.

With regard to the limitations of the information available, archaeologists rely on Aboriginal parties to divulge information about places with cultural or spiritual significance in situations where non archaeological sites may be threatened by development. To date, we have not been told of any such places within the Bomen Stage 3 development area, though registered Aboriginal stakeholders have noted that the Bomen Axe Quarry Aboriginal Place is nearby. There is always the potential for such places to exist but insofar as the current proposal is concerned, no such places or values have been identified.

5. ARCHAEOLOGICAL INVESTIGATION RESULTS

5.1. Survey Strategy

The survey strategy objective was to cover the entirety of the proposed Bomen Stage 3 area outside the areas which currently have active AHIPs over them or which have previously been subject to survey with the Aboriginal community by NGH (2016a; 2018a) and OzArk (2019). Consequently, the survey strategy was devised to walk a series of transects across central portion of the Proposal Area which had not previously been subject to any survey to achieve maximum coverage. Because the central portion of the Proposal Area was generally disturbed and cleared, transects were spaced evenly with the survey team spread apart at 20 to 30 m intervals, walking in parallel lines. At the end of each transect, the team would reposition along a new transect line at the same spacing and walk back on the same compass bearing. The survey team consisted of six persons which allowed a 180 m wide tract of the Proposal Area to be surveyed with each transect. The nature of the Proposal Area made this an ideal survey strategy allowing for maximum survey coverage and opportunity to identify any heritage objects.

The survey strategy was amended in paddocks which during the fieldwork had knee to waist high crops, grasses and Patterson's Curse vegetation. At the request of the RAPs, the survey team did not survey these paddocks due to nil visibility and safety concerns raised by the RAPs at the time.

Any areas of remnant vegetation were deemed to have high archaeological potential for mature trees within the Proposal Area and were inspected for any evidence of Aboriginal scarring (Long 2005). Native paddock trees were also inspected for any evidence of Aboriginal scarring (Long 2005). No rock outcropping is present within the Proposal Area.

Due to the low visibility across the Proposal Area any exposures or areas of visibility were also targeted during the survey.

NGH believes that the survey strategy was comprehensive and the most effective way to identify the presence of Aboriginal heritage objects within the Proposal Area. Discussions were held in the field each day during the survey between the archaeologists and Aboriginal community representatives to ensure all were satisfied and agreed with the spacing and methodology.

The landforms within the Proposal Area have been determined based on topographic identification through the inspection of contour data and Digital Elevation Modelling (DEM) of the Proposal Area and previous assessment within the Proposal Area. Five broad landforms were identified which are shown in Figure 3-1 and listed below:

- Spurs and hill crests;
- Slopes;
- Low slopes;
- Open depressions and drainage lines; and
- Disturbed road corridors.

The survey fieldwork was undertaken by the team which consisted of two archaeologist and four Aboriginal community representatives over two days on 13th to the 14th of October 2020. During the survey notes were made about visibility, photographs were taken, and any possible Aboriginal objects or features identified were inspected, assessed, and recorded if deemed to be Aboriginal in origin.

5.2. Survey Coverage

The Proposal Area consisted primarily of cleared and cropped paddocks that had been subject to farming and grazing activities. Survey transects were undertaken on foot and tranverse the entirety of the area within the Proposal Area which had been mapped by OzArk as requiring further assessment as it had not been subject to any previous survey. Where possible, some areas that had previously been surveyed by NGH (2016a, 2018a) and OzArk (2019) were also surveyed.

The survey was noted to be impeded at times by dense grass and at times knee to waist height crops and weeds however a number of exposures were present across the Proposal Area and all landforms. Areas of increased visibility consisted of disturbed exposures on tracks and roads, fence lines, dam banks, firebreaks, and patches of bare ground. On average, visibility within the surveyed area was low, averaging between 5 to 15%, with visibility in exposures averaging between 40 to 80%.

In areas where the visibility was determined to be nil due to knee to waist height crops and weeds the survey strategy was amended at the request of the RAPs onsite due to safety concerns and these areas were not survey. However, all areas which were not surveyed due to safety concerns by the RAPs during the current assessment have previously been subject to intensive survey by OzArk (2019) with Aboriginal community representatives in 2019 when there was better visibility. Consequently, NGH has determined that while some areas were not surveyed in the current assessment these areas have been sufficiently surveyed and assessed by past surveys by archaeologist with Aboriginal community representatives with no Aboriginal objects or areas of PAD identified. Further and/or additional survey of the areas not walked during this survey is determined not to be required given the entirety of the Proposal Area has been surveyed using a combination of the current survey transects and the previous surveys undertake by NGH (2016a, 2018a) and OzArk (2019) with Aboriginal community representatives.

Table 5-1 below shows the calculations of effective survey coverage and Plates 5-1 to 5-4 below, show examples of the transect landforms and visibility within the Proposal Area. Table 5-1 only includes the calculations of the survey completed during this assessment by NGH however Figure 5-1 shows the coverage of previous survey transect for other recent studies within the Proposal Area.

Over the course of the current survey, approximately 20 km was walked across the Proposal Area by the survey team. Allowing for an effective view width of 5 m for each person and given the variability in the ground visibility across the Proposal Area, overall, the survey effectively examined 8.1% of the Proposal Area which was assessed during this survey investigation.

It is considered by NGH that the survey of the Proposal Area during this investigation had sufficient survey coverage, especially given the consideration of the previous surveys undertake by NGH (2016a, 2018a) and OzArk (2019) with Aboriginal community representatives within the Proposal Area.

The poor visibility within the areas surveyed during the current assessment was however noted to have likely impeded the ability of the survey team to identify the likely presence of low density and isolated surface artefacts.

Plate 5-1 View north lower slopes with low visibility

Plate 5-2 View of lower slopes within recently harvested paddock that had increased ground visibility.

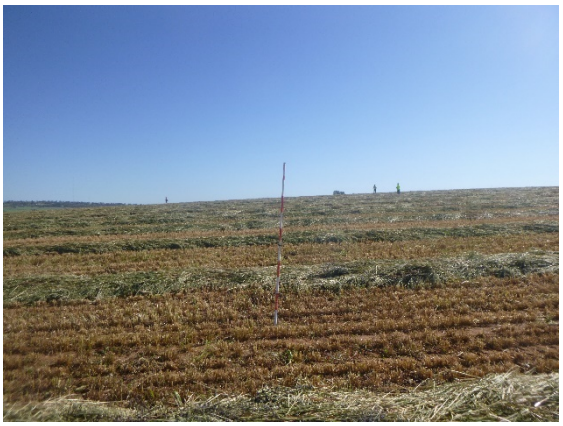

Plate 5-3 View from lower slope up to slope

Plate 5-4 View from lower slope down to open depressions and drainage lines near Duke Creek.

Table 5-1 Summary of effective survey coverage for the Bomen Stage 3 Proposal Area

Landforms	Number of Survey Transect	Exposure type	Area ha Surveyed in 2020 by NGH	Surveyed area (length m x width m)	Survey Area m^2	Visibility	Effective coverage (area x visibility) m^2	Area surveyed (ha)	% of Proposal Area effectively surveyed by NGH in 2020	Survey result
Low slopes	20	Bare ground, gate entrances, fence line and vehicle tracks.	124	14,300 x 30	858,000	15%	128,700	12.87	10.4	1 x previously recorded AHIMS sites (unable to be relocated)
Open depressions and drainage lines	3	Bare ground, gate entrances, fence line and vehicle tracks.	20	1,700 x 30	51,000	15%	7,650	0.76	3.8	1 x Dukes Creek PAD 1
Slopes	7	Bare ground, fence line and vehicle tracks.	24	2,500 x 30	75,000	15%	11,250	1.1	4.5	Nil
Spurs and Hill crests	6	Bare ground, gate entrances, fence line and vehicle tracks.	24	2,000 x 30	60,000	15%	9,000	0.9	3.7	2 previously recorded AHIMS sites (unable to be relocated)
Disturbed Road Corridor	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7 x previously recorded AHIMS sites (unable to be relocated)
Total	**36**	**N/A**	**192**	**20,500 x 30**	**225,900**	**15%**	**156,600**	**15.63**	**8.1**	**10 x previously recorded sites** **1 x PAD**

Figure 5-1 Survey Coverage during this and previous assessments. (Note mapped transects are for two archaeologists, Aboriginal participants not mapped and OzArk data is based on georeferenced information from OzArk 2019 (OzArk 2019 Figure 6-1: 53).

5.3. Survey Results and Discussion

The area surveyed during this assessment was primarily characterised by broad, low gradient slope landforms with low visibility with no specific landforms present which would have concentrated Aboriginal occupation.

Nil Aboriginal objects were recorded during the assessment. NGH consider that the low visibility encountered during this assessment likely hindered the ability of the survey team to identify any low density and isolated Aboriginal objects that may have been present on the ground surface.

Taking into consideration the results of all previous surveys and testing programmes within the Proposal Area a single area of PAD, Dukes Creek PAD 1, was identified which is located on the western side of Dukes Creek along the western boundary of the Proposal Area near the Olympic Highway. Dukes Creek PAD 1 is an elevated flat area which extends for approximately 450 m in length and is 50 m wide, adjacent to Dukes Creek just north of the intersection of Merino Street and the Olympic Highway, as shown in Figure 5-2.

No other areas of PAD were identified by NGH in the Proposal Area that warrant subsurface testing. This was determined based on consideration of the results of the previous testing programme of works undertaken by NGH (2016a) within the Proposal Area which sampled all landforms present including crest, spurs, slopes, lower slopes and drainage depressions. As elevated flats adjacent to named water courses as a landform have yet to be tested within the Proposal Area a limited programme of subsurface testing was determined to be warranted to establish the true archaeological potential, significance and extent of sites within this landform.

The OzArk (2019) survey examined areas of elevated ground close to Dukes Creek and areas of spur crest in the south western portion of the Stage 3 Proposal Area which was not resurveyed during the current assessment due to nil visibility in paddocks which during the fieldwork had knee to waist high crops, grasses and Patterson's Curse vegetation. However, OzArk (2019) did not identify any sites or areas of PAD, although some of the landforms may meet the general criteria for archaeological potential.

Based on the land use history, an appraisal of the landscape, type of soil, level of disturbance and the results from the field surveys and previous subsurface testing programmes it was concluded that there was negligible potential for the presence of intact subsurface deposits with high densities of cultural material within the remainder of the Proposal Area outside Dukes Creek PAD 1 which was identified on the elevated flat adjacent to Dukes Creek. Consequently, subsurface testing is not warranted across the remainder of the Proposal Area beyond the single area of PAD, Dukes Creek PAD 1, which was identified.

This assessment is in line with the results of the previous testing programme of works undertaken by NGH (2016a) which identified that artefact occurrences within the Proposal Area appear to be sparse and of low density, both from a surface and subsurface context. Fewer artefacts than expected were distributed throughout area with only discreet low-density artefact scatters and isolated finds present. While it is likely that quartz artefacts will be present across the entirety of the Proposal Area, their low density and dispersed nature makes it difficult to detect them using subsurface testing techniques approved under the Code of Practice. The sites identified during the subsurface testing by NGH (2016a) will extend beyond the small linear areas tested, but they are not considered likely to represent large extensive archaeological sites. The broad nature of the landforms has most likely resulted in a broad landuse strategy by Aboriginal people which in turn

has led to a broad but low density distribution of artefacts. The general lack of permanent water has also likely contributed to the low density of artefacts and sites.

The landforms within the Proposal Area have previously been tested with nil or only low density artefacts recovered. As such it was determined that additional testing programmes are not deemed to be warranted, even though it is acknowledged that extrapolating the results of previous survey and subsurface investigations in the Proposal Area that artefacts are likely to occur in low densities across the entirety of the land.

None of the previously recorded AHIMS sites within the Proposal Area were relocated and all previously recorded sites are approved for impact under AHIP number C0002180 and C0003609. NGH believe that these sites have now all been collected by the Aboriginal community and impacted and are no longer valid however no impact site cards have been submitted to AHIMS by Council or the Aboriginal community to note the sites as completely impacted.

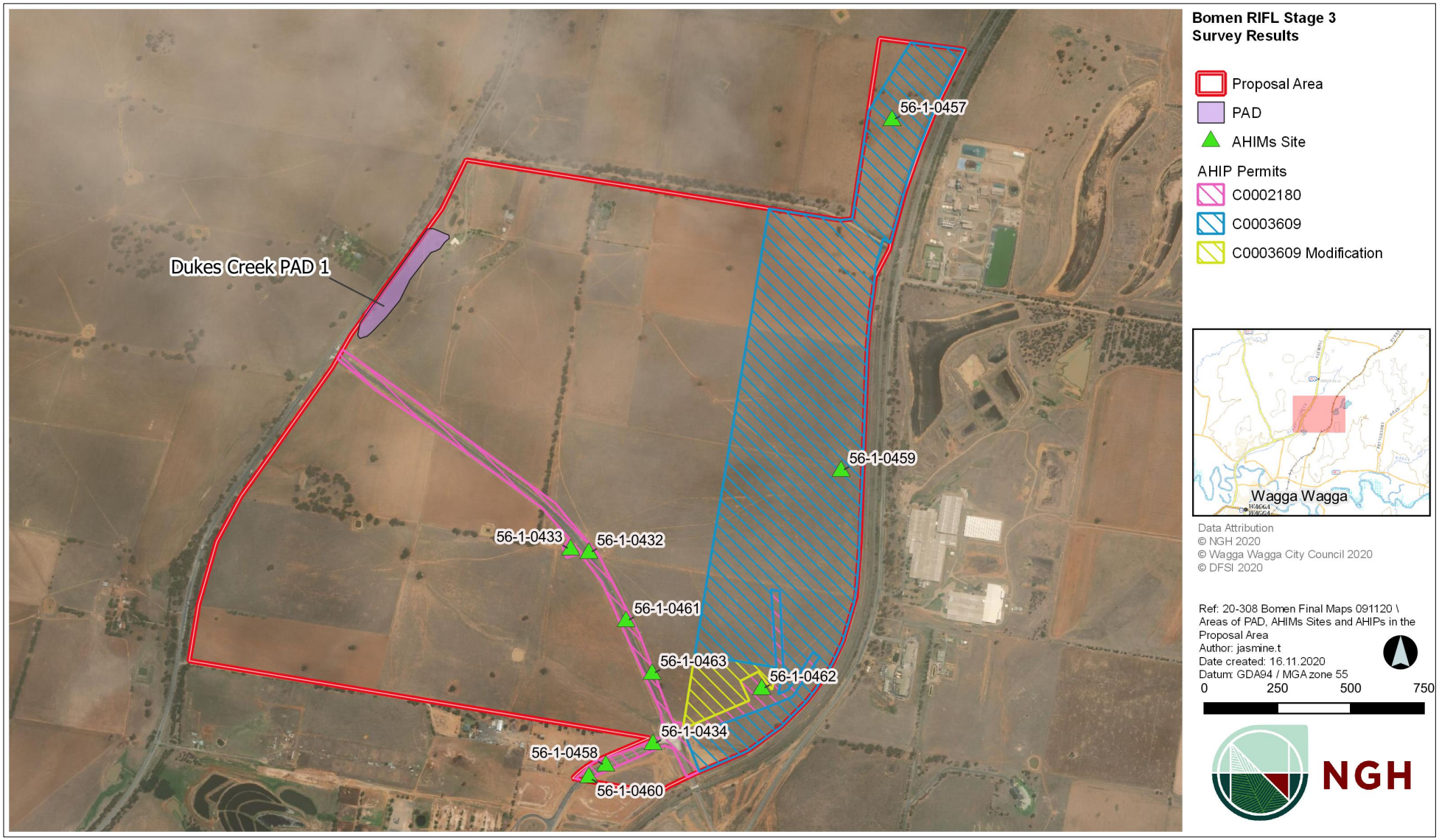

Figure 5-2 Survey Results

6. CULTURAL HERITAGE VALUES AND STATEMENT OF SIGNIFICANCE

The assessment of the significance of Aboriginal archaeological sites is currently undertaken largely with reference to criteria outlined in the ICOMOS Burra Charter (Australian ICOMOS 2013). Criteria used for assessment are:

- Social or Cultural Value: In the context of an Aboriginal heritage assessment, this value refers to the significance placed on a site or place by the local Aboriginal community – either in a contemporary or traditional setting.
- Scientific Value: Scientific value is the term employed to describe the potential of a site or place to answer research questions. In making an assessment of scientific value issues such as representativeness, rarity and integrity are addressed. All archaeological places possess a degree of scientific value in that they contribute to understanding the distribution of evidence of past activities of people in the landscape. In the case of flaked stone artefact scatters, larger sites or those with more complex assemblages are more likely to be able to address questions about past economy and technology, giving them greater significance than smaller, less complex sites. Sites with stratified and potentially in situ sub-surface deposits, such as those found within rock shelters or depositional open environments, could address questions about the sequence and timing of past Aboriginal activity, and will be more significant than disturbed or deflated sites. Groups or complexes of sites that can be related to each other spatially or through time are generally of higher value than single sites.
- Aesthetic Value: Aesthetic values include those related to sensory perception and are not commonly identified as a principal value contributing to management priorities for Aboriginal archaeological sites, except for art sites.
- Historic Value: Historic value refers to a site or place's ability to contribute information on an important historic event, phase or person.
- Other Values: The Burra Charter makes allowance for the incorporation of other values into an assessment where such values are not covered by those listed above. Such values might include Educational Value.
- All sites or places have some degree of value but some have more than others. In addition, where a site is deemed to be significant, it may be so on different levels or contexts ranging from local to regional to national, or in very rare cases, international. Further, sites may either be assessed individually, or where they occur in association with other sites the value of the complex should be considered.

6.1. Social or Cultural Value

While the true cultural and social value of Aboriginal sites can only be determined by local Aboriginal people, as a general concept, all sites hold cultural value to the local Aboriginal community. An opportunity to identify cultural and social value was provided to the Aboriginal representatives for this proposal through the consultation process which included providing comments on the methodology, participating in fieldwork and draft reporting process.

Feedback about the cultural value of the previously recorded AHIMS sites within the Proposal Area has been previous assessed by NGH (2016a; 2018a) and has not changed during this assessment. In general, all sites hold cultural value to the Aboriginal community.

During the fieldwork, BAC representative, Mark Saddler, noted that the Proposal Area has cultural significance given its proximity and relationship to Dukes Creek, The Rock (Kengal), Houlaghans Creek and the Murrumbidgee River (Marrambidya Bila). Mark Saddler also suggested that the Proposal Area is in close proximity to the Bomen Axe Quarry which is an important local Aboriginal Place and emu sanctuaries which used to extend across the Bomen area. These cultural connections to country were noted to increase the cultural significance of landscape which the Proposal Area extends across.

6.2. Scientific (Archaeological) Value

The research potential of the previously recorded AHIMS sites within the Proposal Area has been previous assessed by NGH (2016a; 2018a) and has not changed during this assessment given all sites are noted by NGH to have been impacted and destroyed in accordance with valid AHIPs.

No new sites with Aboriginal objects were recorded during this assessment with only a single PAD, Dukes Creek PAD 1, identified. Given that no new Aboriginal sites were identified during the survey there are limited scientific values to evaluate for this project. While the absence of new sites can be used to assist in the further development of site modelling for the local landscape, the scientific value for further research outside Dukes Creek PAD 1 is determined to be nil.

The research potential of the Dukes Creek PAD 1 is considered to be moderate given that evaluated flat landforms adjacent to named water courses have to date yet to be subject to any subsurface testing within the Proposal Area. The PAD identified within the Proposal Area has the highest potential for additional information about Aboriginal occupation of the Bomen Area to be obtained from the Proposal Area. This location is likely to yield the best information about Aboriginal land use and to potentially contain unequivocal cultural charcoal that could potentially be dated.

6.3. Aesthetic Value

There is no aesthetic value associated with the Proposal Area and the previously recorded AHIMS sites beyond those previously noted by NGH (2016a and 2018a).

6.4. Historic Value

There are no known historic values associated with the Proposal Area, the previously recorded AHIMS sites or links to known people.

6.5. Other Values

The area may have some educational value (not related to archaeological research) through educational material provided to the public about the Aboriginal occupation and use of the area, although the archaeological material is primarily currently within private and Council property and there is little for the public to see. However, given the proposed the future development of the area Council should consider consultation with the local Aboriginal community in regard to appropriate possible road and street names within the Proposal Area.

7. PROPOSED ACTIVITY

7.1. History and Land Use

It has been noted above that historically the Proposal Area has been heavily impacted through agricultural and pastoral land use practices, including ploughing. These ground disturbance activities have resulted in a landscape with little evidence of the pre-European natural features. The implications for this past activity is that the archaeological record has been compromised in terms of its context, with little likelihood of stratified subsurface deposits remaining in situ and the movement of some archaeological materials across the landscape. Recently works as approved under AHIP number C0002180 and C0003609 have also further impacted the area.

Despite these impacts, Aboriginal artefacts and a scarred tree which were previously recorded were found in the area, indicating the presence of archaeological sites and Aboriginal use of the area. While the integrity of a number of the sites has been compromised, the presence of the stone artefacts and a single scar tree within the Proposal Area attests to their resilience.

7.2. Proposed Development Activity

As noted above in section 1.4, the proposal involves the construction of the Bomen Stage 3 works which would include but are not limited to works associated with the Regional Enterprise Zone which will be zoned for a mix of Industrial, Rural, Infrastructure, Recreation, Environmental and Residential land uses that would have many land uses ranging from rail terminals, warehouses for manufacturing and food processing businesses, the RIFL Hub and associated industry and logistics works.

The development will result in disturbance of approximately 362 ha of land. Any Aboriginal heritage objects that are within this footprint would therefore likely be impacted.

7.3. Assessment of Harm

As described in this report, no new Aboriginal objects were located within the Proposal Area. The previously recorded AHIMS sites within the Proposal Area are likely to be larger than recorded and extend outside the areas assessed but the testing showed the extent likely to be limited. All sites are noted to have been salvaged and/or impacted by the works approved under AHIP number C0002180 and C0003609 however the site cards have not been updated to list these sites as impacted. There is potential therefore, for some of the sites to extend beyond the areas recorded and therefore harm will be more extensive than previously assessed for smaller development footprints.

A single PAD, Dukes Creek PAD 1, has been identified within the Proposal Area that, if impacted, requires further archaeological research to be undertaken in the form of subsurface testing in order to establish the presence or absence sub surface deposits and Aboriginal objects. It was assessed that subsurface testing was only warranted within Dukes Creek PAD 1 as all other landforms within the Proposal Area have been subject to a testing programme with only low density artefact scatter or isolated stone artefacts recovered.

The presence of previously recorded surface and subsurface stone artefacts within the Proposal Area shows that despite no new sites being recorded during the current assessment there is Aboriginal archaeological material present within the Proposal Area. It is consequently considered likely that there will be other stone artefacts, predominately manufactured from quartz, present across the Proposal Area, although in similar low densities or as isolated objects.

The proposed level of disturbance for the Bomen Stage 3 works would therefore likely impact stone artefacts that may be present within the Proposal Area which have not been recorded to date. The impact to these unrecorded Aboriginal objects is likely to be most extensive where earthworks will occur such as grading, levelling and trenching, which may involve the removal, breakage or displacement of artefacts. This is considered a direct impact on any Aboriginal objects by the development in its present form and would constitute almost total harm based on the anticipated widespread but low density presence of artefacts and the extent of the proposed development area.

7.4. Impacts to Values

The values potentially impacted by the development of the Proposal Area on the previously recorded AHIMS sites within the Proposal Area has been previous assessed by NGH (2016a; 2018a) and has not changed during this assessment as noted in Section 6 and Table 7-1 given that they have been impacted under AHIP number C0002180 and C0003609.

The values potentially impacted by the development are any social and cultural values attributed to the artefacts and the sites by the local Aboriginal community. The extent to which the loss of the sites or parts of the sites would impact on the community is only something the Aboriginal community can articulate.

The impact to the scientific values of other low density and isolated stone artefact which may be within the balance of the Proposal Area outside the PAD is considered low.

No other values have been identified that would be affected by the development proposal.

Table 7-1 Identified risk to known sites

AHIMS #	Site name	Site integrity	Scientific significance	Type of harm	Degree of harm	Consequence of harm	Recommendation
56-1-0433	BomenRIFL IF1	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	Site totally impacted under AHIP number C0002180. Council is required to submit updated site cards to note this site as totally impacted so AHIMS reflects current status of the site.
56-1-0432	BomenRIFL IF2	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	Site totally impacted under AHIP number C0002180. Council is required to submit updated site cards to note this site as totally impacted so AHIMS reflects current status of the site.
56-1-0434	BomenRIFL IF3	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	Site totally impacted under AHIP number C0002180. Council is required to submit updated site cards to note this site as totally impacted so AHIMS reflects current status of the site.
56-1-0457	BomenRIFL IF4	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	Site impacted under AHIP number C0003609 Council is required to submit updated site cards to note this site as totally impacted AHIMS reflects current status of the site.
56-1-0458	BomenRIFL IF5	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	Site totally impacted under AHIP number C0002180. Council is required to submit updated site cards to note this site as totally impacted so AHIMS reflects current status of the site.
56-1-0460	BomenRIFL AS 1	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	Site totally impacted under AHIP number C0002180. Council is required to submit updated site cards to note this site as totally impacted so AHIMS reflects current status of the site.

AHIMS #	Site name	Site integrity	Scientific significance	Type of harm	Degree of harm	Consequence of harm	Recommendation
56-1-0461	BomenRIFL AS 2	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	Site totally impacted under AHIP number C0002180. Council is required to submit updated site cards to note this site as totally impacted so AHIMS reflects current status of the site.
56-1-0462	BomenRIFL AS 3	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	Site totally impacted under AHIP number C0002180. Council is required to submit updated site cards to note this site as totally impacted so AHIMS reflects current status of the site.
56-1-0463	BomenRIFL AS 4	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	Site totally impacted under AHIP number C0002180. Council is required to submit updated site cards to note this site as totally impacted so AHIMS reflects current status of the site.
56-1-0459	Bomen RIFL ST1	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	N/A site totally impacted	Scar relocated and site impacted under AHIP number C0003609 Council is required to submit updated site cards to note this site as destroyed so AHIMS reflects current status of the site.
N/A	Dukes Creek PAD 1	Moderate	Unknown	Direct	Direct	Unknown loss of value	Further archaeological research should be undertaken in the form of a limited programme of subsurface testing in order to establish the presence or absence sub surface deposits of the PAD if the area can note be avoided with a minimum 10 m buffer.

8. AVOIDING OR MITIGATING HARM

8.1. Consideration of ESD Principles

Consideration of the principles of Ecologically Sustainable Development (ESD) and the use of the precautionary principle was undertaken when assessing the harm to the previously recorded AHIMS within the Proposal Area. The main consideration was the cumulative effect of the proposed impact to the previously recorded AHIMS sites and the wider archaeological record. The precautionary principle in relation to Aboriginal heritage implies that development proposals should be carefully evaluated to identify possible impacts and assess the potential consequences.

In broad terms, while no new Aboriginal sites were recorded during this investigation previous sites have been recorded within the Proposal Area which are similar to what has been found previously within the Wagga Wagga region and local Bomen area, comprising of low density artefact scatters and isolated artefacts dominated by quartz lithology and a single scarred tree.

There have been archaeological investigations for other projects in the Proposal Area, including survey and subsurface investigations but currently there is no clear regional synthesis of the nature, number, extent and content for archaeological sites within the local Bomen area or the wider Wagga Wagga LGA. Nevertheless, given the size of the wider Wagga Wagga LGA geographical area, it is almost certain that there would be similar site types present within the region to those previously recorded within the Proposal Area.

The implications for ESD principles from the results of previous investigation within the Proposal Area is that sites appear to be present only as small concentrations, with areas previously considered as archaeologically sensitive, containing sparse archaeological material. The previously recorded AHIMS sites that exist within the Proposal area have previously been assessed to be generally of low archaeological value. Nevertheless, there are likely to be many more scattered stone artefacts and isolated finds in the rural landscape within and surrounding the Proposal Area.

As noted above, the archaeological values of the previously recorded artefact sites and isolated finds, considering the scientific, representative and rarity values was deemed to be low on previous assessments which has not changed based on the results in this report. It is believed therefore that the proposed impacts to the previously recorded sites or the suspected sites elsewhere within the Proposal Area through development would not adversely affect the broader archaeological record for the local area or the region.

The cumulative impacts of the development on the Aboriginal archaeological record can be viewed in two ways. Firstly, the previously recorded sites Bomen RIFL IF1, Bomen RIFL IF2, Bomen RIFL IF3, Bomen RIFL IF4, Bomen RILF IF5, Bomen RIFL AS1, Bomen RIFL AS2, Bomen RIFL AS3, Bomen RIFL AS4 and Bomen RILF ST 1 within the Proposal Area have been impacted under AHIP number C0002180 and C0003609 and therefore are no longer valid. Further development for the Bomen Stage 3 work would increase the impact to the archaeological record locally within the Proposal Area but the impacts would be to a predicted low density and spatially sparse scatter of stone artefacts with low scientific significance.

The second consideration is more broadly the archaeological record within the local area, here considered to be the Wagga Wagga LGA. As already noted, the presence of the isolated artefacts, artefact scatters and a scarred tree which were previously recorded within the Proposal Area supported the Aboriginal site location model for the area and more such sites are expected to occur. Whilst nil new Aboriginal sites were recorded during the current assessment it also stands that there

are many other archaeological sites present that are both within and outside the area of the Proposal Area as surrounding landforms are considered similar.

The principle of inter-generational equity requires the present generation to ensure that the health and diversity of the archaeological record is maintained or enhanced for the benefit of future generations. We believe that the diversity of the archaeological record is not compromised by impact to the previously recorded AHIMS sites or the anticipated low-density stone artefacts within the Proposal Area. This is due to the conclusion that the other artefacts likely to be present are of equally low scientific significance and would be replicated outside the area. The overall cumulative impact on the archaeological record for the region would be increased by the proposed development of the Proposal Area but the nature and character of the sites present are considered of low archaeological value.

Therefore there are no reasons based on ESD principles that the development should not proceed.

8.2. Consideration of Harm

Avoiding harm to the likely broader extent of previously recorded AHIMS sites within the Proposal Area is not warranted given the level of impacts to those sites within the Proposal Area has been granted under AHIP number C0002180 and C0003609.

It is possible and considered likely that additional artefacts will be present, most likely in the form of isolated artefacts or small low-density scatters manufactured from quartz. Without knowing their exact locations, it is difficult to fully consider the level of harm, although it is possible to extrapolate to suggest that harm to these artefact occurrences will occur. We do not consider that the risk of such disturbances means the development of the Proposal Area should be abandoned. The lack of archaeological material identified in the current and previous surveys and subsurface testing programme shows that intensive occupation of the Proposal Area by Aboriginal people was unlikely and the artefactual material within the balance of the Proposal Area is not of sufficient value to reject the development proposal.

Given the low density and likely scattered nature of additional artefacts across the wider Proposal Area it is considered that the implementation of an Unexpected Finds Protocol should be put in place to deal with any suspected artefacts if they are found during construction and development of the area under a broad AHIP which would encompass the entire works area. This would ensure that an opportunity to collect and salvage any additional Aboriginal objects is provided to the local Aboriginal community.

Avoiding harm to the PAD, Dukes Creek PAD 1, identified during this assessment is technically possible through avoidance however pending the development requirements of the Proposal Area this may not be possible. No other areas within the Proposal Area have been identified to warrant avoidance or further subsurface testing.

8.3. Mitigation of Harm

Mitigation of harm to cultural heritage sites generally involves some level of detailed recording to preserve the information contained within the site. Mitigation can be in the form of minimising harm, through slight changes in the development plan or through direct management measures of the sites and Aboriginal objects.

No further mitigation measures for the previously recorded AHIMS sites within the Proposal Area is warranted beyond that noted under AHIP number C0002180 and C0003609.

If the complete avoidance of the PAD identified during this assessment is not possible a limited programme of subsurface testing is required to establish the true archaeological potential, significance, and extent of sites within this landform which has previously not be subject to a subsurface testing programme within Proposal Area.

We do not consider further mitigation such as artefact collection is warranted given that no further occurrences of artefacts were found and further mitigation in the form of salvage excavation is also not warranted.

9. LEGISLATIVE CONTEXT

Aboriginal heritage is primarily protected under the NPW Act and as subsequently amended in 2019 with the introduction of the National Parks and Wildlife Amendment Regulation 2019. The aim of the NPW Act includes:

> The conservation of objects, places or features (including biological diversity) of cultural value within the landscape, including but not limited to: places, objects and features of significance to Aboriginal people.

An Aboriginal object is defined as:

> Any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with the occupation of that area by persons on non-Aboriginal extraction and includes Aboriginal remains.

Part 6 of the NPW Act concerns Aboriginal objects and places and various sections describe the offences, defences and requirements to harm an Aboriginal object or place. The main offences under section 86 of the NPW Act are:

- A person must not harm or desecrate an object that the person knows is an Aboriginal object.
- A person must not harm an Aboriginal object.
- For the purposes of this section, "circumstances of aggravation" are:
  - that the offence was committed in the course of carrying out a commercial activity, or
  - that the offence was the second or subsequent occasion on which the offender was convicted of an offence under this section.
- A person must not harm or desecrate an Aboriginal place.

Under section 87 of the NPW Act, there are specified defences to prosecution including authorisation through an Aboriginal Heritage Impact Permit (AHIP) or through exercising due diligence or compliance through the regulation.

Section 89A of the Act also requires that a person who is aware of an Aboriginal object, must notify the Director-General in a prescribed manner. In effect, this section requires the completion of AHIMS site cards for all sites located during heritage surveys.

Section 90 of the NPW Act deal with the issuing of an AHIP, including that the permit may be subject to certain conditions.

The Environmental Planning and Assessment Act 1979 (EP&A Act) is legislation for the management of development in NSW. It sets up a planning structure that requires developers (individuals or companies) to consider the environmental impacts of new projects. Under this Act, cultural heritage is considered to be a part of the environment. This Act requires that Aboriginal cultural heritage and the possible impacts to Aboriginal heritage that development may have are formally considered in land-use planning and development approval processes.

10. RECOMMENDATIONS

The recommendations are based on the following information and considerations:

- Results of the current archaeological survey of the Proposal Area;
- Consideration of results from other archaeological assessments which have occurred in the Proposal Area including NGH (2016, 2018a) and OzArk (2019);
- Consideration of results from other regional archaeological studies;
- Results of consultation with the registered Aboriginal parties;
- The assessed significance of the sites;
- Appraisal of the proposed development; and
- Legislative context for the development proposal.

It is recommended that:

1. Wagga Wagga City Council updates all AHIMS sites cards immediately for any sites which have been impacted to date as approved under AHIP number C0002180 and C0003609.
2. If the PAD identified in this assessment, Dukes Creek PAD 1, is unable to be avoided, a limited program of subsurface test excavation is required to determine the archaeological nature and extent of the deposits within the raised flat landform adjacent to a named watercourse within the Proposal Area. All subsurface testing must be undertaken in line with the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales.
3. All cultural material recovered from the subsurface testing programme will be in temporary care at the NGH Canberra and/or Wagga office for analysis until an appropriate time when it can be returned to site. This material must be buried in line with Requirement 26 of the Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales and in an appropriate location within the Proposal Area that will not be subject to any ground disturbance. The burial location will be submitted to the AHIMS database.
4. Given the high likelihood of low density stone artefacts across the entire Proposal Area the proponent must apply to Heritage NSW and receive an Aboriginal Heritage Impact Permit (AHIP) to allow harm to the land to which the AHIP area applies. The AHIP area land should contain the entirety of the Proposal Area (excluding the PAD until a subsurface testing programme is completed).
5. This report must accompany any AHIP application for the Proposal Area, as outlined in Applying for an Aboriginal Heritage Impact Permit: Guide for Applicants.
6. Should any of the previously recorded sites within the Proposal Area be confirmed by Council as currently not impacted all recommendations and impact assessments from the NGH (2016a and 2018a) ACHAs would replace the identified risk to known sites within Table 7-1 within this report and included in the AHIP application.
7. No further archaeological investigation or subsurface testing is warranted or required for the areas outside Dukes Creek PAD 1 within the Proposal Area.

8. In the unlikely event that human remains are discovered during any of the proposed works, all work must cease in the immediate vicinity. Heritage NSW and the local police should be notified. Further assessment would be undertaken to determine if the remains were Aboriginal or non-Aboriginal. If the remains are deemed to be Aboriginal in origin the Registered Aboriginal Parties should be advised of the find as directed by Heritage NSW. Heritage NSW would advise Council on the following appropriate actions required.
9. Further archaeological assessment would be required if the proposal activity extends beyond the area assessed in this report. This would include consultation with the registered Aboriginal parties and may include further field survey.

The Wagga Wagga City Council are reminded that it is an offence under the National Parks and Wildlife Act to harm an Aboriginal object without a valid AHIP.

11. REFERENCES

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APPENDIX A PARTIAL COPIES OF EXISTING AHIPS WITHIN THE PROPOSAL AREA

A.1 AHIP C0002180

Aboriginal Heritage Impact Permit

Section 90 of the *National Parks and Wildlife Act 1974*

NSW GOVERNMENT Office of Environment & Heritage

AHIP number: C0002180

(AHIMS Permit ID: 4016)

AHIP Issued To:

Mr Rob Sharpe
Wagga Wagga City Council
PO Box 20
WAGGA WAGGA NSW 2650

OEH Office issuing this AHIP

Office of Environment and Heritage
Regional Operations
South Branch, South West Region
PO Box 544
ALBURY NSW 2640
Telephone number: (02) 6022 0624
Fax number: (02) 6022 6010

Additional details for public register

a) Name of development or project	Bomen Riverina Intermodal Freight and Logistics (RIFL) Hub Stage 1
b) Location	At Bomen, between Byrnes Rd and Olympic Hwy and to the east of Byrnes Rd near East Bomen Rd.
c) Local Government Area(s)	Wagga Wagga City Council
d) Description of harm authorised	• Certain Aboriginal objects must not be harmed • Movement of certain Aboriginal objects • Community collection • Harm to certain Aboriginal objects through the proposed works
e) AHIP commencement date and duration	*Commencement:* 30 September 2016 *Duration:* 5 years

AHIP number: C0002180
Application Ref No. A11643-2016
Printed: 5:15:49 PM 30/09/2016

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Aboriginal Heritage Impact Permit

Section 90 of the *National Parks and Wildlife Act 1974*

NSW GOVERNMENT Office of Environment & Heritage

AHIP TO HARM ABORIGINAL OBJECTS

A. Background

(i) On 26 August 2016 an application was made to the Chief Executive of the Office of Environment and Heritage (OEH) for an Aboriginal Heritage Impact Permit (AHIP) pursuant to s.90 of the *National Parks and Wildlife Act 1974* (the Act).

(ii) Wagga Wagga City Council (WWCC) is proposing to upgrade freight rail handling capacity for the City, by implementing the Riverina Intermodal Freight and Logistics (RIFL) hub in Wagga Wagga (Figure 1). The proposal is for a staged development approach, the first stage being enabling works and the second stage being construction of rail infrastructure and an 80 hectare area allotment for logistics freight. This AHIP is for Stage 1 – enabling works (detailed section D).

As part of the planning and approvals process an archaeological assessment was undertaken by ngh Environmental for Aboriginal Cultural Heritage. Ten Aboriginal objects (sites) were located during the assessment, with this AHIP application being for eight of them:

- Bomen RIFL IF 1 Isolated artefact
- Bomen RIFL IF 2 Isolated artefact
- Bomen RIFL IF3 Isolated artefact
- Bomen RIFL IF5 Isolated artefact
- Bomen RIFL AS1 Artefact scatter
- Bomen RIFL AS2 Artefact scatter
- Bomen RIFL AS3 Artefact scatter
- Bomen RIFL AS4 Artefact scatter

(iii) OEH considered the application and supporting information provided, and matters under section 90K of the Act and decided to issue an AHIP subject to conditions.

B. AHIP issued subject to conditions

An AHIP is issued to harm Aboriginal objects identified in Schedules B and C, in accordance with the conditions of this AHIP.

This AHIP is issued pursuant to section 90 of the Act.

C. Commencement and duration of AHIP

This AHIP commences on the date it is signed unless otherwise provided by this AHIP.

Unless otherwise revoked in writing, this AHIP remains in force for:

(i) Five years from the date of commencement, that is, until 30 September 2021; or

(ii) until the date on which the Post AHIP Activity Report, is submitted

D. Proposed Works

Bomen RIFL Stage 1: enabling works:

- Construction of a grade separated underpass of the main north-south line.
- Associated road work to facilitate the underpass construction near East Bomen Road.
- Closure of the level crossing on Dampier Street.

AHIP number: C0002180 Page 2 of 20
Printed: 5:15:49 PM 30/09/2016

Aboriginal Heritage Impact Permit

Section 90 of the *National Parks and Wildlife Act 1974*

NSW GOVERNMENT Office of Environment & Heritage

- Construction of a link road between Bomen Business Park to the underpass running north from Bomen Road intersection to Dampier Street.
- A link for B-Triple heavy vehicles between the eastern side of the main rail line (near Byrnes Rd) to the Olympic Highway.

Note: A Dictionary at the end of the AHIP defines terms used in this document. Further information about this AHIP is also set out after the Dictionary.

Peter Ewin
Senior Team Leader Planning – South West Region
Albury
(by Delegation)
DATED: 30 September 2016

AHIP number: C0002180
Printed: 5:15:49 PM 30/09/2016

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A.2 AHIP C0003609

Aboriginal Heritage Impact Permit

Section 90 of the *National Parks and Wildlife Act 1974*

NSW GOVERNMENT Office of Environment & Heritage

AHIP number: C0003609

(AHIMS Permit ID: 4243)

AHIP Issued To:

Wagga Wagga City Council
PO Box 20
WAGGA WAGGA NSW 2650

OEH Office issuing this AHIP
Office of Environment and Heritage
Regional Operations
South West Region
PO Box 1040
ALBURY NSW 2640
Telephone number: (02) 6022 0624
Fax number: (02) 6022 6010

Additional details for public register

a) Name of development or project	Bomen Riverina Intermodal Freight and Logistics (RIFL) Hub Stage 2
b) Location	At Bomen, adjacent to the western side of Byrnes Rd
c) Local Government Area(s)	Wagga Wagga City Council
d) Description of harm authorised	• Movement only of certain Aboriginal objects • Harm to certain Aboriginal objects through the proposed works
e) AHIP commencement date and duration	*Commencement:* 24 April 2018 *Duration:* 5 Years

AHIP number: C0003609
Application Ref No. A02677-2018
Printed: 9:36:38 AM 24/04/2018

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Aboriginal Heritage Impact Permit

Section 90 of the *National Parks and Wildlife Act 1974*

NSW GOVERNMENT Office of Environment & Heritage

AHIP TO HARM ABORIGINAL OBJECTS

A. Background

(i) On 27 February 2018 an application was made to the Chief Executive of the Office of Environment and Heritage (OEH) for an Aboriginal Heritage Impact Permit (AHIP) pursuant to s.90 of the *National Parks and Wildlife Act 1974* (the Act).

(ii) Wagga Wagga City Council, the proponent, is proposing to upgrade freight rail handling capacity within the Local Government Area (LGA) and broader Riverina region, by developing the Riverina Intermodal Freight and Logistics (RIFL) hub within Wagga Wagga LGA at Bomen.

The project for the Bomen RIFL hub is a staged development approach:

Stage 1 Enabling works – construction access infrastructure (which has is operating under a previously approved consent (AHIP C0002180); and

Stage 2 Rail infrastructure – construction of main railway siding and 80ha allotment for freight logistics (which is the subject of this application)

Within the development footprint are two Aboriginal objects which cannot be avoided. The permit is to facilitate legal harm of these objects through salvage and relocation:

- A scarred tree Bomen RIFL ST1 (AHIMS# 56-1-0459), and
- An isolated find (artefact) Bomen RIFL IF4 (AHIMS# 56-1-0457)

(iii) OEH considered the application and supporting information provided, and matters under section 90K of the Act and decided to issue an AHIP subject to conditions.

B. AHIP issued subject to conditions

An AHIP is issued to harm Aboriginal objects identified in Schedules B and C, in accordance with the conditions of this AHIP.

This AHIP is issued pursuant to section 90 of the Act.

C. Commencement and duration of AHIP

This AHIP commences on the date it is signed unless otherwise provided by this AHIP.

Unless otherwise revoked in writing, this AHIP remains in force for:

(i) 5 years from the date of commencement, that is, until 24 April 2023; or

(ii) until the date on which the Post AHIP Activity Report, is submitted.

D. Proposed Works

Proposed activities authorised under this AHIP include:

- Removal of the scar section of Bomen RIFL ST1 (AHIMS# 56-1-0459), relocation of it to Bomen Axe Quarry Aboriginal Place and ongoing curation of it at that location
- Salvage and relocation of isolated stone artefact Bomen RIFL IF4 (AHIMS# 56-1-0457), if it can be found; if it cannot be located, then this AHIP authorised destruction as part of Stage 2 developments.

Note: A Dictionary at the end of the AHIP defines terms used in this document. Further information about this AHIP is also set out after the Dictionary.

AHIP number: C0003609
Printed: 9:36:38 AM 24/04/2018

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Aboriginal Heritage Impact Permit

Section 90 of the *National Parks and Wildlife Act 1974*

NSW GOVERNMENT | Office of Environment & Heritage

Andrew Fisher
A/Senior Team Leader Planning - South West
Albury
(by Delegation)
DATED: 24 April 2018

AHIP number: C0003609
Printed: 9:36:38 AM 24/04/2018

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APPENDIX B ABORIGINAL CONSULTATION

Redacted for public versions