



Appendix G

Aboriginal cultural heritage assessment



Aboriginal Cultural Heritage Assessment

Dubbo Quarry Continuation Project

Report Number

J180313 RP15

Client

Holcim (Australia) Pty Ltd

Date

3 December 2020

Version

v2 Final

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3 December 2020

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3 December 2020

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Acknowledgement of Country

EMM would like to acknowledge and pay respect to the traditional owners of the land on which the project is proposed. We would like to thank all members of the Aboriginal community who generously gave their time and knowledge regarding the Aboriginal cultural heritage values associated with the project.

Executive Summary

ES1 Overview

Holcim (Australia) Pty Limited (Holcim) are the owners and operators of Dubbo Quarry (the quarry) located on Sheraton Road, Dubbo. The quarry has operated since 1980 under a development consent granted by Dubbo Regional Council (DRC). Accessible basalt resources within the existing quarry boundary are close to exhaustion and planning approval is required to allow the quarry to continue operating. Holcim is, therefore, seeking approval for the Dubbo Quarry Continuation Project (henceforth referred to as ‘the project’) which involves the continued operation of the quarry through the development of two new resource areas to the south and west of the existing quarry boundary.

The project is classified as State significant development (SSD) under Part 4, Division 4.7 of the NSW *Environmental Planning Assessment Act 1979* (EP&A Act). This report will accompany the environmental impact statement (EIS) prepared for the project.

The objectives of the Aboriginal cultural heritage assessment (ACHA) are to:

- identify Aboriginal cultural heritage values relevant to the project area;
- assess the significance of Aboriginal objects, sites and locations identified in the course of the archaeological investigations and through Aboriginal community consultation;
- assess the impact of the project on identified Aboriginal cultural heritage values; and
- propose appropriate management measures for potentially impacted Aboriginal cultural heritage values in response to their assessed significance.

ES2 Assessment methods

This ACHA has been prepared in accordance with the Secretary’s Environmental Assessment Requirements (SEARs) for the project and leading practice guidelines. In summary, the ACHA has involved:

- background research of the project area’s environmental, archaeological, and ethno-historical context;
- Aboriginal consultation in accordance with the *Aboriginal Consultation Requirements for Proponents* (DECCW 2010c);
- an archaeological survey following the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010a); and
- an impact assessment and management recommendations for identified Aboriginal cultural heritage values using the *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011).

ES3 Aboriginal consultation

The *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010c) were used for the project. Two Aboriginal parties registered their interest in the project and are referred to in this report as registered Aboriginal parties (RAPs). RAPs were invited to provide cultural information about the project area, provided with the draft assessment report and fieldwork methods for review, and kept updated about the project via letters and emails. RAPs also participated in the archaeological survey.

EMM Consulting Pty Limited (EMM) and Holcim have worked closely with RAPs in formulating appropriate management measures for the Aboriginal cultural heritage values identified during the ACHA, which are outlined in Chapter 8 of this report.

ES4 Archaeological investigations

Through background research and landscape analysis, EMM predicted that the project area had the potential to feature a range of Aboriginal sites including stone artefacts, scarred trees, quarries and grinding grooves. Based on a search of the Aboriginal Heritage Information Management System (AHIMS) register, no Aboriginal sites had previously been recorded in the project area.

EMM conducted a targeted archaeological survey over three days with the support of RAP representatives. The survey coverage results indicate that the ground surface visibility conditions during the survey were generally effective to characterise the distribution of archaeological sites across the survey area.

The survey team identified four Aboriginal sites: Dubbo Quarry – Isolated Find 1 (DQ-IF1); Dubbo Quarry – Isolated Find 2 (DQ-IF2); Dubbo Quarry – Open Site 1 (DQ-OS1); and Dubbo Quarry – Open Site 2 (DQ-OS2).

Archaeological and socio-cultural significance values were assessed for the project area (refer to Table ES1). It is noted that RAPs place cultural value on any Aboriginal objects identified within the project area.

Table ES1 Significance of Aboriginal objects and/or sites identified

| Site | AHIMS # | Site Type | Scientific | Aesthetic | Historical | Cultural | Overall |
|--------|-----------|---------------------------|------------|--------------|------------|----------|----------|
| DQ-IF1 | 44-4-0383 | Isolated find | Low | Low | Nil | High | Low |
| DQ-IF2 | 44-4-0384 | Isolated find with PAD | Moderate | Low/Moderate | Nil | High | Moderate |
| DQ-OS1 | 36-1-0773 | Artefact scatter with PAD | Low | Low | Nil | High | Low |
| DQ-OS2 | 36-1-0774 | Artefact scatter with PAD | Moderate | Low/Moderate | Nil | High | Moderate |

ES5 Impact assessment

An iterative design process has resulted in avoidance of impacts to the majority of Aboriginal sites located within the project area.

Aboriginal site DQ-IF1 is the only known site to be impacted by the project. DQ-IF1 consists of an isolated artefact with no predicted sub-surface deposit. It has been assessed herein as being of low archaeological significance, whilst acknowledging that it is of cultural significance to the Aboriginal community.

ES6 Management measures

An Aboriginal heritage management plan (AHMP) will be developed in consultation with the RAPs and Heritage NSW. The AHMP will detail the management and mitigation of all identified Aboriginal sites along with special procedures and training and reporting protocols. A summary of the management measures are provided in Table ES2.

Table ES2 Site significance, impact, and management summary

| Site Name | AHIMS site number | Site type | Significance | Impact type | Project component | Minimum buffer required (m) | Management strategy |
|-----------|-------------------|---------------------------|--------------|-------------|-------------------|-----------------------------|---------------------|
| DQ-IF1 | 44-4-0383 | Isolated find | Low | Direct | Haul road | N/A | Relocation |
| DQ-IF2 | 44-4-0384 | Isolated find with PAD | Moderate | None | Nil | 20 m | Avoidance |
| DQ-OS1 | 36-1-0773 | Artefact scatter with PAD | Low | None | Nil | 50 m | Avoidance |
| DQ-OS2 | 36-1-0774 | Artefact scatter with PAD | Moderate | None | Nil | 50 m | Avoidance |

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Abbreviations

| | |
|----------------|--|
| ACHA | Aboriginal Cultural Heritage Assessment |
| ACHCRs | Aboriginal Cultural Heritage Consultation Requirements for Proponents |
| AHD | Australian Height Datum |
| AHIMS | Aboriginal Heritage Information Management System |
| BP | Years before present |
| c. | circa |
| cm | centimetres |
| CVA | Cultural Values Assessment |
| DECCW | Department of Environment Climate Change and Water, now DPC |
| DPC | Department of Premier and Cabinet |
| DPIE | Department of Planning, Industry and Environment |
| DPIE BCD | Department of Planning, Industry and Environment Biodiversity and Conservation Division (formerly OEH) |
| DRC | Dubbo Regional Council |
| EIS | Environmental Impact Statement |
| EMM | EMM Consulting Pty Ltd |
| EP&A Act | <i>Environmental Planning and Assessment Act 1979</i> |
| ha | hectare |
| Heritage NSW | Heritage NSW Aboriginal Cultural Heritage Regulation Team of the Department of Premier and Cabinet (formerly DPIE) |
| LALC | Local Aboriginal Lands Council |
| LEP | Local Environmental Plan |
| LGA | Local Government Area |
| m | metres |
| m ² | square metres |
| Mm | millimetres |
| NPWS | National Parks and Wildlife Service |
| NSW | New South Wales |
| OEH | Office of Environment and Heritage (now Heritage NSW) |
| PAD | Potential archaeological deposit |
| RAP/s | Registered Aboriginal Party/Parties |
| SEA | Southern Extension Area |
| SEARs | Secretary's Environmental Assessment Requirements |
| SHR | State Heritage Register |
| SSD | State significant development |
| SU | Survey unit |
| WEA | Western Extension Area |

1 Introduction

1.1 Overview

Holcim (Australia) Pty Limited (Holcim) are the owners and operators of Dubbo Quarry (the quarry) located on Sheraton Road, Dubbo (refer Figure 1.1 and Figure 1.2). The quarry has operated since 1980 under a development consent granted by Dubbo Regional Council (DRC). Accessible basalt resources within the existing quarry boundary are close to exhaustion and planning approval is required to allow the quarry to continue operating. Holcim is, therefore, seeking approval for the Dubbo Quarry Continuation Project (henceforth referred to as 'the project') which involves the continued operation of the quarry through the development of two new resource areas to the south and west of the existing quarry boundary (refer Figure 1.3).

The project is classified as State significant development (SSD) under Part 4, Division 4.1 of the NSW *Environmental Planning Assessment Act 1979* (EP&A Act). This report will accompany the environmental impact statement (EIS) prepared for the project.

1.2 The site

The quarry is located within Dubbo Regional Local Government Area (LGA) approximately 1.9 kilometres (km) west of the city of Dubbo. The quarry is accessed via Sheraton Road which connects to the Mitchell Highway approximately 2 km north-west of the quarry.

The project area relates to the following land as shown on Figure 1.3:

- Lot 222 DP 1247780, owned by Holcim; and
- Part Lot 100 DP 628628, for which Holcim propose to enter into an Access Licence with the landowners.

Development consent for Dubbo Quarry was originally granted by Talbragar Shire Council on 18 March 1980 under SPR79/22 (the existing consent). This consent related to the establishment of a basalt quarry on former Portions 208 and 211, Parish Dubbo (the existing site) and contains eight conditions with no restrictions on production rates or operating hours. Holcim also holds Environment Protection Licence (EPL) No. 2212 for land-based extraction activities between 100,000 and 500,000 tonnes per annum (tpa).

The quarry produces high quality aggregates for use in the construction industry, such as concrete and asphalt production, and for use as road base. Precoated sealing aggregates from crushed basalt are produced at the quarry. The quarry produces many types of road base, both specification and non-specification, such as the premium road base product Heavy Duty DGB20 which is frequently used by local councils and Roads and Maritime Services (RMS) for the construction and upgrade of roads.

1.3 Project overview

The project involves continued operations within the existing site and into two new resource areas as described below (refer Table 1.1):

- the existing approved disturbance boundary within Lot 222 DP 1247780 which is approximately 32.5 hectares (ha) in size and contains approximately 960,000 t of remaining resource;
- the Western Extension Area (WEA) which is west and north-west of the existing quarry boundary, located within Lot 222 DP 1247780 (north and south of Sheraton Road), is approximately 6.5 ha in size and contains approximately 2.24 Million tonnes (Mt) of resource; and

- the Southern Extension Area (SEA) which is south of the existing quarry boundary on the southern side of Eulomogo Creek, located within part Lot 100 DP 628628, is approximately 13.6 ha in size and contains approximately 5.17 Mt of resource.

A new haul road and crossing over Eulomogo Creek would also be constructed as part of the project to connect the existing site with the SEA. The quarry's access road, which connects to Sheraton Road, is to be relocated around the boundary of the WEA.

The existing consent for quarry operations places no restriction on production, with the existing infrastructure having the capacity to produce a maximum of 500,000 tpa. At an average production rate of 350,000 tpa the two proposed extension areas provide sufficient resource for quarry operations to continue for approximately 20-25 years.

1.4 Report objectives

This Aboriginal Cultural Heritage Assessment (ACHA) has been prepared by EMM to assess the potential Aboriginal heritage impacts associated with the project.

The objectives of the ACHA are to:

- identify Aboriginal cultural heritage values relevant to the project area which include:
 - Aboriginal objects and sites;
 - Aboriginal socio-cultural or historic values which might not be related to Aboriginal objects; and
 - areas of archaeological sensitivity;
- assess the significance of Aboriginal objects, sites and locations identified in the course of the archaeological investigations and through Aboriginal community consultation;
- assess the impact of the project on identified Aboriginal cultural heritage values; and
- propose appropriate management measures for potentially impacted Aboriginal cultural heritage values in response to their assessed significance.

This assessment addresses the relevant Secretary's Environmental Assessment Requirement (SEARs) (refer to Section 1.5) and has been prepared in accordance with:

- *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (the Code) (DECCW 2010a);
- *Guide to investigating, assessing, and reporting on Aboriginal cultural heritage in NSW* (DECCW 2010b);
- *Aboriginal Consultation Requirements for Proponents* (DECCW 2010c); and
- *Australian International Council on Monuments and Sites (ICOMOS) Burra Charter* (Australia ICOMOS 1999).

1.5 Secretary's Environmental Assessment Requirements

SEARs for the project were issued on 3 April 2020. SEARs relating to Aboriginal heritage are provided in Table 1.1.

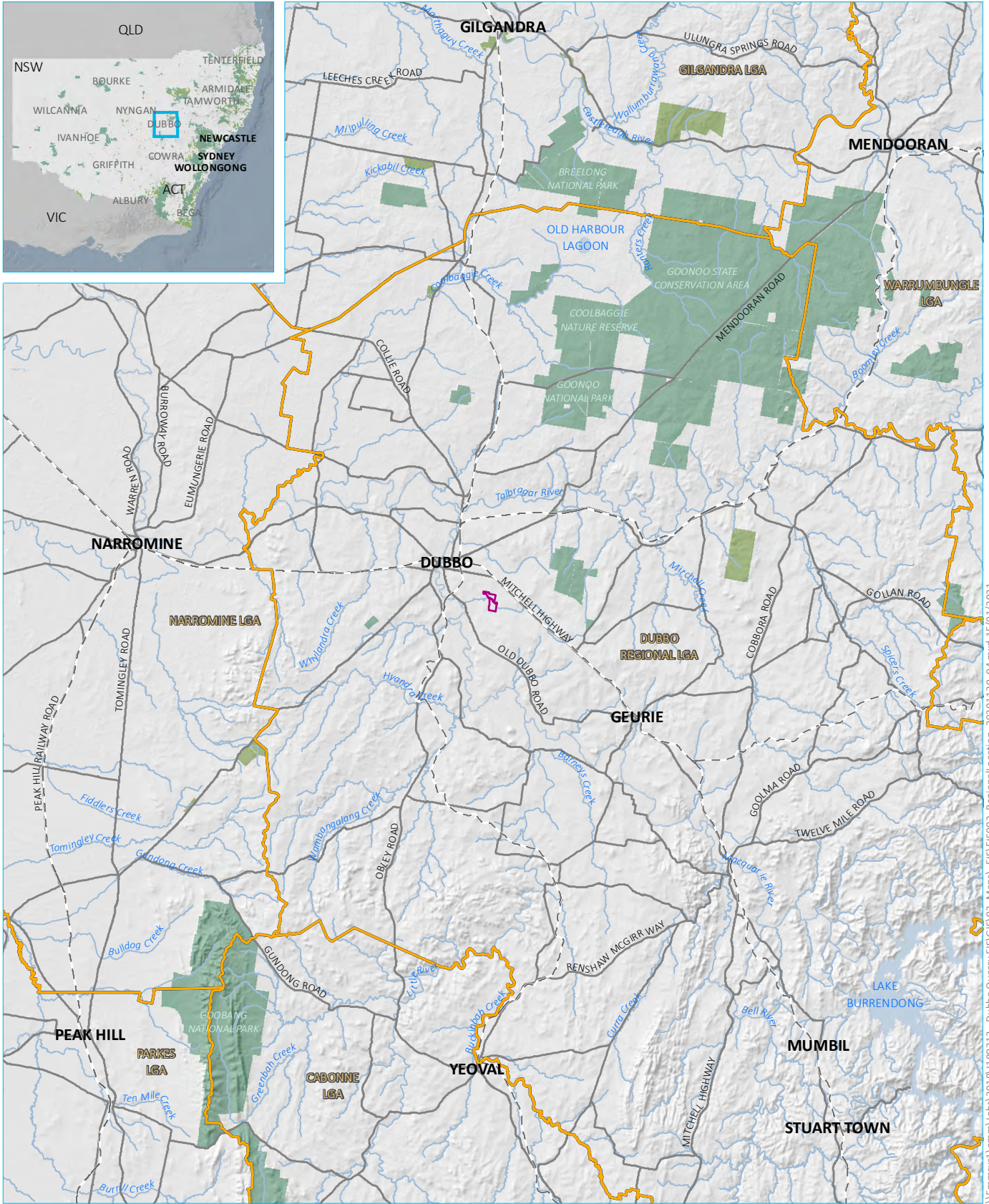
Table 1.1 SEARs Aboriginal heritage requirements

| SEARs | Report section |
|--|--|
| DPIE | |
| Heritage | This report. |
| - an assessment of the potential impacts on Aboriginal heritage (cultural and archaeological), including evidence of appropriate consultation with relevant Aboriginal communities/parties and documentation of the views of these stakeholders regarding the likely impact of the development on their cultural heritage; and | Note: This report only includes matters relating to Aboriginal cultural heritage and not historical heritage, which is addressed in respective environmental impact statement (EIS) main documents and not in this document. |
| - identification of historic heritage in the vicinity of the development and an assessment of the likelihood and significance of impacts on heritage items. | |
| Heritage NSW | |
| 6. The EIS must identify and describe the Aboriginal cultural heritage values that exist across the whole area that will be affected by the project and document these in an Aboriginal Cultural Heritage Assessment Report (ACHAR). This may include the need for surface survey and test excavation. The identification of cultural heritage values must be conducted in accordance with the Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW (OEH 2010), and guided by the Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (DECCW, 2011) and consultation with DPIE regional branch officers. | This report. |
| 7. Consultation with Aboriginal people must be undertaken and documented in accordance with the Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW). The significance of cultural heritage values for Aboriginal people who have a cultural association with the land must be documented in the ACHAR. | Section 2 |
| 8. Impacts on Aboriginal cultural heritage values are to be assessed and documented in the ACHAR. The ACHAR must demonstrate attempts to avoid impact upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the ACHAR must outline measures proposed to mitigate impacts. Any objects recorded as part of the assessment must be documented and notified to DPIE. | Section 7 |

1.6 Authorship and acknowledgements

This report was written by EMM Senior Archaeologist Morgan Wilcox (Bachelor Archaeology (Hons)) and reviewed by EMM Associate Archaeologist Ryan Desic (Bachelor of Arts (Hons) Prehistoric and Historical Archaeology).

EMM would like to thank the registered Aboriginal parties (RAPs) for their involvement in ongoing consultation, knowledge sharing and fieldwork assistance. Special thanks are extended to Raymond Smith and Paul Carr for their participation in the survey effort.



Source: EMM (2020); DFSI (2017); GA (2011); ASGC (2006)



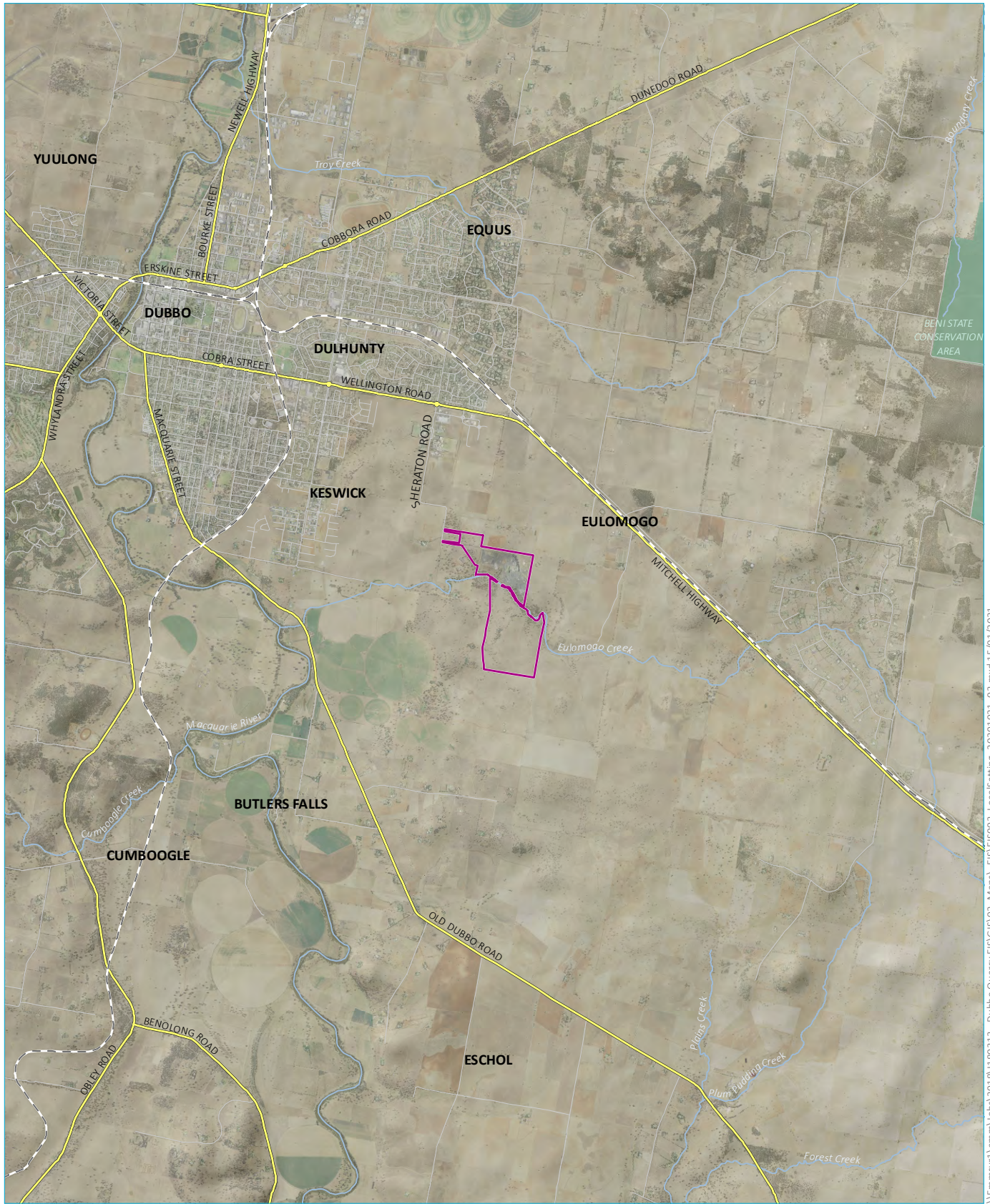
- KEY**
- Project area
 - Rail line
 - Major road
 - Named watercourse
 - Named waterbody
 - Local government area
 - NPWS reserve
 - State forest

Regional setting

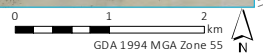
Dubbo Quarry Continuation Project
Aboriginal Cultural Heritage Assessment
Figure 1.1



\\Emmsvr1\emms\Jobs\2018\1180313 - Dubbo Quarry EIS\GIS02_Maps\EIS\EIS02_RegionalLocation_20201120_04.mxd 15/01/2021



DFS1 (2017); DFS1 (2020); EMM (2020)



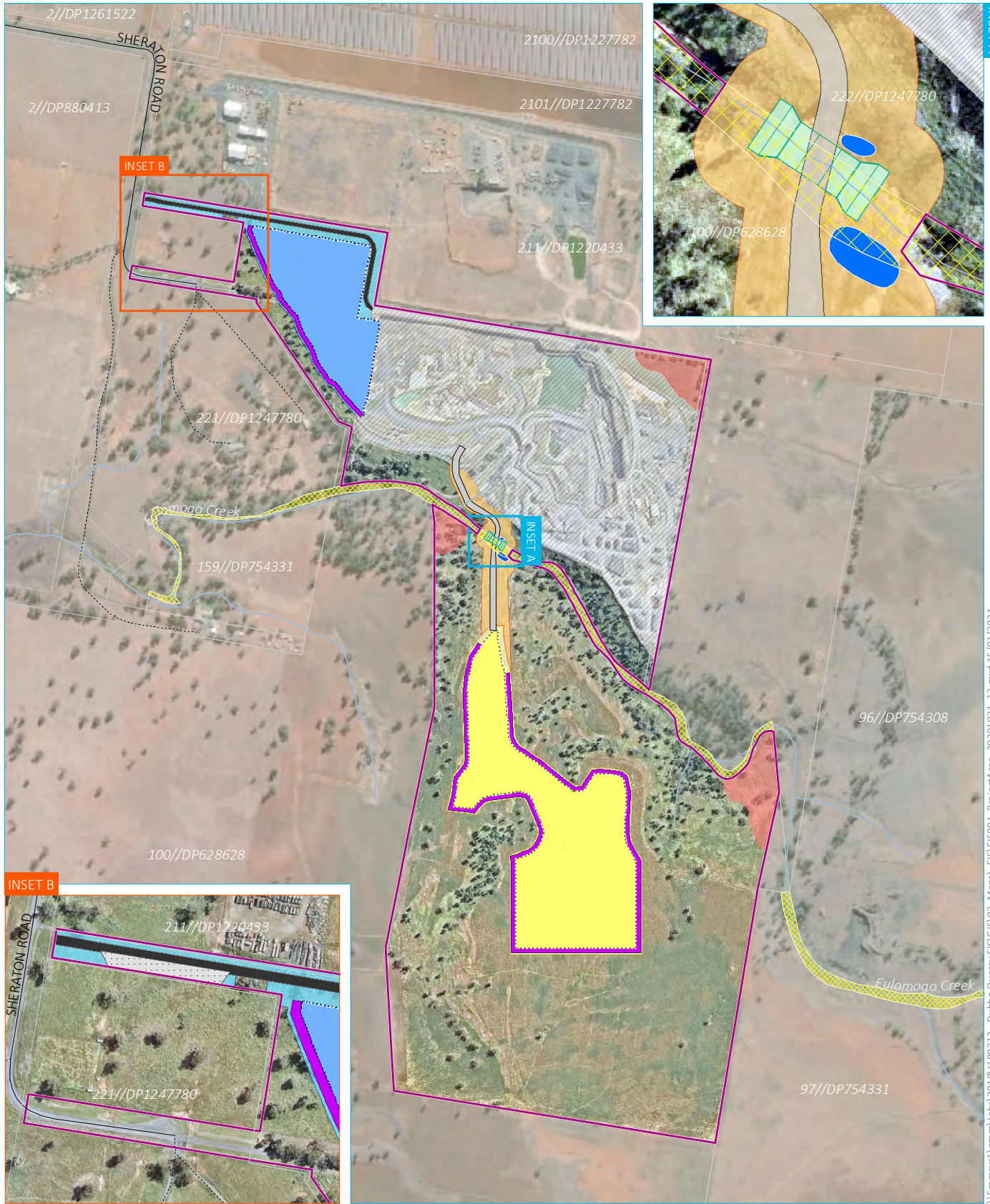
KEY

- Project area
- Rail line
- Major road
- Minor road
- Named watercourse
- NPWS reserve

Local context

Dubbo Quarry Continuation Project
Aboriginal Cultural Heritage Assessment
Figure 1.2

\\Emmsvr1\emms\jobs\2018\1180313 - Dubbo Quarry EIS\GIS\02_Maps\EIS\EIS003_LocSetting_20201021_03.mxd 15/01/2021



Source: EMM (2020); DFSI (2017); GA (2011); Nearmap (2020)

KEY

- | | | |
|--------------------------------------|----------------------------|--|
| Project area | Proposed access road | Minor road |
| Sediment pond | Truck tarping area | Vehicular track |
| Aboriginal protection zone | Western extension area | Watercourse/drainage line |
| Indicative existing disturbance area | Western disturbance area | Waterbody |
| Proposed haul road | Haul road disturbance area | Cadastral boundary (data does not align with surveyed site boundary) |
| Indicative proposed water crossing | Southern extension area | Crown land |
| Bund wall | Southern disturbance area | |

Project area and proposed development footprint



Dubbo Quarry Continuation Project
Aboriginal Cultural Heritage Assessment
Figure 1.3



\\Emmsvr1\emms\Jobs\2018\180313 - Dubbo Quarry EIS\GIS02_Maps\EIS\EIS001_ProjectArea_20201021_13.mxd 15/01/2021

2 Aboriginal consultation

2.1 Statutory context

The *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010c) were used for the project. The stages of consultation and their outcomes are provided in the headings below. Each private Aboriginal organisation or individual who requested to be registered for consultation within the timeframes of the requirements is referred to as a registered Aboriginal party (RAP).

A copy of the consultation log and copies of all notifications and responses received are included in Appendix A.

2.2 Stage 1 – Notification of project proposal and registration of interest

2.2.1 Agency contact

A letter requesting advice on which Aboriginal parties to invite for consultation and all known heritage matters to be taken into consideration, was posted to the following agencies on 9 May 2019:

- Heritage NSW Aboriginal Cultural Heritage (ACH) Regulation Team of the Department of Premier and Cabinet (then Department of Planning, Industry and Environment Biodiversity and Conservation Division [DPIE BCD]);
- Dubbo Local Aboriginal Land Council (Dubbo LALC);
- DRC;
- Central West Local Land Services;
- National Native Title Tribunal;
- Native Title Services Corp; and
- Office of the Registrar, Aboriginal Land Rights Act 1983 (Office of the Registrar).

Four responses, included in Appendix A, were received from Heritage NSW, Dubbo LALC, National Native Title Tribunal and Office of the Registrar. A total of 16 organisations and/or individuals were identified.

2.2.2 Media advertisement

A public notice was placed in the local newspaper, the Dubbo Daily Liberal on 27 May 2019. A copy of this notice is in Appendix A. The advertisement invited all Aboriginal persons and organisation who hold cultural knowledge relevant to determining the significance of Aboriginal objects and places in the project area to register their interest by 10 June 2019.

2.2.3 Aboriginal groups invitation to register

On 27 May 2019 EMM sent letters inviting registrations via post and email to the Aboriginal parties identified by the agency requests.

The Aboriginal parties who registered an interest in being consulted for the project are listed below:

- Dubbo LALC; and
- Dubbo City Council Aboriginal Community Working Party.

2.3 Stages 2 and 3 – Presentation of project and method information

A letter was sent to all RAPs on 11 June 2019 detailing fieldwork methodology, details and requirements as well as a request for cultural information about the project area. Responses were requested by 9 July 2019, however no responses were received.

An archaeological survey of the project area was conducted between 16 July and 18 July 2019 by EMM Senior Archaeologist Morgan Wilcox, accompanied by Raymond Smith (Dubbo LALC) and Paul Carr (Dubbo City Council Aboriginal Community Working Party). The RAPs were offered the opportunity to provide cultural information given that they had the opportunity to inspect the project area and gather context about its location and landscape.

On 19 December 2019, RAPs were sent a project update email advising that the scoping report was being finalised and project SEARs were anticipated the first quarter of 2020.

On 16 July 2020, all RAPs were sent a project update email advising that SEARs had been issued on the 3 April 2020 and the proposed project design was being finalised. RAPs were notified that they would receive the draft ACHA in the near future for their review and comment.

2.4 Stage 4 – Distribution of draft ACHA for review

The draft ACHA was sent to the RAPs on 4 August 2020. The RAPs were invited to provide comment on the report as well as the significance of cultural heritage relevant to the project area. Responses were requested by 2 September 2020. A follow-up email was sent on 7 September 2020 to all RAPs.

No responses or comments on the draft ACHA were received.

3 Landscape context

3.1 Rationale

The environmental context is used to predict the spatial distribution, preservation, and likelihood of archaeological material. Landscape features were an important factor for the choice of camping, transitory and ceremonial areas used in the past by Aboriginal people. Natural resources, including raw stone materials and local flora and fauna, would have provided food, tools and material resources. These resources are linked to the topography, hydrology, geology and soil types in the region. Additionally, natural, and cultural (human-made) site formation processes influence the present potential for archaeological material to occur in the area.

3.2 Topography and geology

The project area lies within the Brigalow Belt South Bioregion and predominantly falls within the Talbragar Basalts ecosystem and Dubbo Basalts landscape unit (Mitchell 2002, p.15) as shown on Figure 3.1. The north-eastern portion of the project area falls within the Pilliga ecosystem and Goonoo Slopes landscape unit (Mitchell 2002, p.13).

The topography of the Dubbo Basalts landscape unit is characterised by slightly elevated plains and low hills on flat lying Tertiary volcanics (basalt and trachyte) with stony hillocks (Mitchell 2002, p.15). General elevation across this landscape ranges from 300–330 m above sea level (asl) with a local relief of 10 m.

The topography of the Goonoo Slopes landscape unit is characterised by extensive undulating to stepped low hills with long slopes on Triassic/Jurassic quartz sandstone, conglomerates, siltstone, shale, and some coal (Mitchell 2002, p.13). General elevation across this landscape ranges from 300–500 m asl, with a local relief of 30 m, and a predominantly westerly aspect with poorly defined drainage networks.

Topography of the project area features subtly undulating slopes and plains ranging in elevation from 280–310 m asl predominantly on a westerly aspect, with local relief in proximity to Eulomogo Creek.

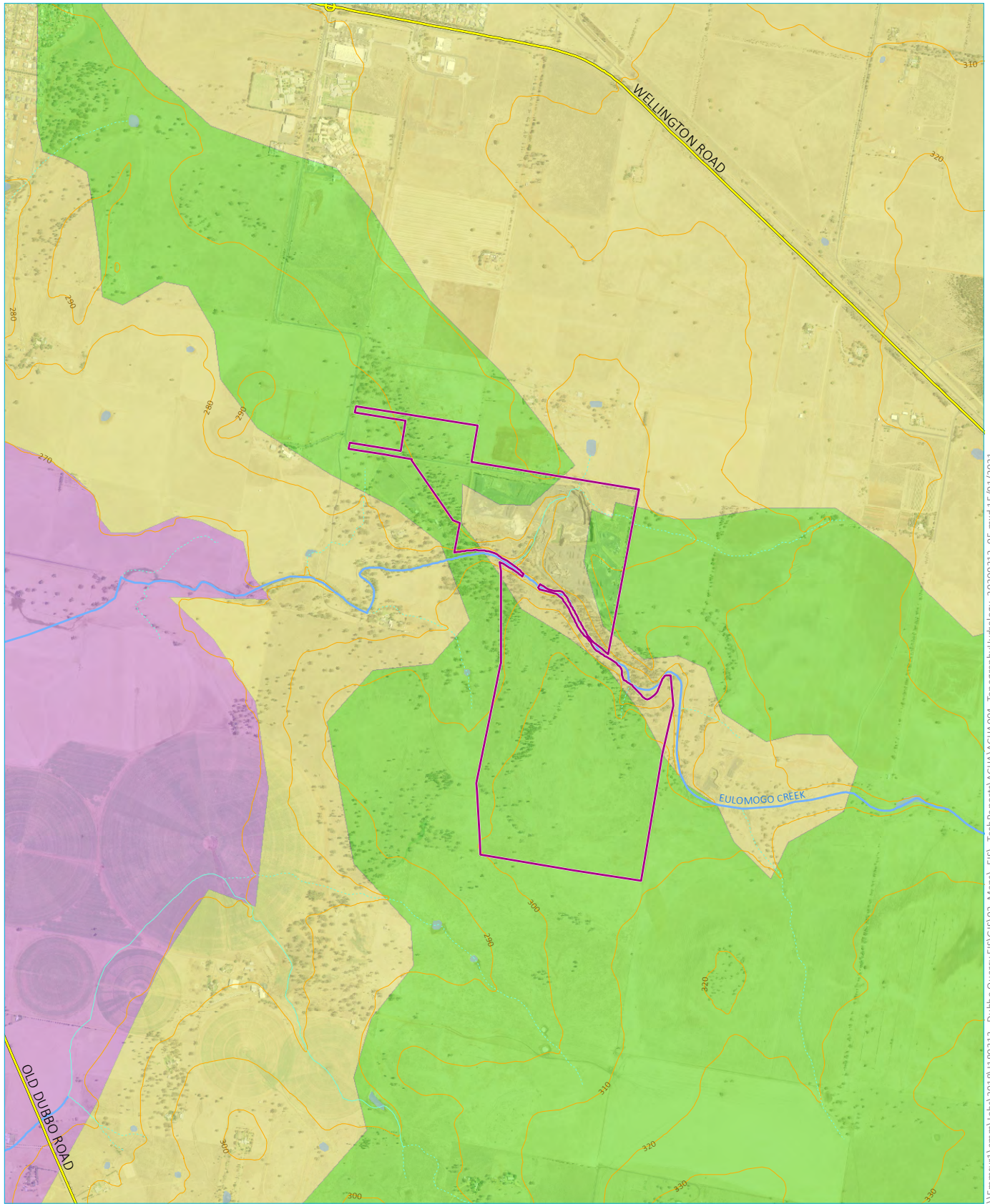
3.3 Hydrology

The project area lies within the Brigalow Belt South Bioregion through which several major rivers flow including the MacIntyre, Gwydir, Namoi, Castlereagh, Goulburn, Talbragar and Macquarie Rivers, their catchments forming an integral part of the Murray-Darling Basin.

The main hydrological features of the project area and its surrounds, as shown on Figure 3.1, comprise:













- Macquarie River (9th order stream in accordance with the Strahler system of stream order) located approximately 2.7 km west of the project area;
- Eulomogo Creek (3rd order) which transects the project area on an east–west alignment; and
- a number of ephemeral drainage lines (1st and 2nd order) within the project area.

The hydrology of the project area provides a semi-permanent water supply, in addition to water collecting in stone outcropping and depressions during rainfall events in the form of linear gilgai (Murphy & Lawrie 1998, p.107).



Source: EMM (2020); DFSI (2020); DFSI (2017); OEH (2019)

0 0.5 1 km
GDA 1994 MGA Zone 55

| KEY | | |
|---|---|---|
|  | Project area |  Mitchell landscape |
|  | Major road |  Dubbo Basalts |
|  | Waterbody |  Goonoo Slopes |
|  | Contour (10 m) |  Macquarie Alluvial Plains |
| |  Strahler stream order | |
| |  1st order | |
| |  2nd order | |
| |  3rd order | |

Topography and hydrology of the project area

Dubbo Quarry Continuation Project
Aboriginal Cultural Heritage Assessment
Figure 3.1



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3.4 Soils

The project area falls within the Wongarbone soil landscape which is characterised by friable surface soils with moderate to high susceptibility to erosion (Murphy & Lawrie 1998, p.107). This soil landscape features two co-dominant soil types (refer to Plate 3.1).

1. **Euchrozems:** typically occur on mid to lower slopes and crests. Features hard setting topsoils of dark reddish-brown clay loam to light clay with a fine blocky to polyhedral structure to a depth of 15 cm, with a gradual transition to dark reddish-brown light to medium clay subsoil. Calcium carbonate (ie limestone) bedrock occurs at depth (80–100 cm).
2. **Cracking clays:** typically occur on mid to lower slopes and features cracking clays crack on drying and swell on wetting throughout the profile. Topsoils comprise reddish-brown medium self-mulching clay with a strong fine blocky structure and calcium carbonate nodules to a depth of 8–10 cm, and subsoils comprise reddish-brown heavy clays with strong coarse layered, or lenticular structure alternating with soft calcium carbonate concretions to depths exceeding 100 cm.

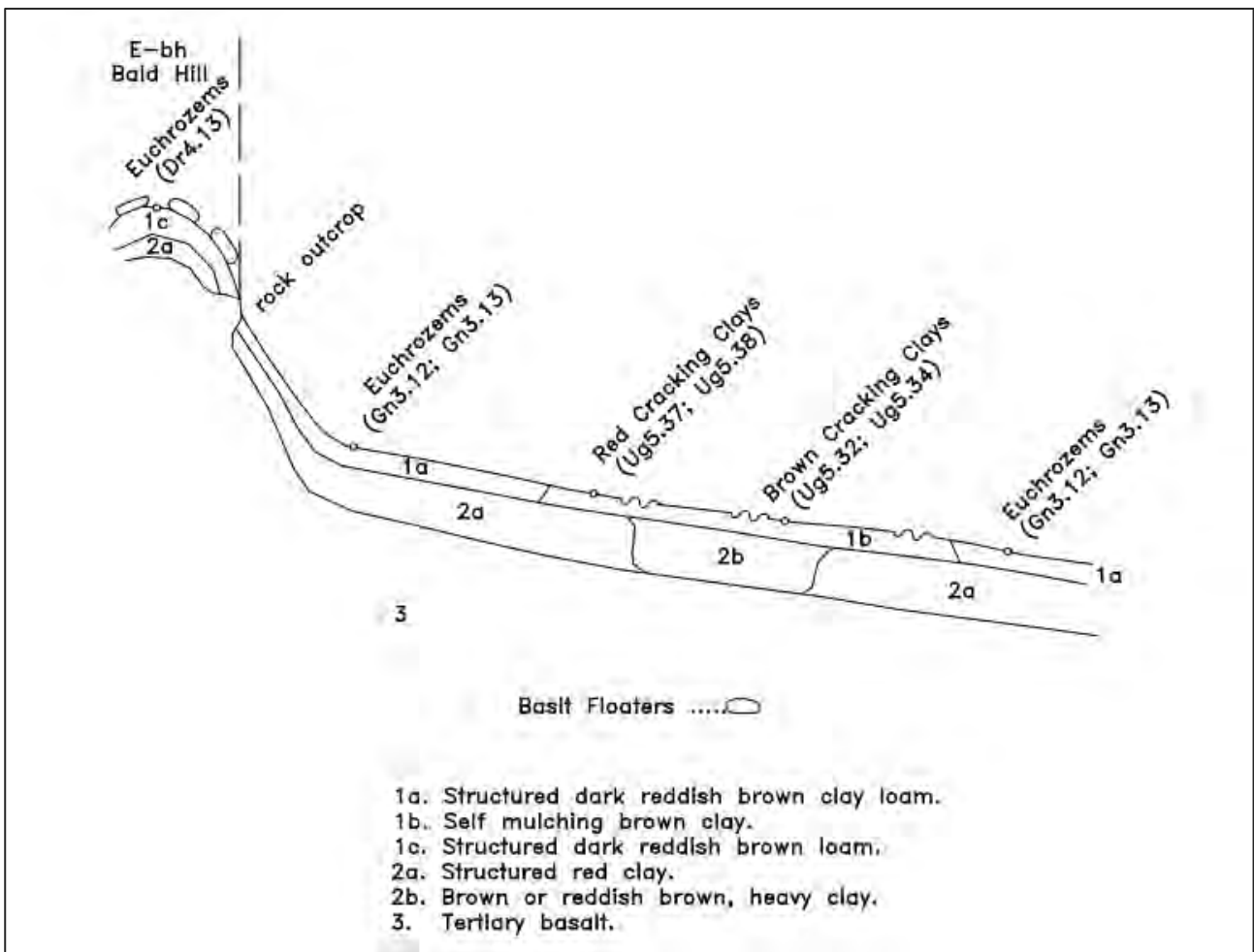


Plate 3.1 Distribution diagram of Wongarbone soil landscape illustrating the occurrence and relationship of dominant soil materials (Source: Murphy & Lawrie 1998, p.108)

3.5 Flora and fauna

The project area has remnants of pre-colonial ecological communities that would have covered the landscape; however, most of it has been cleared leaving only isolated paddock trees or small pockets of trees. Broad scale assessment of vegetation in NSW indicates that the following vegetation communities have the potential to occur within the project area (Mitchell 2002, pp.13, 15; Murphy & Lawrie 1998, p.107):

- **Ridges:** Broad-Leaved Ironbark (*Eucalyptus fibrosa ssp. fibrosa*) and Black Cypress Pine (*Callitris endlicheri*);
- **Slopes:** Broad-Leaved Ironbark, Narrow-Leaved Ironbark (*Eucalyptus crebra*), Red Ironbark (*Eucalyptus sideroxylon*), Fringe Myrtle (*Calytrix tetragona*), Spur-Wing Wattle (*Acacia triptera*), Daphne Heath (*Brachyloma daphnoides*) with patches of Green Mallee (*Eucalyptus viridis*), Dwyer's Mallee Gum (*Eucalyptus dwyeri*) and Broombush (*Melaleuca uncinata*);
- **Plains:** White Box (*Eucalyptus albens*), Yellow Box (*Eucalyptus melliodora*), White Cypress Pine (*Callitris columellaris*) and Rough-Barked Apple (*Angophora floribunda*) with diverse grasses; and
- **Adjacent to waterways:** Grey Box (*Eucalyptus microcarpa*), Red Ironbark, Red Stringybark (*Eucalyptus macrorhyncha*), Fuzzy Box (*Eucalyptus conica*) and Blakely's Red Gum (*Eucalyptus blakelyi*) with Knob Sedge (*Carex inversa*) and Tall Sedge (*Carex appressa*).

Of the trees listed above, box eucalypts are most commonly recorded with Aboriginal scarring and carving in the western plains region, as well as occasional pine and mallee species (DECCW 2005, p. 62).

Pre-colonial biodiversity in the project area would have been greater than today and without the impact of widespread vegetation clearance. Native birds, reptiles, mammals, insects, and aquatic life would have occupied the landscape providing various resources for consumption by Aboriginal people.

3.6 Land use and disturbance

The project area is currently broadly used for pastoralism and cultivation, in addition to the current operations of the quarry. Neighbouring land-use practices include a neighbouring quarry and solar farm to the immediate north, in addition to surrounding low density rural residential housing approximately 1.5 km east of the project area.

The majority of the project area been modified by historical land use practices and past disturbances associated with land clearing, manual and machine rock-picking, cropping, and intensive livestock grazing which has increased susceptibility to sheet and gully erosion. Although widespread clearing has occurred, there are a number of mature trees that have survived for use as shade for livestock. Areas with significant outcropping bedrock have also been historically cleared of vegetation; however, depending on the nature and extent of bedrock, are likely to have been avoided from repeated cropping due to inaccessibility from farming machinery.

Further details of disturbance levels observed in the field are presented in Section 5.4 and Table 5.2.

4 Aboriginal heritage context

4.1 Ethno-historical overview

Information about the socio-cultural structure of Aboriginal society prior to European contact largely comes from ethno-historic accounts made by Europeans. These accounts and observations were made after massive social disruption due to disease and displacement. As a result, this information is often contentious, particularly in relation to language area boundaries.

The project area falls within the Aboriginal language group boundary of the *Wiradjuri*; which can be broken down into two sub-groups, the *Dundullimal* and *Tubba-Gah* for the Dubbo area (Bowdler 1983:22). Norman Tindale (1974) recorded the Wiradjuri country as stretching from the Wongaibon country in the west, and Wailwan country in the north, which he recorded as stretching between Gilgandra, Nyngan, Brewarrina and down to Coonabarabran. Later Horton (1994) recorded Wiradjuri country as extending to the Gilgandra, Nyngan and Bogan River areas. Within the Wiradjuri language group, there is some debate on the extent of the Tubba-Gah and Dundullimal territories. Many argue that the Tubba-Gah country extends from the eastern margin of the Macquarie River, to the Talbragar River in the south and to Eulomogo creek, and the location of the project area, in the north while the Dundullimal occupy the western side of the Macquarie River. However, many Aboriginal communities argue that the Tubba-Gah country also encompasses the western side of the Macquarie River (Grounds 1983; Helton 1995:7-8; Koettig 1985:21-22).

The first historical references of the Wiradjuri language group in this region were recounted by John Oxley (1820), Charles Sturt (1833) and E.J Garnsey (1942). Garnsey who was born in Dubbo, had an interest in Aboriginal cultures and his studies of their everyday life and ceremonial practices are still a valuable source of information on the Wiradjuri people in the Dubbo area. These accounts of Wiradjuri culture provide recorded information and supplements the invaluable oral histories provided by traditional owners (Koettig 1985). Garnsey (1942:6) describes the campsites as bark structures arranged in a semi-circle open towards the east, with a fire in the centre and men's huts located on the northern end, women's huts located in the middle and children on the southern end. The people were semi-nomadic, moving short distances in response to hygiene issues, social reasons and deteriorating weather conditions while long distance travelling was reserved for more significant events such as for ceremonial purposes, warfare, or once local resources were depleted.

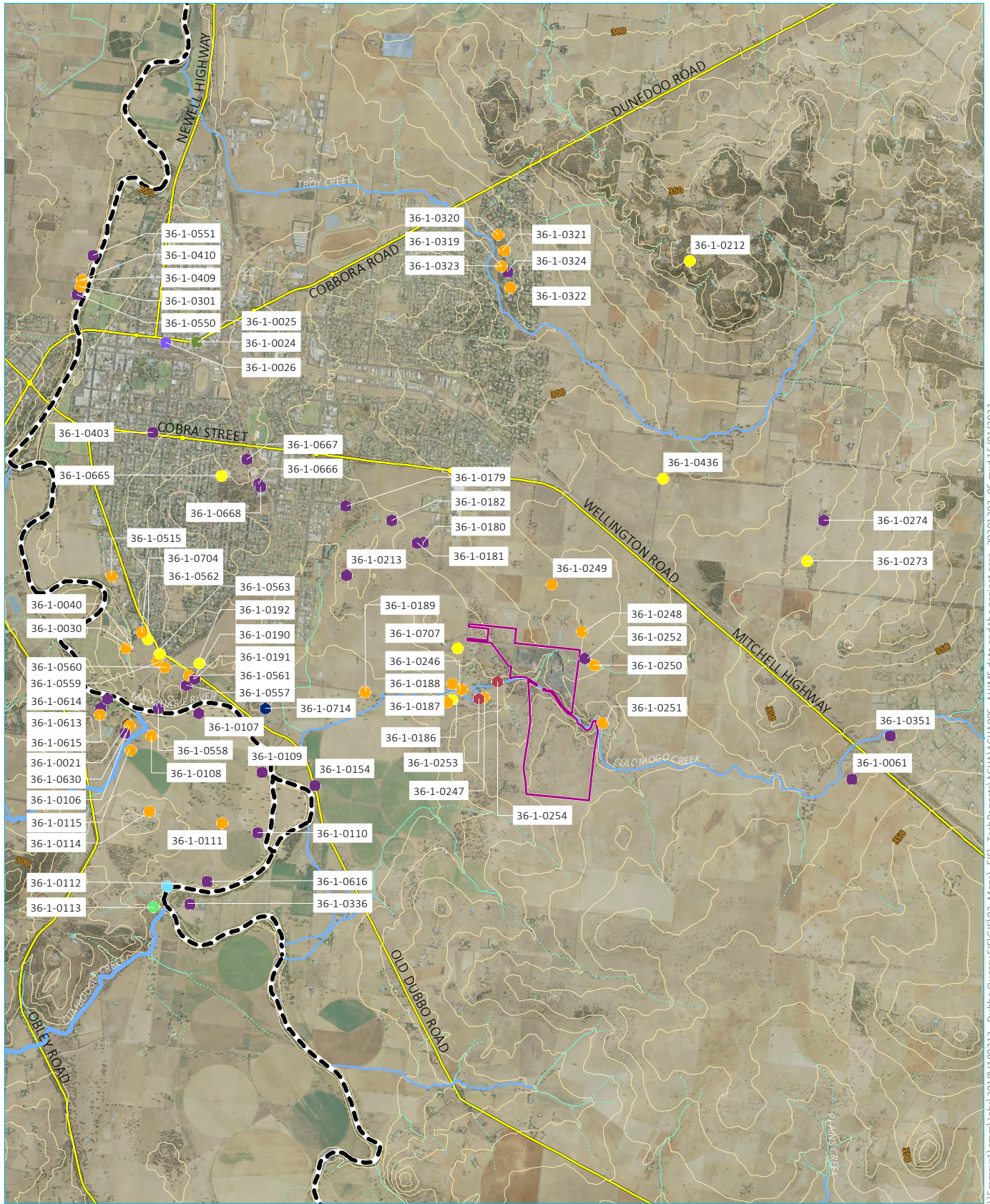
Garnsey (1942) discusses the ceremonial practices involved with the initiation of youth into adulthood and alterations in social status, though this results from oral histories which are difficult to confirm with any certainty. He notes that social structures within the group began to break down in the 1890s after the colonial contact period when only the older men possessed the knowledge of ceremonial practices and still maintained their traditional markings (Garnsey 1942:14).

4.2 AHIMS data

A search of the Aboriginal Heritage Management System (AHIMS) database was completed on 25 February 2019 (ID 401606), and an updated search was completed on 16 July 2020 (ID 521010) (Appendix B).

The search identified 78 sites within a 10 km x 10 km search area centred on the project area (Figure 4.1). The search area was sufficient to define the pattern of previously recorded Aboriginal sites in the landscape as it covered adjacent catchments. It is important to note that a lack of sites identified on the AHIMS database does not necessarily correlate with a low frequency of sites being present, rather it is more often a reflection of the amount of archaeological survey that has been done in the area. This means that Aboriginal objects may be present in the project area despite the apparent lack of AHIMS sites.

A breakdown of AHIMS sites by type is shown on Figure 4.1 and detailed in Table 4.1.



Source: EMM (2020); DFSI (2017); DFSI (2020); OEH (2019)

- | | | | |
|--|---|--|--|
| Project area | Strahler stream | AHIMS site | ● Axe grinding |
| Major | ⋯ 1st | ● Artefact | ● Burials and carved |
| Contour (10 m) | — 2nd | ● Artefact scatter and | ● Carved |
| | — 3rd | ● Artefact scatter with PAD | ● Isolated |
| | — 4th | ● Artefact scatter, midden and scarred | ● Quarry |
| | — 9th | ● Artefact scatter, axe grinding groove and | ● Scarred |

AHIMS data and the project area

Dubbo Quarry Continuation Project
Aboriginal Cultural Heritage Assessment
Figure 4.1



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Table 4.1 AHIMS extensive search results

| Site Type | Number of sites | Representation (%) |
|--|-----------------|--------------------|
| Open camp sites | 38 | 48.7 |
| <i>Artefact site (number of artefacts not specified)</i> | 24 | 30.8 |
| <i>Artefact scatter</i> | 8 | 10.3 |
| <i>Isolated find</i> | 6 | 7.7 |
| Culturally modified tree | 30 | 38.5 |
| Grinding groove | 2 | 2.6 |
| Burial with culturally modified tree (carved) | 2 | 2.6 |
| Potential archaeological deposit (PAD) | 1 | 1.3 |
| Quarry site with artefacts | 1 | 1.3 |
| Culturally modified tree (scarred) with midden and artefacts | 1 | 1.3 |
| Midden with artefacts | 1 | 1.3 |
| Aboriginal ceremony & dreaming, hearth, grinding groove, artefacts | 1 | 1.3 |
| Artefact reburial location | 1 | 1.3 |
| Total | 78 | 100 |

Open camp sites (artefact scatters and isolated finds) represent the dominant site type for this area representing 48.7% of the site assemblage, followed by culturally modified (carved or scarred) trees were also predominant which account for 38.5% of AHIMS registrations.

Three of the AHIMS sites, Macquarie-OS1 (AHIMS 36-1-0704), Keswick-Scarred Tree-5 (AHIMS 36-1-0179), and K-OS-4 (AHIMS 36-1-0189) are listed as destroyed; however, an additional 15 sites have permits for harm listed against their registration.

There are no AHIMS sites recorded within the project area; however; there are 13 of sites within 1 km which are detailed in Table 4.2. Further information on these sites is provided below in Section 4.4.

Table 4.2 AHIMS sites in proximity to the project area

| Site ID | Site name | Site type | Distance from project area (m) | Section discussed in current report |
|-----------|--------------|---------------------------------|--------------------------------|-------------------------------------|
| 36-1-0251 | EC-OS-6 | Artefact (number not specified) | 83 | Section 4.4.2 |
| 36-1-0254 | EC-AG-1 | Grinding groove | 128 | Section 4.4.2 |
| 36-1-0247 | EC-OS-2 | Artefact (number not specified) | 265 | Section 4.4.2 |
| 36-1-0707 | Hillview-IF1 | Artefact (number not specified) | 289 | Section 4.4.3 |
| 36-1-0253 | EC-AG-2 | Grinding groove | 318 | Section 4.4.2 |
| 36-1-0246 | EC-OS-1 | Artefact (number not specified) | 540 | Section 4.4.2 |
| 36-1-0252 | EC-ST-1 | Modified tree | 589 | Section 4.4.2 |
| 36-1-0250 | EC-OS-5 | Artefact (number not specified) | 607 | Section 4.4.2 |
| 36-1-0186 | K-IF-2 | Isolated find | 634 | Section 4.4.4 |

Table 4.2 AHIMS sites in proximity to the project area

| Site ID | Site name | Site type | Distance from project area (m) | Section discussed in current report |
|-----------|-----------|---------------------------------|--------------------------------|-------------------------------------|
| 36-1-0187 | K-OS-2 | Artefact (number not specified) | 643 | Section 4.4.4 |
| 36-1-0188 | K-OS-3 | Artefact (number not specified) | 666 | Section 4.4.4 |
| 36-1-0249 | EC-OS-4 | Artefact (number not specified) | 710 | Section 4.4.2 |
| 36-1-0248 | EC-OS-3 | Artefact (number not specified) | 805 | Section 4.4.2 |

4.3 Regional archaeological context

Prior to 1985, no systematic archaeological studies had been undertaken in the Dubbo region. Studies had primarily been completed by interested locals and amateur archaeologists such as Gresser (1941) and Milne (Kaus 2003), and to a lesser extent Garnsey, who recorded a number of sites and collected artefacts.

Over the past 40 years a number of archaeological studies of the Dubbo region have been conducted which provide baseline data for placing Aboriginal sites within a regional landscape context, including Pearson (1981) and Balme (1986). Systematic archaeological studies of the region have been completed by Purcell (2000, 2002) and OzArk (2006) which assessed the Brigalow Belt South (BBS) bioregion and the Dubbo LGA, respectively.

4.3.1 Aboriginal Cultural Heritage Assessment Brigalow Belt South (Purcell 2000, 2002)

Between 2000 and 2002, Purcell completed an Aboriginal cultural heritage assessment of the Pilliga and Goonoo State Forests with the aim of increasing understanding of the cultural links between Aboriginal people and the BBS bioregion. Landforms sampled within the state forests included floodplains, soil mantled slopes, terraces, rocky ground, and alluvium.

During the Stage 1 assessment (Purcell 2000), 47 Aboriginal sites were recorded through consultation, oral history, and archival investigations, and 106 Aboriginal sites were identified as a result of archaeological survey. Purcell (2000, p.31) found that sites were most frequently associated with alluvium landforms, demonstrating that 91.5% of sites were located within 200–300 m of water.

Stage 2 of the assessment focused on targeted archaeological survey of landforms identified as potentially sensitive during Stage 1. A total of 849 Aboriginal sites were recorded as a result of the survey, including site types such as artefact scatters, scarred trees, isolated finds, rock engravings, shelters with art, ochre quarries, stone arrangements, and stone quarries. The results of Stage 2 reinforced Stage 1 findings, with the distribution of Aboriginal sites heavily influenced by the variety of water features that occur on floodplain and alluvium landforms including river frontage locations, creek tributaries and chain of ponds.

4.3.2 Dubbo Local Government Aboriginal Heritage Study (OzArk 2006)

In 2006, OzArk assessed Aboriginal heritage resources within the Dubbo LGA to assist Dubbo City Council with future development planning. The study aimed to consolidate previous assessments, establish a baseline for further study, and to survey areas zoned for future development.

Approximately 1,120 ha within five study areas were surveyed surrounding the city of Dubbo. As a result of investigations 26 new Aboriginal sites were recorded, and eight of 12 previously recorded sites were relocated. Proportions of new sites by types were similar to those recorded by previous studies, however fewer scarred trees were identified than expected likely due to intensive agricultural practices and associated land clearance around the city of Dubbo as opposed to the broader region. No new grinding groove sites were identified, which was anticipated due to the low representation (3.6%) in the archaeological record to date. Scarred tree distribution adhered to predictive modelling, exclusively following waterways and fence lines, the latter representative of land clearing practices more than Aboriginal site patterning. Isolated finds and open artefact sites were largely limited to watercourse edges and elevated terraces within 500 m of the Macquarie River and other permanent to semi-permanent waterways.

Findings of the OzArk LGA study findings of specific relevance to the project area are discussed further in Section 4.4.6.

4.4 Local archaeological context

The following is a summary of previous investigations undertaken in the locality, addressing sites identified by the AHIMS extensive search, which are discussed in order of proximity to the project area.

4.4.1 Aboriginal archaeological due diligence assessment, proposed extension to Dubbo Quarry, Sheraton Road NSW (Umwelt 2018)

As part of the current project to continue operations at Dubbo Quarry, Holcim engaged Umwelt in 2018 to complete an Aboriginal heritage due diligence assessment of Lot 22 DP793541 which lies within the current project area.

A site inspection identified the main landform as a broad crest with gently inclined slope to the west (Umwelt 2018, p.5). Ground surface visibility was noted to be 75% constrained by exotic grasses and weeds apart from stock and vehicle tracks. Where the ground surface was visible it was assessed to comprise of remnant A² horizon soils of a red/brown, coarse sandy loam. Umwelt (2018, p.5) noted that the ground surface had been highly disturbed due to clearance of native vegetation and pastoral use, leading to significant erosion. They identified the level of erosion within their subject area as particularly important, particularly when considered in conjunction with the extremely shallow topsoils present in the subject area. They concluded that these characteristics together indicate a low archaeological potential as there is less chance that intact deposits will remain in skeletal topsoil.

No Aboriginal sites were identified as a result of the inspection. Mature eucalypts within the project area were examined for cultural scarring and no artefacts or evidence of flaking or fracturing on the basalt outcropping or pebbles was identified.

Umwelt (2018, p.8) recommended that the proposed works proceed without further archaeological investigation.

4.4.2 Aboriginal archaeological survey of industrial candidate area no 1. – Mitchell/Eulomogo, east of Dubbo, Central West Plains, NSW (CWAHS 1998)

In 1998, Central West Archaeological and Heritage Services Pty Ltd (CWAHS 1998) was commissioned by Dubbo City Council to complete an archaeological assessment of 300 ha of privately-owned land identified as a potential area for a future industrial estate as part of an Urban Development Strategy. CWAHS' study area incorporated the northern portion of the current project area (Lot 22 DP793541).

A total of nine Aboriginal sites were recorded as a result of the assessment, including six open camp sites, two axe grinding groove sites and one scarred tree (CWAHS 1998, p.1). All nine sites are situated within 83 m to 805 m from the current project area (as shown in Figure 4.1) and discussed in order of proximity in Table 4.3.

The findings of the CWAHS assessment conformed with the distributional models of the report which predicted sites would occur along the banks of perennial and ephemeral creek lines, with large open camp sites anticipated to occur within 1 km of Eulomogo Creek. The variability of larger open camp sites such as EC-OS-3 on hillslopes exceeding 1 km from water sources is inferred to indicate that large amounts of basal outcropping would have trapped and pooled sufficient water during periods of rain for use (CHAHS 1998, p.32).

CWAHS (1998, p.33) note the extent of disturbance resulting from changing and current land use has had significant implications for the preservation of Aboriginal sites and the loss of archaeological integrity within the study area most notably as a result of clearance and the continued destruction of known sites as a result of cultivation.

Table 4.3 Aboriginal sites identified by CWAHS (1998)

| AHIMS ID | Site Name | Location | Description | Significance |
|-----------|-----------|--|---|---|
| 36-1-0251 | EC-OS-6 | Located on eastern bank of Eulomogo Creek. | Relatively limited extent and low stone artefact density. | Low to moderate scientific significance due to high levels of disturbance countered by areas of PAD which may contain intact deposit. |
| 36-1-0251 | EC-AG-1 | Located on a bench approximately 25 m north of Eulomogo Creek. | Consisting of a group of at least four poorly defined and highly eroded axe grinding grooves on a soft sandstone outcrop. | Low to moderate scientific significance due to their poor condition but countered by the relative scarcity of the site type locally. |
| 36-1-0247 | EC-OS-2 | Located in ploughed paddock on alluvial flat paddock and southern bank of Eulomogo Creek. | Stone artefact scatter approximately 200 m x 50 m. | Low scientific significance due to high levels of disturbance. |
| 36-1-0253 | EC-AG-2 | Located on a low sandstone bench on the southern immediate edge of Eulomogo Creek. | Consists of at least three identifiable axe grinding grooves. | Low to moderate scientific significance due to their poor condition but countered by the relative scarcity of the site type locally. |
| 36-1-0246 | EC-OS-1 | Located in ploughed paddock on northern bank and adjacent terraces of Eulomogo Creek. | Artefact scatter approximately 170 m x 140 m. | Low to moderate scientific significance due to high levels of disturbance countered by density and range of artefact types. |
| 36-1-0252 | EC-ST-1 | Located on the crest of a low hill. | Probable Aboriginal scarred grey box with four scars within 50 m of EC-OS-5. | Low scientific significance due to ability to provide further information but moderate educational significance due to representativeness of site type. |
| 36-1-0250 | EC-OS-5 | Located within a ploughed paddock on the northern and southern flat banks of an ephemeral creek line which drains into Eulomogo Creek. | Extensive, low artefact density stone artefact scatter approximately 350 m x 40 m. | Low scientific significance due to high levels of disturbance. |
| 36-1-0249 | EC-OS-4 | Located on a low hillslope within a ploughed paddock. | Relatively small area stone artefact scatter approximately 25 m x 25 m. | Low scientific significance due to high levels of disturbance. |
| 36-1-0248 | EC-OS-3 | Located on a low hillslope and plains within a ploughed paddock 500 m east of Keswick South Homestead. | Extensive stone artefact scatter approximately 400 m x 350 m. | Low to moderate scientific significance due to high levels of disturbance countered by density and range of artefact types. |

4.4.3 Aboriginal due diligence archaeological assessment subdivision of Lot 2 DP880413 Sheraton Road, Dubbo NSW Dubbo Regional LGA (OzArk 2017)

In 2017, OzArk Environmental and Heritage Management Pty Ltd (OzArk) was engaged by MAAS Group Properties to undertake an Aboriginal heritage due diligence assessment of Lot 2 DP880413, located on Sheraton Road to the immediate east of the current project area.

Three sites previously recorded by Central West Archaeological and Heritage Services Pty Ltd (CWAHS), as discussed below in Section 4.4.4, were identified within the study area in addition to one new site, Hillview-IF1 (AHIMS 36-1-0707) located approximately 290 m outside of the current project area.

Hillview-IF1 is an isolated mudstone multidirectional core located on a gentle mid-slope landform in a cleared, grazed and possibly ploughed paddock, beside a paddock fence, below a large bench that contains the property residence and sheds (OzArk 2017: 22). The potential for subsurface archaeological deposits was assessed as being low-moderate due to distance from water, the gentle sloping landform, and levels of ground disturbance.

An area of potential archaeological sensitivity encompassing a 30 m buffer from Eulomogo Creek was also identified by the assessment, delineated on the basis of landform potential and the presence of previously recorded Aboriginal objects, sites and PAD (OzArk 2017: 31).

4.4.4 An Archaeological Survey for the Proposed Keswick Housing Sub-division, Dubbo, NSW (CWAHS 1995)

In 1995, CWAHS was commissioned by Hoynes Wheeler and Thorne Development Consultants to complete an archaeological assessment of 415 ha of rural land where a medium density housing development was proposed. The study area is located to the immediate east of the current project area.

A total of 12 Aboriginal sites were recorded as a result of the assessment, including six culturally modified trees, four open camp sites, and two isolated finds. Three of the sites are located within approximately 600 m of the current project area (as shown in Figure 4.1) and discussed in order of proximity in Table 4.4.

CWAHS (1995: 46) attributes the notable absence of larger artefact types such as stone axes or grind stones from the landscape which would once have been present in association with grinding groove sites and millstones, to artefact collectors of the early 1900s. For example, Gresser (1941) refers to large collections of artefacts removed from sites in the locality now known to be kept in the Australian Museum.

Table 4.4 Aboriginal sites identified by CWAHS (1995)

| AHIMS ID | Site Name | Location | Description | Significance |
|-----------|-----------|--|--|--|
| 36-1-0186 | K-IF-2 | Located 70 m north of K-OS-2 on the elevated flat 50 m south of Eulomogo Creek. | A single sandstone slab with evidence of lower millstone use supported by an apparent but barely visible area of silica gloss on one surface. | Significance not assigned. |
| 36-1-0187 | K-OS-2 | Located on an exposed cleared vehicle track at the foot of a gentle slope where slopes join elevated floodplain. | Artefact scatter approximately 10 m x 2 m in a heavily disturbed area. 6 quartz, quartzite, and river pebble artefacts observed including flakes, one possible scraper, and a core. | Low to moderate scientific significance due to the high level of disturbance and low number of artefacts countered by the potential for intact subsurface deposit. |

Table 4.4 Aboriginal sites identified by CWAHS (1995)

| AHIMS ID | Site Name | Location | Description | Significance |
|-----------|-----------|--|--|--|
| 36-1-0188 | K-OS-3 | Located on slightly elevated, gently sloping area between the confluence of Eulomogo Creek and an unnamed ephemeral drainage line. | An extensive crescent shaped artefact scatter approximately 87 m x 88 m. 37 quartz, quartzite and chert artefacts observed including flakes, cores, millstone fragments and an unmodified river pebble. | Moderate to high scientific significance due to high potential to yield further information. |

4.4.5 Assessment of Aboriginal sites in the Dubbo City Area (Koettig 1985)

In 1985, Margrit Koettig was engaged by Cameron McNamara, on behalf of Dubbo City Council, to complete an archaeological assessment of Dubbo city and its limits as part of a Local Environmental Planning study. The assessment was undertaken in consultation with the local and regional Aboriginal Land Council who also participated on fieldwork.

A total of 72 Aboriginal sites were located recorded as a result of the study including 60 open campsites (five with associated scarred trees and three with associated hearth features), 11 scarred trees and one carved tree (Koettig 1985: 71). Ten of the 72 sites, M13 to M22 (AHIMS 36-1-0106 to 36-1-0115), are located within 3.5 km of the current project area, including three scarred River Gums trees and seven open camp sites.

A wide variety of raw lithic materials were identified by the study including quartz, silcrete, quartzite, indurated mudstone, chert and others (Koettig 1985: 117). Artefact assemblages were dominated by flakes, flaked pieces and cores, however backed blades, hammerstones, hatchets, and a grindstone were also recorded (Koettig 1985: 124-125). Artefact densities were noted to markedly decrease in correlation to increased distance from the Macquarie or Talbragar Rivers (Koettig 1985: 127).

4.4.6 Dubbo Local Government Aboriginal Heritage Study (OzArk 2006)

In 2006, OzArk completed a multidisciplinary Dubbo LGA Aboriginal cultural heritage study on behalf of Dubbo City Council. This project overlaid all AHIMS registered sites within the local government area on a mapped geomorphological GIS layer of landforms.

This study recorded a total of 26 Aboriginal sites. Nine of the 26 sites are located from 3.5 km to 7 km from the current project area. These sites include four scarred trees (DLGA-ST-01, 02, 06 and 07), two isolated finds (DLGA-IF-01 and 02) and three open camp sites (DLGA-OS-01 to 03). All nine sites are located along the immediate margins of the Macquarie river which conforms with the findings of the study which noted that the banks of the Macquarie River exhibited elevated archaeological sensitivity.

4.4.7 Tracker Riley Cycle Way Extension, Dubbo NSW: Aboriginal Heritage Assessment (OzArk 2009)

In 2009, OzArk completed an Aboriginal heritage assessment on behalf of Dubbo City Council for proposed extensions to the Tracker Riley Cycle Way located approximately 5km from the current project area. In addition to four previously recorded Aboriginal sites, which included two scarred trees and one isolated find, OzArk identified two additional scarred trees, Dundullimal Reserve ST1 (AHIMS 36-1-0613) and Dundullimal Reserve ST2 (AHIMS 36-1-0614), and one open camp site with PAD, Dundullimal Reserve Open Site with PAD (AHIMS 36-1-0615).

4.5 Predictive model

A predictive model of Aboriginal site location has been devised based on the data presented in the preceding sections. In summary, the model has been formed by an analysis of:

- landscape features in the project area and surrounds;
- pre-colonial period ecological conditions;
- advice from Aboriginal knowledge holders including RAPs;
- ethno-historical information about Aboriginal life and material culture; and
- the type and distribution of Aboriginal sites described in previous reports and AHIMS data.

The model enabled predictions to be made about the location of Aboriginal sites within the project area and this information guided the archaeological survey effort performed as part of this ACHA. The results from the predictive model are summarised below.

The project area contains a number of landscape features, which are often associated with Aboriginal objects and archaeological sensitivity as a result of Aboriginal people's use of those features in their everyday lives and for traditional cultural activities. Proximity to Eulomogo Creek and other ephemeral waterways and the subsequent availability of animal and plant resources in addition to natural materials suitable for artefact manufacture indicate that the project area would have been a locale highly likely to have attracted Aboriginal occupation. It must be noted that landscapes possessing archaeological sensitivity identified through desktop studies may not deliver on that potential as a result of natural processes (ie flooding events or erosion) or as a result of anthropogenic disturbances such as farming activities including tree clearing and cultivation.

The following areas within the project area have been identified from desktop level as areas of potential archaeological sensitivity, acknowledging that archaeological material has a higher likelihood of occurring within these areas in contrast to the surrounding landscape:

- within 30 m of ephemeral waterways;
- within 200 m of Eulomogo Creek;
- level areas associated with hill crests; and
- areas of stone outcropping.

Predictions for the types of Aboriginal sites likely to be identified within the project area are as follows:

- **Open stone artefact sites** (scatters and isolated finds) are the most likely site types to occur in the project area due to the prevalence of this site type in the locality and the proximity of the project area to Eulomogo Creek;
- **Areas of potential archaeological deposit (PAD)** have the potential to occur within the project area given its proximity to Eulomogo Creek. The project area exhibits varying levels of disturbance and it is possible that less disturbed areas may retain archaeological deposit;
- **Grinding grooves** are known to occur in the local area and have the potential to occur where stone outcropping is present within the project area in proximity to Eulomogo Creek;

- **Modified trees** (scarred or carved) may occur if mature trees of a sufficient age to bear the marks of traditional Aboriginal scarring or carving are present. The project area has been subject to a high level of historical land clearing practices; however, a number of isolated mature trees remain present across the project area which have the potential to display evidence of cultural modification;
- **Quarry sites** have the potential to occur as the geology within the project area does exhibit outcropping; however, investigations in the area have thus far failed to identify any clear signs of quarrying activity; and
- **Ceremonial grounds, mythological sites, and burials** can occur anywhere in the landscape, but their identification is very rare. Generally, they would be visually identifiable by mounds of earth or stone markers arranged in a conspicuous layout. These are unlikely to occur or survive in the project area because of the high levels of ground disturbance.

5 Archaeological survey

5.1 General

EMM conducted an archaeological field survey of the survey area with the assistance of RAP site officers between 16 July and 18 July 2019. The survey was completed over a total of three days.

The primary aims of the survey were to:

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

5.2 Sampling strategy

At the time of survey, the proposed development footprint was not known and as such the project area was assessed as a whole for potential development. The survey strategy was developed on the basis of the predictive model for Aboriginal site location (refer Section 4.5). The overarching aims of the survey strategy were to focus on the landforms most likely to feature Aboriginal sites (areas of high archaeological sensitivity such as creek lines) while also gathering a representative sample of landforms less likely to feature Aboriginal sites to confirm predictions of low archaeological sensitivity. The SEA development footprint was not surveyed in detail due to high levels of disturbance and the general low archaeological sensitivity of the landform.

The survey area was categorised into classes of landforms for sampling during the survey. The extent of sampling within each landform class was proportionate to its level of archaeological sensitivity as presented in the predictive model. Prior to the survey, the project area was divided into broad landform classes, guided by the definitions presented in the *Australian Soil and Land Survey Field Book* (National Committee on Soil and Terrain 2009). This approach allowed for a broad landscape division to assist survey planning and was flexible enough to allow specific landform elements to be defined during the field survey. Landforms and their corresponding elements are described in Table 5.1. The landform classes guided the boundaries of the survey transects which were further categorised into more specific landform elements.

Table 5.1 Landform classes and their corresponding landform elements

| Landform class | Landform element |
|----------------|--|
| Hill slope | Hill slope was divided into two categories: <ul style="list-style-type: none">• Hill slope 1 – very gentle to gently inclined slopes (representing areas suitable for Aboriginal camping activities); and• Hill slope 2 – slopes of moderate inclination and above (representing steeper terrain not typically suitable for open camp sites). |
| Flat | This includes flat terrain including undulating plains, flood plains and terraces. |
| Watercourse | This includes stream channels and a 50 m corridor of land adjacent to watercourses. |

5.3 Survey methods

The archaeological survey and data collection methods followed Section 2.2 of the Code (DECCW 2010a). The survey involved pedestrian field transects within defined landform units. The survey team comprised three people per day. Each survey participant was spaced approximately 5 m apart. This method was considered to be suitable for a landscape characterised by modified paddocks, whereby suitable ground exposures were easy to identify and targeted at this spacing. The assessment calculations assume that each participant could only observe approximately 5 m of the ground surface in front of them (ie three field members covered 15 m of ground).

The survey team targeted ground exposures along transects such as outcropping bedrock, ploughed fields, vehicle and animal tracks, scalds and sheetwash erosion and stream banks, all of which provided good ground surface visibility for identifying Aboriginal objects. The survey team paid particular attention to outcropping stone material that dominated parts of the survey area.

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

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

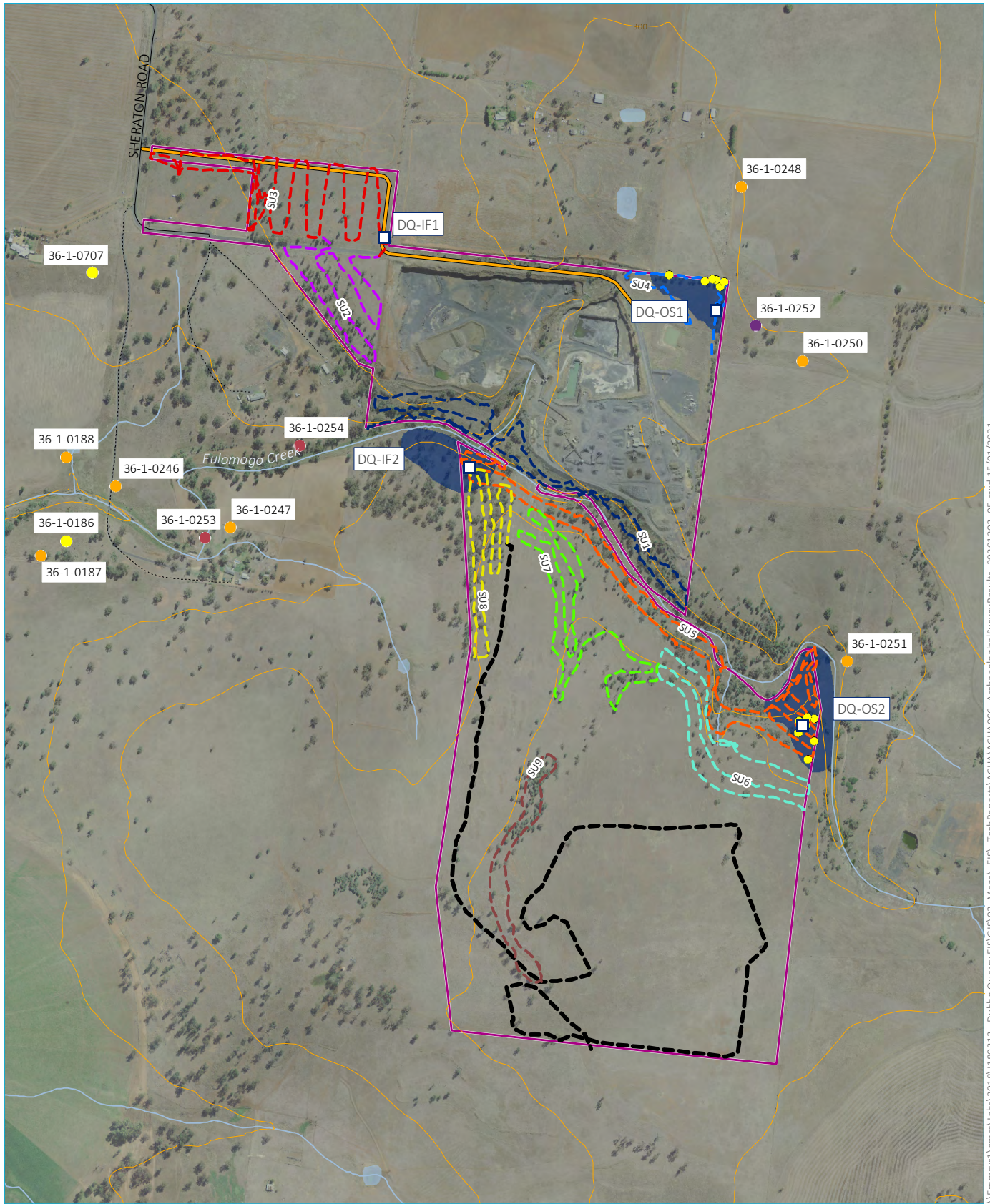
All artefact locations were marked with high visibility stake flags and/or flagging tape. Site locations and details were checked and finalised using ArcGIS software Collector and ArcMap post-fieldwork. Hand-held non-differential GPS units were also used to mark individual artefact locations when recording sites with multiple artefacts. These locations were linked to the Survey123 site locations and assisted in defining site boundaries. Survey transects were recorded on a separate Survey123 form created by EMM. The Survey123 form allowed for survey transects starting points, details, and representative photographs to be recorded. The course of survey transects were recorded as tracks on hand-held non-differential GPS units which were linked to the Survey123 forms. Further information regarding Aboriginal site definitions and recording methods are provided in Appendix C.

5.4 Effective survey coverage

5.4.1 Pedestrian survey

The project area was divided into nine survey units which were assessed via pedestrian survey transects (refer to Figure 5.1). A description of each survey unit is provided in overview photographs of each survey unit showing landforms, ground surface visibility conditions and disturbance levels are shown in Plate 5.1 to Plate 5.54.

Survey transect coverage as shown on Figure 5.1 represents the survey effort of one individual and as such does not accurately represent the full area covered by the three person survey team, which sometimes involved people separating beyond 10 m spacing to inspect key landscape features such as rock outcrops and trees along the general transect alignment.



Source: EMM (2020); DFSI (2017); DFSI (2020); OEH (2019)

KEY

- | | | | | |
|---------------------------|--------------------|---------------------|-----------------|-----|
| Project area | Aboriginal site | AHIMS site type | Survey transect | SU5 |
| Proposed access road | Aboriginal site | Artefact scatter | SU1 | SU6 |
| Contour (10 m) | Artefact | Axe grinding groove | SU2 | SU7 |
| Minor road | Isolated find | Scarred tree | SU3 | SU8 |
| Vehicular track | Vehicle inspection | | SU4 | SU9 |
| Watercourse/drainage line | | | | |
| Waterbody | | | | |

Archaeological survey results

Dubbo Quarry Continuation Project
Aboriginal Cultural Heritage Assessment
Figure 6.1



\\Emmsvr1\emms\loba\2018\U180313 - Dubbo Quarry EIS\GIS\02_Maps\EIS_TechReports\ACHA\ACHA006_Archaeological Survey Results_2020\203_05.mxd 15/01/2021

Table 5.2 Survey unit descriptions

| Survey unit | Description | Aboriginal sites |
|-------------|--|------------------|
| SU1 | Northern bank of Eulomogo Creek. High levels of disturbance associated with operation of the quarry, including but not limited to grading, earthworks, and construction (ie roads and utilities), were observed in the western and central portions of SU1. The eastern portion of SU1 is dominated by steep slopes receding to the creek line with a large amount of basalt outcropping with limited to no topsoil. | Nil |
| SU2 | Hill slope northerly adjacent to SU1. High levels of disturbance were observed across SU2 including extensive vegetation clearance, wide graded surfaces along the eastern boundary and deep graded cuttings along the north-western boundary. Soil profiles were shallow and stoney dominated by basalt material. | Nil |
| SU3 | Undulating plain in north-west of project area receding slightly to the west. The western portion of SU3 has been fenced and horse-keeping facilities constructed including fencing, irrigation, and shelters. The central portion contains remnant mature vegetation. All trees were inspected, but no evidence of cultural scarring was identified. Shallow stoney profile with large amounts of basalt surface outcropping and gravel. The eastern portion of the project area demonstrated high levels of disturbance associated with vegetation clearance, cultivation, and livestock. One isolated artefact, DQ-IF1, was identified in the south-eastern corner of SU3. | DQ-IF1 |
| SU4 | Flat plain in north-eastern corner of the project area. Demonstrates extensive disturbance associated with cultivation and dam construction as well as quarry land-use including stockpiling of material. Open artefact scatter, DQ-OS1, is identified as extending in low density across SU4. | DQ-OS1 |
| SU5 | Southern bank of Eulomogo Creek. The eastern portion of SU5 is dominated by steep slopes receding to the creek line with large basalt boulders and outcropping. A U-bend in the creek line at the eastern extent has created a large terrace approximately 180 m by 110 m. The area has been cleared of vegetation, with limited mature trees remaining, and has been subject to cultivation and livestock. Open artefact scatter, DQ-OS2, was identified at this location. Central portion of SU5 is dominated by slight to moderate slopes receding to the creek line with a large amount of basalt outcropping with limited to no topsoil, and towards the east large areas of exposed bedrock. The western portion of SU5 is a large terrace approximately 200 m by 90 m. Beyond vegetation clearance and livestock impacts, the area did not show obvious signs of disturbance. In contrast to the neighbouring paddock, it does not appear to have been cultivated (at least in recent times). Isolated find, DQ-IF2, was identified in associated with this western terrace. | DQ-IF2 DQ-OS2 |
| SU6 | Flat plain of upper plateau which extends to the break of slope receding to Eulomogo Creek. Demonstrates high levels of disturbance including cultivation and stone raking. The land up to the break of slope has been largely cleared with occasional remnant Cyprus Pine. | Nil |
| SU7 | Isolated pockets of uncultivated land on the flat plain of the upper plateau which extends to the break of slope receding to Eulomogo Creek. Remnant vegetation predominantly Cyprus Pine with occasional eucalyptus. Shallow stoney soil profiles with areas of exposed basalt bedrock. | Nil |
| SU8 | Moderately steep hillslope of open woodland of Cyprus Pine and eucalyptus which recedes to the west from the edge of exposed bedrock on the central plateau. Shallow stoney soil profiles with areas of exposed basalt bedrock. | |
| SU9 | Isolated pockets of uncultivated land on the eastern margin of the upper plateau. Flat plain with stoney profile soils with an abundance of basalt material and areas of exposed bedrock. Occasional stands of young Cyprus Pine, and isolated mature eucalypts. | Nil |

Survey coverage data is summarised in Table 5.3 and landform coverage data in Table 5.4.

GPS track log data indicates that each survey participant walked approximately 17.52 km, representing a total survey area of 262,800 m². Visibility across the project area was generally high, averaging 30%, whilst instances of exposure, typically due to disturbances, averaged 18%. When visibility and exposure is considered, the average survey coverage effectiveness is 15,699 m² or 5.97%. Effective survey coverage conditions were adequate to characterise the archaeology of the area.

Table 5.3 Effective survey coverage – survey unit summary

| Survey unit | Landform | Transect length (m) | Transect width (m) | Transect Area (sq. m) | Visibility (%) | Exposure (%) | Effective coverage (m ²) | Effective coverage (%) |
|-------------|--------------|---------------------|--------------------|-----------------------|----------------|--------------|--------------------------------------|------------------------|
| 1 | Watercourse | 2,440 | 15 | 36,600 | 20 | 15 | 1,098 | 3 |
| 2 | Hill slope 1 | 1,250 | 15 | 18,750 | 35 | 40 | 2,625 | 14 |
| 3 | Flat | 2,680 | 15 | 40,200 | 40 | 25 | 4,020 | 10 |
| 4 | Flat | 920 | 15 | 13,800 | 15 | 10 | 207 | 1.5 |
| 5 | Watercourse | 3,570 | 15 | 53,550 | 40 | 10 | 2,142 | 4 |
| 6 | Flat | 1,730 | 15 | 25,950 | 25 | 20 | 1,298 | 5 |
| 7 | Flat | 2,130 | 15 | 31,950 | 40 | 25 | 3,195 | 10 |
| 8 | Hill slope 2 | 1,580 | 15 | 23,700 | 20 | 10 | 474 | 2 |
| 9 | Flat | 1,220 | 15 | 18,300 | 35 | 10 | 641 | 3.5 |

Table 5.4 Effective survey coverage – landform summary

| Landform | Landform area (sq. m) | Effective survey coverage (m ²) | Effective survey coverage (%) | Number of Aboriginal sites | Number of artefacts or features |
|-------------|-----------------------|---|-------------------------------|----------------------------|---------------------------------|
| Watercourse | 90,150 | 3,240 | 3.6 | 2 | ≥25 |
| Hill slope | 18,750 | 2,625 | 14 | 0 | 0 |
| Flat | 153,900 | 9,835 | 6.4 | 2 | ≥10 |

5.4.2 Vehicle inspection

The southern portion of the project area is characterised by a heavily cultivated plateau which features scattered paddock trees (see Plate 5.55). Due to high levels of disturbance the area was not subject to pedestrian survey, rather mature trees across the plateau were inspected via vehicle for any signs of cultural scarring.

No scars were observed; however, as shown in Plate 5.56 to Plate 5.60, large amounts of rock has been cleared from the plateau and mounded around paddock trees obscuring the tree trunk prohibiting proper inspection.



Plate 5.1 Western SU1. Northern bank Eulomogo Creek. View east



Plate 5.2 Western SU1. Northern bank Eulomogo Creek. GSV example



Plate 5.3 Central SU1. Northern bank Eulomogo Creek. View west



Plate 5.4 Central SU1. Northern bank Eulomogo Creek. GSV example



Plate 5.5 Eastern SU1. Northern bank Eulomogo Creek. View west



Plate 5.6 Eastern SU1. Northern bank Eulomogo Creek. GSV example



Plate 5.7 Northern SU2. Graded ditch and fence line. View south-west



Plate 5.8 Northern SU2. Imported gravel and concrete. GSV example



Plate 5.9 Central SU2. View south-east.



Plate 5.10 Central SU2. GSV example



Plate 5.11 Southern SU2. Earthworks disturbance. View south



Plate 5.12 Eastern SU2. Graded disturbance. View north



Plate 5.13 Western SU3. View north-west



Plate 5.14 Western SU3. GSV example



Plate 5.15 Central SU3. View west



Plate 5.16 Central SU3. GSV example



Plate 5.17 Eastern SU3. View east



Plate 5.18 Eastern SU3. GSV example



Plate 5.19 Eastern boundary SU4. View north



Plate 5.20 Eastern SU4. GSV example



Plate 5.21 Central SU4. Large spoil mounds. View south-east



Plate 5.22 Central SU4. GSV example



Plate 5.23 Northern boundary SU4. View north-east



Plate 5.24 Western SU4. Highly disturbed. View south-west



Plate 5.25 Western SU5. Southern bank Eulomogo Creek. Location of DQ-IF2. View north



Plate 5.26 Western SU5. Southern bank Eulomogo Creek. GSV example



Plate 5.27 Central SU5. Southern bank Eulomogo Creek. View west



Plate 5.28 Central SU5. Southern bank Eulomogo Creek. GSV example



Plate 5.29 Eastern SU5. Southern bank Eulomogo Creek. Location of DQ-OS2. View north



Plate 5.30 Eastern SU5. Southern bank Eulomogo Creek. Location of DQ-OS2. View north



Plate 5.31 Eastern SU6. Edge of cultivated flat. View west



Plate 5.32 Eastern SU6. GSV example



Plate 5.33 Central SU6. View west



Plate 5.34 Central SU6. GSV example



Plate 5.35 Eastern SU6. View north-west



Plate 5.36 Eastern SU6. GSV example



Plate 5.37 Eastern SU7. View east



Plate 5.38 Eastern SU7. GSV example



Plate 5.39 Central SU7. View west



Plate 5.40 Central SU7. GSV example



Plate 5.41 Western SU7. View west



Plate 5.42 Western SU7. GSV example



Plate 5.43 Southern SU8. View north



Plate 5.44 Southern SU8. GSV example



Plate 5.45 Central SU8. View south



Plate 5.46 Central SU8. GSV example



Plate 5.47 Northern SU8. View north



Plate 5.48 Northern SU8. GSV example



Plate 5.49 Southern SU9. View south



Plate 5.50 Southern SU9. GSV example



Plate 5.51 Central SU9. View north



Plate 5.52 Central SU9. GSV example



Plate 5.53 Northern SU9. View north



Plate 5.54 Northern SU9. View north



Plate 5.55 Vehicle inspection. Central plateau. View north



Plate 5.56 Vehicle inspection. South-western plateau corner. View east



Plate 5.57 Vehicle inspection. North-eastern plateau corner. View east



Plate 5.58 Vehicle inspection. North-eastern plateau corner. View north



Plate 5.59 Vehicle inspection. South-eastern plateau corner. View east



Plate 5.60 Vehicle inspection. South-eastern plateau corner. View west

5.5 Aboriginal sites identified

A total of four Aboriginal sites were identified within the project area (refer to Table 5.5).

Table 5.5 Aboriginal sites identified

| Site name | Site type | Location (GDA 94 Zone 55) | Landform |
|-----------|---------------------------|---------------------------|-------------------------|
| DQ-IF1 | Isolated find | 655715E 6427521N | Flat (undulating plain) |
| DQ-IF2 | Isolated find with PAD | 655881E 6426981N | Watercourse (terrace) |
| DQ-OS1 | Artefact scatter with PAD | 656469E 6427311N | Flat (undulating plain) |
| DQ-OS2 | Artefact scatter with PAD | 656615E 6426343N | Watercourse (terrace) |

5.5.1 Dubbo Quarry – Isolated Find 1 (DQ-IF1)

Dubbo Quarry – Isolated Find 1 (DQ-IF1) is an isolated sandstone manuport with ground surface. The artefact was identified in a disturbed context near the base of a Cyprus Pine near the south-eastern entry gate to SU3. No other artefacts or material suitable for artefact manufacture was identified in the vicinity. Due to the likely displaced nature of the artefact and shallow stoney soil profiles, no associated sub-surface deposit is anticipated.



Plate 5.61 Location of DQ-IF1 within SU3. View north



Plate 5.62 DQ-IF1 sandstone manuport



Plate 5.63 DQ-IF1 – detail of ground surface



Plate 5.64 DQ-IF1 – detail of ground surface

5.5.2 Dubbo Quarry – Isolated Find 2 (DQ-IF2)

Dubbo Quarry – Isolated Find 2 (DQ-IF2) is an isolated sandstone grinding dish fragment approximately 16 cm long, 12 cm wide and 3 cm thick. The artefact was identified on a defined terrace landform approximately 200 m by 90 m adjacent to Eulomogo Creek within SU5. No other artefacts or material suitable for artefact manufacture was identified in the vicinity. The terrace has been defined as a potential archaeological deposit (PAD) due to anticipated deeper soil profiles and the likelihood of additional cultural material occurring sub-surface.



Plate 5.65 Location of DQ-IF2 within SU5. Eulomogo Creek in background. View north-west



Plate 5.66 DQ-IF2 grinding dish fragment



Plate 5.67 DQ-IF2 – detail



Plate 5.68 DQ-IF2 – detail

5.5.3 Dubbo Quarry – Open Site 1 (DQ-OS1)

Dubbo Quarry – Open Site 1 (DQ-OS1) is an artefact scatter (≥ 10 artefacts) identified on flat plain in north-eastern corner of the project area within SU4 associated with an unnamed ephemeral waterway. The area demonstrates high levels of disturbance associated with agricultural land use (primarily cultivation) and quarry land-use. Artefact types included ground-edge axe fragments, cores, hammerstones, flakes, blades and debitage. Materials included sandstone, basalt, quartz, quartzite and silcrete. One possible flaked glass artefact was also identified.

The area has been defined as a potential archaeological deposit (PAD) due to anticipated deeper soil profiles and the potential for additional cultural material to occur sub-surface, including intact deposit below the plough zone.

It is likely that these artefacts form part of a continuous background artefact scatter associated with “EC-OS-5” (AHIMS 36-1-0250, refer to Section 4.3).



Plate 5.69 Location of DQ-OS1 within SU4. View north-east



Plate 5.70 DQ-OS1 ground-edge axe fragment



Plate 5.71 DQ-OS1 quartz flaked artefacts



Plate 5.72 DQ-OS1 quartzite core



Plate 5.73 DQ-OS1 silcrete and basalt flaked artefacts



Plate 5.74 DQ-OS1 possible flaked glass artefact

5.5.4 Dubbo Quarry – Open Site 2 (DQ-OS2)

Dubbo Quarry – Open Site 2 (DQ-OS2) is an artefact scatter (≥ 25 artefacts) identified on a large terrace within SU5 approximately 200 m by 90 m located at a U-bend in Eulomogo Creek. The area demonstrates moderate to high levels of disturbance primarily associated with vegetation clearance and cultivation. A diverse variety of artefact types were identified including ground-edge axe fragments, sandstone grinding dish fragment, grinding stone, hammerstones, flakes, blades and debitage. Materials included sandstone, basalt, quartz and silcrete.

The terrace has been defined as a PAD due to anticipated deeper soil profiles and the potential for additional cultural material to occur sub-surface, including intact deposit below the plough zone.

It is likely that these artefacts form part of a continuous background artefact scatter associated with “EC-OS-6” (AHIMS 36-1-0251, refer to Section 4.3).



Plate 5.75 Location of DQ-OS2 within SU5. Eulomogo Creek in background. View north-east



Plate 5.76 Location of DQ-OS2 within SU5. Eulomogo Creek in background. View north



Plate 5.77 DQ-OS2 ground-edge axe fragment



Plate 5.78 DQ-OS2 ground-edge axe fragment - detail



Plate 5.79 DQ-OS2 grinding stone



Plate 5.80 DQ-O2 ground-edge axe fragment and flaked artefacts



Plate 5.81 DQ-OS2 flaked artefacts



Plate 5.82 DQ-OS2 flaked artefacts



Plate 5.83 DQ-OS2 grinding dish fragment



Plate 5.84 DQ-OS2 grinding dish fragment – detail

5.6 Discussion

The archaeological investigation has provided an informative and representative example of the widespread occupation of Aboriginal people in the survey area. Assessment findings largely conformed to the predictive model, with all Aboriginal sites, with the exception of DQ-IF1 which is likely displaced within a disturbed context, identified within 30 m of ephemeral waterways or within 200 m of Eulomogo Creek. The frequent distribution of open sites on landforms associated with watercourses demonstrates that the project area was part of a landscape utilised by Aboriginal people for its natural resources.

As anticipated, open stone artefact sites (scatters and isolated finds) were the dominant site type. The absence of more obtrusive artefact types such as stone axes at DQ-IF2 is potentially a result of curation of the archaeological record following collections undertaken in the early 1900s by individuals such as Gresser (1941) who refers to large collections of artefacts removed from sites in the locality now known kept in the Australian Museum. Similar conclusions were drawn by Central West Archaeological and Heritage Services through their investigations of the local area (refer to Section 4.3). Furthermore, widespread historical disturbance (eg clearing, cultivation and rock-picking) will have affected their current representation in the landscape.

Soil profiles across the project area were typically shallow and stoney with frequent outcropping of basalt bedrock. Landforms associated with DQ-IF2, DQ-OS1 and DQ-OS2 demonstrated a potential for greater depth of deposit accumulated as a result of fluvial processes, and as such these areas have been characterised as having the potential to contain sub-surface cultural deposits. The development footprint has limited surface and subsurface archaeological potential due to shallow and stoney soil profiles with limited depth of deposit, in addition to predictive archaeological modelling and assessment findings which establish that areas over 200 m from Eulomogo Creek are unlikely to feature Aboriginal objects and where present are sporadically deposited or displaced in disturbed contexts.

Areas of outcropping basalt along Eulomogo Creek were thoroughly inspected for evidence of grinding grooves; however, none were identified. Two grinding groove sites EC-AG-1 (AHIMS 36-1-0251) and EC-AG-2 (AHIMS 36-1-0253) (refer to Section 4.4.2) have been identified associated with Eulomogo Creek within approximately 300 m proximity to the project area. However, each of these sites were identified on sandstone outcropping, and no sandstone outcropping was identified within the project area. The presence of ground-edge axes at open artefact sites within the project area suggests movement of peoples along Eulomogo Creek to exploit the various resources available within the corridor.

Modified trees in the local region have predominantly been identified along the banks of the Macquarie River (9th order). This is likely a product of mature native vegetation being retained within a riparian corridor along the Macquarie River, and more intensified vegetation clearance across surrounding agricultural properties including the project area. Similarly, no ceremonial sites, Aboriginal stone arrangements, rock art or burials were identified. The identification of such sites are rare generally, primarily because they represent rarer activities, but also because widespread historical disturbance is likely to have destroyed or highly disturbed their archaeological indicators in the landscape.

The AHIMS data, along with background research and the findings of the assessment show that the project area is only a small portion of a much broader and dynamic cultural landscape. Finds within the project area are representative of a continuous archaeological character, and that many more sites are likely to be found in similar landscape contexts throughout pastoral properties in the locality.

6 Significance assessment

6.1 General

All Aboriginal objects in NSW are protected under the *National Parks and Wildlife Act 1974*. It is recognised that the destruction of sites may be necessary to allow other activities or developments to occur. In order for the consent authority to make informed decisions on such matters, an important element of cultural resource management is determining the significance of cultural heritage places and objects to understand what may be lost; and how best it can be mitigated. However, it is highlighted that something can be of little or no significance and still be protected under the Act.

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

The criteria adopted for this report are defined in Table 6.1.

Table 6.1 A summary of criteria used to assess the cultural significance (OEH 2011, 8–10)

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

6.2 Statement of significance

Table 6.2 provides a summary of the significance values for each Aboriginal object and/or site identified.

Table 6.2 Significance of Aboriginal objects and/or sites identified

| Site | AHIMS # | Site Type | Scientific | Aesthetic | Historical | Cultural | Overall |
|--------|-----------|------------------------|--|---|--|---|--|
| DQ-IF1 | 44-4-0383 | Isolated find | Low – DQ-IF1 consists of an isolated artefact within a heavily disturbed context. Shallow stoney soil profiles in combination with existing disturbances limit the site’s scientific potential. | Low – DQ-IF1 is an isolated artefact located within a heavily disturbed context. The object is not associated with any defined landform or feature to give it aesthetic value. | Nil – there are no known written or oral historical references to the site. | High - provides tangible evidence of the use of the area by Aboriginal people. It is noted RAPs place cultural value on any Aboriginal objects identified within the project area. | Low – whilst its existence symbolises Aboriginal presence in the landscape, it can tell us little more than what is already known and established in archaeology. Notwithstanding the limited scientific potential, it is of cultural significance to the Aboriginal community. |
| DQ-IF2 | 44-4-0384 | Isolated find with PAD | Moderate – DQ-IF2 consists of an isolated grinding dish fragment which is a rare artefact type for the region. Whilst only one surface object was identified, disturbance of the area appears limited and scientific value of the site is increased by the potential for intact sub-surface cultural deposit. | Low/Moderate – DQ-IF2 is associated with a defined terrace landform. The area has aesthetic value for its sensory and scenic association to Eulomogo Creek, however observable Aboriginal objects are limited to one surface artefact. | Nil – there are no known written or oral historical references to the site. | High - provides tangible evidence of the use of the area by Aboriginal people. It is noted RAPs place cultural value on any Aboriginal objects identified within the project area. | Moderate – the level of disturbance, artefact type, and sub-surface potential have all contributed to this site being categorised as having overall moderate significance. |

Table 6.2 Significance of Aboriginal objects and/or sites identified

| Site | AHIMS # | Site Type | Scientific | Aesthetic | Historical | Cultural | Overall |
|--------|-----------|---------------------------|---|--|--|---|---|
| DQ-OS1 | 36-1-0773 | Artefact scatter with PAD | Low – DQ-OS1 contained a diverse range of artefact types but was located in an area exhibiting extensive disturbance which has reduced its archaeological integrity and hence its scientific value. However, it is acknowledged that there may be potential for in-tact sub-surface deposit below the plough zone. | Low – DQ-OS1 has limited aesthetic value due to its heavily disturbed context and lack of clear association with a landform feature. | Nil – there are no known written or oral historical references to the site. | High - provides tangible evidence of the use of the area by Aboriginal people. It is noted RAPs place cultural value on any Aboriginal objects identified within the project area. | Low – the level of disturbance, material and surface potential have all contributed to this site being categorised as having overall low significance. The site holds little value beyond its physical contents which has been significantly compromised. |
| DQ-OS2 | 36-1-0774 | Artefact scatter with PAD | Moderate – DQ-OS2 presented a diverse range of artefact types but was located in an area disturbed by cultivation. This has reduced its archaeological integrity and hence its scientific value. However, it is acknowledged that there may be potential for in-tact sub-surface deposit below the plough zone. | Low/Moderate - DQ-OS2 is associated with a defined terrace landform. The area has aesthetic value for its sensory and scenic association to Eulomogo Creek and a large number of surface artefacts. However, the aesthetic qualities of the area have been impacted by disturbances including vegetation clearance and cultivation. | Nil – there are no known written or oral historical references to the site. | High - provides tangible evidence of the use of the area by Aboriginal people. It is noted RAPs place cultural value on any Aboriginal objects identified within the project area. | Moderate – the level of disturbance, material and surface potential have all contributed to this site being categorised as having overall moderate significance. |

7 Impact assessment

7.1 Overview

The project will result in impacts to Aboriginal objects within the proposed development footprints as shown on Figure 1.3. Ground disturbance activities have the potential to impact known and unknown Aboriginal objects in the project area.

A summary of the potential archaeological impact of the project on known Aboriginal sites within the project area is provided in Table 7.1.

Table 7.1 Impact summary

| Site Name | AHIMS site number | Significance | Impact type | Impact assessment | Consequence of impact |
|-----------|-------------------|--------------|-------------|-------------------|-----------------------|
| DQ-IF1 | 44-4-0383 | Low | Direct | Total loss | Total loss of value |
| DQ-IF2 | 44-4-0384 | Moderate | None | No impact | No loss of value |
| DQ-OS1 | 36-1-0773 | Low | None | No impact | No loss of value |
| DQ-OS2 | 36-1-0774 | Moderate | None | No impact | No loss of value |

7.2 Measures to minimise harm

An iterative design process has resulted in avoidance of impacts to the majority of Aboriginal sites located within the project area. As noted in Section 5.2, at the time of survey, the proposed development footprint was not known and as such the project area was assessed as a whole for potential development. The development footprint has been refined with the objective of developing an efficient project that avoids and minimises environmental impacts wherever feasible. Avoidance of Aboriginal cultural heritage values has been a key aspect of this refinement process wherever possible.

7.3 Intergenerational equity

Aboriginal heritage management is based on the principle of *intergenerational equity* which has the intention to ensure present generations consider future generations when making management decisions on environmental issues. This principle is possibly the most relevant part of the notion of *ecologically sustainable development* (ESD) when considering Aboriginal heritage management.

This principle can be achieved by a regional program of protection for representative cultural landscapes and sites. The project will result in minor loss to the local archaeological resource. The only impacted Aboriginal site DQ-IF1 will be subject to total loss. The site comprises an isolated artefact within a disturbed context and as a result the cultural landscape will not be meaningfully affected by its removal.

7.4 Cumulative impacts within the region

Unavoidable harm to Aboriginal objects is acknowledged as a result of the project. The project will impact one Aboriginal site, DQ-IF1, assessed as a site of low archaeological significance. The design of the current project avoids impact to all remaining identified Aboriginal sites. The project will have a negligible loss of the Aboriginal archaeological record in the area.

7.5 Potential impacts to unidentified sites

Artefacts may occur very sporadically (probably as isolated artefacts or small artefact scatters) within or outside of the survey transect paths, but within the development footprint, in an unpredictable pattern representative of background scatter. The limitation of almost every archaeological survey is that ground surface visibility affects the identification of all artefacts within any given survey area. The key aim is to have characterised the archaeological nature of the proposed area of impact for a project (ie the development footprint) so that appropriate avoidance and mitigation measures can be employed on a broader scale. Unknown artefacts may occur in moderately to highly-disturbed areas predicted to be of low archaeological significance.

EMM notes that although the development footprint covers a broad area, the majority has been subject to extensive disturbance resulting from agricultural land use and quarrying activities.

The project is unlikely to impact additional significant or obtrusive site types such as grinding groove sites or extensive artefact scatters because the survey specifically targeted landform features predicted to contain such types.

EMM acknowledges that it is possible that not all scar trees have been identified within the development footprint and therefore potential impacts to unknown scar trees are not currently determined. This is addressed further in Section 8.2.5iia.

7.6 Ground vibration impacts

This assessment has considered the risk of impact to Aboriginal sites within and surrounding the project area as a result of ground vibration emission levels from extraction blasting.

Aboriginal site types within and surrounding the project area are predominantly unobtrusive, such as artefact scatters and isolated finds, and areas of PAD, which are typically not at risk of harm from ground vibration.

Obtrusive Aboriginal sites, such as rock shelters, are most susceptible to vibrational impacts due to the potential for rock fall or collapse. It is noted that two grinding groove sites, EC-AG-1 (36-1-0254) and EC-AG-2 (36-1-0253) are located on sandstone outcropping along Eulomogo Creek outside of the project area (refer to Section 4.2 and 4.4.2). Unlike underground mining and subsidence impacts which can fracture of bedrock expanses where grinding grooves occur, the potential for ground vibration from blasting to harm grinding groove sites is low if outside risk parameters. EC-AG-1 and EC-AG-2 are located 310 m and 530 m from the existing pit. At its closest point, the WEA is 320 m from EC-AG-1 and 570 m from EC-AG-2, whilst the SEA is 600 m from EC-AG-1 and 680 m from EC-AG-2.

The *Noise and Vibration Impact Assessment* (NVIA; EMM 2020) completed for the project found that ground vibration emissions from the WEA or SEA will be the same or lower than current levels from existing operations, with no impacts from blasting anticipated if maximum instantaneous charge (MIC) limits are followed. Anticipated ground vibration emissions are not considered to pose a risk of impacting the sandstone outcropping on which the grinding grooves occur.

This assessment considers vibrations from the project to have low potential to cause harm to Aboriginal sites within or surrounding the project area.

7.7 Summary of impacts

An iterative design process has resulted in avoidance of impacts to the majority of Aboriginal sites located within the project area.

Aboriginal site DQ-IF1 is the only known site to be impacted by the project. DQ-IF1 consists of an isolated artefact with no associated sub-surface deposit. It has been assessed herein as being of low archaeological significance, whilst acknowledging that it is of cultural significance to the Aboriginal community.

8 Recommendations

8.1 Management strategy

This section describes the management measures for identified Aboriginal cultural heritage values in the study area. The management measures proposed in this chapter respond to:

- the impacts identified in the preceding chapter;
- the assessed significance of the Aboriginal sites;
- the views of the Aboriginal community as represented by the RAPs;
- the need to address intergenerational equity in the values of Aboriginal heritage;
- the need to protect sites not impacted by the project but under the care of WaterNSW; and
- the need to mitigate the loss and disturbance of impacted Aboriginal sites and Aboriginal objects.

While Aboriginal sites cannot be replaced once lost, the salvage of Aboriginal objects impacted by the project will provide a tangible monument to those sites. Furthermore, with care in curation, those salvaged materials can be better studied to help understand other Aboriginal sites present in the landscape.

Intergenerational equity is a core element in the notion of ecologically sustainable development (ESD), which commonly guides regulators in their review of Aboriginal cultural heritage management. This may be achieved by a program of avoidance and protection for the most significant sites (both scientifically and culturally) and salvage of sites with lesser scientific value but still of cultural importance to the Aboriginal community. Both of these measures allow retention of cultural materials for the enjoyment and education of future generations.

The management measures proposed in response to the impacts and Aboriginal site significance levels comprise the following:

- active protection and avoidance of Aboriginal sites close to and within the development footprint boundary in accordance with the management measures and recommendations presented as part of this report;
- passive avoidance of Aboriginal sites within the project area not impacted by current development plans;
- salvage collection of Aboriginal sites within disturbance areas of the development footprint; and
- procedures that specify actions to be taken in the event of discovery of human skeletal remains or previously unidentified Aboriginal sites.

8.2 Proposed management measures

8.2.1 Overview

The management measures to be applied to each identified site is provided in Table 8.1. A detailed summary of each site, its type, significance rating, impacts and proposed management measures is provided in Table 8.2.

Table 8.1 Site management summary

| Management measure/site type | Count |
|-------------------------------------|--------------|
| Avoidance | 3 |
| DQ-IF2, DQ-OS1 and DQ-OS2 | |
| Relocation | 1 |
| DQ-IF1 | |
| Total | 4 |

8.2.2 Aboriginal heritage management plan

An Aboriginal Heritage Management Plan (AHMP) will be developed in consultation with DPIE, the RAPs and Heritage NSW. It will provide details of:

- all Aboriginal sites identified during the archaeological investigation for the project;
- management measures and their progress towards completion;
- measures to ensure ongoing consultation and involvement of project RAPs;
- protocols for newly identified sites;
- protocols for educating staff and contractors of their obligations relating to Aboriginal cultural heritage values through a site induction process;
- protocols for suspected human skeletal materials;
- protocols for the ongoing care of salvaged Aboriginal objects; and
- provisions for review and updates of the AHMP.

The AHMP will be prepared after project approval, and in addition to the points above, will address all relevant conditions of approval. The AHMP will provide the details of the management measures outlined in the sections below.

8.2.3 Avoidance

Avoidance of Aboriginal sites is a preferred management option as it ensures that Aboriginal sites, and their landscape information, will be preserved for future generations.

A total of 3 out of 4 Aboriginal sites will be avoided by the project. Generally, sites designated for avoidance within the development footprint or within 20 m of the development footprint will be protected by a semi-permanent or permanent boundary fence around the visible extent of the sites and/or the PAD areas to avoid inadvertent impacts. A buffer of at least 20 m will be applied to the demarcated boundaries of these sites.

If there are sites designated in this report for collection that are later determined not to be impacted, but are within 20 m of the development footprint, such sites will be avoided and managed in a method consistent with this section of the report.

Sites of moderate to high significance warrant a greater visual buffer so that they can be appreciated in context within the natural landscape. A buffer of at least 50 m from the PAD boundary that extends beyond the physical site contents will be applied to the sites DQ-IF2 and DQ-OS2.

8.2.4 Relocation

The isolated artefact from Aboriginal site, DQ-IF1, will be relocated prior to proposed project impacts.

The relocation will be undertaken by a qualified archaeologist and RAP representatives and will adhere to the following method:

1. Site coordinates will be entered into mobile GPS devices to re-locate and confirm the location.
2. The general vicinity will be inspected, and any artefact(s) flagged on the ground and a photo taken. Each artefact will be marked as a waypoint in the GPS.
3. The artefact will then be collected and moved to a location outside of the development footprint but remaining within the project area.
4. The relocated position will be marked as a waypoint in the GPS and a photo taken. An Aboriginal Site Impact Recording Form (ASIRF) will be completed.
5. A salvage report will detail the results of the fieldwork, the artefacts recovered at each site and GIS figures showing the artefact locations.

8.2.5 Special procedures

i Aboriginal ancestral remains

It is important that all quarry personnel be briefed on the possibility and the appropriate protocols to follow if human remains are found, as well as, what to do if other Aboriginal cultural material is encountered.

In the event that known or suspected human remains are encountered, the following procedure will be followed as soon as the suspected remains are discovered:

- all work in the immediate vicinity will cease and the find will be reported to the work supervisor who will advise the site supervisor or other nominated senior staff member;
- the site supervisor or other nominated senior staff member will promptly notify the NSW Police and the State coroner (as required for all human remains discoveries);
- the site supervisor or other nominated senior staff member will contact Heritage NSW for advice on identification and management of Aboriginal skeletal material; and

- if it is determined that the skeletal material is of Aboriginal ancestry, the RAPs will be contacted and consultative arrangements will be made to discuss ongoing care or reinterment of the remains.

ii Discovery of new Aboriginal sites

a Procedure

In the event of discovery of new Aboriginal sites within the development footprint, the following procedure will be followed:

- the immediate vicinity (an approximate 20 m buffer from the visible extent of the site) will be secured to protect the find and the find will be reported to the work supervisor who will immediately advise the environmental manager or other nominated senior staff member;
- an archaeologist and select RAPs must be contacted by the site supervisor or other nominated senior staff member at the earliest possible opportunity to validate the find and determine the significance of the objects(s); and
- any new sites must be registered in the AHIMS database.

b Management of new Aboriginal sites

Newly identified sites that are not at risk of impact (ie over 20 m from the approved development footprint) will be avoided through passive protection. Sites that are within 20 m of the approved development footprint (ie DQ-OS1) will be managed through active protection measures including fencing and signage as outlined in Section 8.2.3.

In the event that newly identified sites will be impacted by the project and cannot be avoided, they will be managed in a manner commensurate with their assessed significance, consistent with the management measures provided for similar sites in this chapter, meaning:

- stone artefact sites of low or moderate significance may be collected prior to ground disturbance or be subject to unmitigated impacts, based on the outcomes of consultation with the RAPs;
- decisions about stone artefact sites of high significance will require further consultation with the RAPs and Heritage NSW to determine an appropriate conservation or salvage methodology; and
- although other Aboriginal site types are unlikely to occur in the development footprint (eg burials or stone arrangements), the following steps will be followed if they are identified:
 - a suitably qualified archaeologist will be contacted to verify and assess the evidence;
 - if the find is not an Aboriginal object then the works can continue without further investigation; and
 - if the find is verified as being an Aboriginal object, the RAPs and Heritage NSW will be contacted to discuss appropriate management measures proportionate to the significance of the find.

8.3 Additional assessment

As noted in Section 5.4.2, targeted inspection of mature paddock trees within the upper plateau paddock was completed; however, large quantities of rock mounded around some trees prohibited comprehensive inspection for cultural scarring. As such, there remains some potential for this site type to occur within the development footprint.

Further assessment is required to assess any mature trees which falls within the SEA development footprint which are currently obscured by rock to confirm whether or not cultural scarring is present, and if so to assess project impacts and propose suitable management measures. This is important as Aboriginal scarred trees are rare, have high value to the Aboriginal community and therefore warrant conservation or appropriate management.

This additional assessment was unable to be completed during the preparation of this report due to timing of submission of the EIS. As such, the following process will be completed:

- all mature trees within the SEA development footprint which are currently obscured by rock will have that rock removed to facilitate inspection for evidence of scarring;
- should any scarring be observed, the tree would be assessed by a suitably qualified archaeologist to determine if scarring is of cultural origin;
- any new Aboriginal scarred or carved trees identified will be recorded and assessed with reference to the findings of this report; and
- the priority will be to avoid any newly identified scarred or carved trees. If the project cannot avoid any newly identified sites and/or there is ambiguity between natural scars and scars of Aboriginal origin, then the below procedure will be followed to determine the most appropriate management strategy:
 - if assessment from a suitably qualified expert in scar tree assessment (arborist or other) determines that scarring is not of Aboriginal origin, then such trees will be removed as part of the project without further constraints on the project; and
 - if assessment from a suitably qualified expert in scar tree assessment determines that the scarring is of Aboriginal origin, Holcim will first seek to avoid such trees. If any trees cannot be avoided because of the high level of constraint they would pose on the project, then Holcim will consult with RAPs to determine the suitability of scar tree removal, relocation, and preservation. EMM notes that avoidance and protection of scar trees is the most appropriate measure and that approval for the removal of scarred trees is subject to support by RAPs, Heritage NSW and DPIE. The details of any scar tree removal and relocation measures will be detailed in the AHMP.

This task will be completed during either public exhibition or the preparation of the RTS report. The results of the assessment, proposed management measures, and evidence of RAP and Heritage NSW consultation will be provided prior to or as part of the RTS report to ensure DPIE can consider any new information prior to project approval.

8.4 Management summary

Table 8.2 provides a summary of all Aboriginal sites, significance ratings, impact types and management recommendations presented as part of this report.

Table 8.2 Site significance, impact, and management summary

| Site Name | AHIMS site number | Site type | Significance | Impact type | Project component | Minimum buffer required (m) | Management strategy |
|-----------|-------------------|---------------------------|--------------|-------------|-------------------|-----------------------------|---------------------|
| DQ-IF1 | 44-4-0383 | Isolated find | Low | Direct | Haul road | N/A | Relocation |
| DQ-IF2 | 44-4-0384 | Isolated find with PAD | Moderate | None | Nil | 20 m | Avoidance |
| DQ-OS1 | 36-1-0773 | Artefact scatter with PAD | Low | None | Nil | 50 m | Avoidance |
| DQ-OS2 | 36-1-0774 | Artefact scatter with PAD | Moderate | None | Nil | 50 m | Avoidance |

References

Balme, J 1986. *North Central Rivers Archaeological Project*, A report to NSW National Parks and Wildlife Service.

Central West Archaeological and Heritage Services Pty Ltd (CWAHS).

- 1995. *An Archaeological Survey for the Proposed Keswick Housing Sub-division, Dubbo, NSW*, A report to Hoynes Wheeler and Thorne Development Consultants.
- 1998. *Aboriginal archaeological survey of industrial candidate area no 1. – Mitchell/Eulomogo, east of Dubbo, Central West Plains, NSW*, A report to Dubbo City Council.

Department of Environment Climate Change and Water (DECCW).

- 2005, *Aboriginal scarred trees in New South Wales: a field manual*.
- 2010a, *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*.
- 2010b, *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW*.
- 2010c, *Aboriginal Consultation Requirements for Proponents 2010*.

Gresser, P. 1941, *Old Aboriginal Campsites, Stone Arrangements, Etc. Dubbo NSW*, Mitchell Library.

Kaus, D 2003. 'Collectors and collections: Edmund Milne's collection', *Friends*, 14 (3), pp. 18-19.

Murphy, BW & Lawrie, JW, 1998, *Soil landscapes of the Dubbo 1:250 000 Sheet*, Department of Land & Water Conservation.

Mitchell, P 2002, *Description for NSW (Mitchell) Landscapes Version 2*, Department of Environment and Climate Change, NSW.

NSW National Parks and Wildlife Service 2003, *The Bioregions of New South Wales: their biodiversity, conservation and history*, NSW National Parks and Wildlife Service, Sydney.

Office of Environment and Heritage (OEH) 2011, *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW*.

OzArk Environmental and Heritage Management (OzArk).

- 2006, *Dubbo Local Government Aboriginal Heritage Study*.
- 2009, *Tracker Riley Cycle Way Extension, Dubbo NSW: Aboriginal Heritage Assessment*.
- 2017, *Aboriginal due diligence archaeological assessment subdivision of Lot 2 DP880413 Sheraton Road, Dubbo NSW*.

Pearson, M 1981. *Seen through different eyes: changing land use and settlement patterns in the Upper Macquarie River Region of NSW from prehistoric times to 1860*, PhD thesis submitted to the Department of Prehistory and Anthropology, Australian National University.

Purcell, P

- 2000, *Aboriginal Cultural Heritage Assessment, Brigalow Belt South Stage 1*, Report to Resource and Conservation Assessment Council.
- 2002, *Aboriginal Cultural Heritage Assessment, Brigalow Belt South Stage 2*, Report to Resource and Conservation Assessment Council.

Tindale N, 1974. *Aboriginal Tribes of Australia*, ANU Press, Canberra.

Umwelt, 2018. *Aboriginal Due Diligence Assessment, Proposed Extension to Dubbo Quarry, Sheraton Rd, NSW*, A report to Holcim Australia Pty Ltd.

Glossary

Many of these definitions have been taken from the *Code of Practice for archaeological investigation of Aboriginal objects in NSW* (DECCW 2010).

Aboriginal object: A physical manifestation of past Aboriginal activity. The legal term is defined in the *National Parks and Wildlife Act 1974* section 5 as: any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains.

Typical examples include stone artefacts, grinding grooves, Aboriginal rock shelters which by definition include physical evidence of occupation, midden shell, hearths, stone arrangements and other landscape features which derive from past Aboriginal activity.

Archaeological survey: A method of data collection for Aboriginal heritage assessment. It involved a survey team walking over the land in a systematic way, recording information. Activities are not invasive or destructive.

Aboriginal culturally modified tree: A tree of sufficient age to have been mature at the time of traditional Aboriginal hunter-gatherer life and therefore generally of more than 220 years ago with evidence of bark or cambium wood removal for the purpose of implement manufacture, footholds, bark sheet removal for shelter, or extraction of animals or other food. Care must be taken to distinguish Aboriginal scars from the much more common natural causes of branch tear, insect attack, animal impact, lightning strike and dieback. Culturally modified tree recognition guidelines exist to distinguish these features. Naturally scarred trees are often misidentified as Aboriginal culturally modified trees.

Aboriginal site: The location where a person in the present day can observe one or more Aboriginal objects. The boundaries of a site are limited to the extent of the observed evidence. In the context of this report a 'site' does not include the assumed extent of unobserved Aboriginal objects (such as archaeological deposit). Different archaeologists can have varying definitions of a 'site' and may use the term to reflect the assumed extent of past Aboriginal activity beyond visible Aboriginal objects. Such use of the term risks defining all of Australia as a single 'site'.

Aboriginal stone artefact: A stone object with morphological features derived from past Aboriginal activity such as intentional fracture, abrasion or impact. Artefacts are distinguished by morphology and context. Typically flaked stone artefacts are distinguished from naturally broken stone by recognition of clear marginal fracture initiation (typically herzian/conchoidal or wedging initiation) on highly siliceous stone types which can often be exotic to the area. Care must be taken to distinguish modern broken stone in machine impacted contexts and therefore context must be carefully considered as well as morphology.

Aggradation: a term used in geology for the increase in land elevation, typically in a river system, due to the deposition of sediment.

AHIMS: Aboriginal Heritage Information Management System — a computer software system employed by the Office of Environment and Heritage to manage many aspects of Aboriginal site recording and permitting. AHIMS includes an Aboriginal sites database which can be accessed via an internet portal.

Archaeological deposit: Aboriginal objects occurring in one or more soil strata. The most common form of archaeological deposit relates to the presence of a single conflated layer of Aboriginal stone artefacts worked into the topsoil through **bioturbation**.

Backed artefact: A thin flake or blade-flake that has been shaped by secondary flaking (**retouch**) along one lateral margin. The retouched margin is typically steep and bipolar to form a blunt 'back' in the manner of a modern scalpel blade. Distinctive symmetrical and asymmetrical forms are typically found called geometric **microliths** and Bondi points respectively. A thick symmetrical form, called an Elouera, is typically the size of a mandarin segment.

Bioturbation: is the reworking of soils and sediments by animals or plants. Its effects include changing texture of sediments (diagenetic), bioirrigation and displacement of microorganisms and non-living particles.

Bipolar flaking: Where the stone to be worked is rested on an anvil or other stone before being hit by the hammerstone. This results in the presence of negative flake scars on both ends of the core.

Bondi point: See backed artefact definition.

Brown podosols: Topsoils have loamy textures. A2 horizons are common. There is a clear boundary onto the B horizon. They have a sandy clay to heavy clay texture (typically occur on upper and mid-slopes).

Chocolate Soils: Soils that are typically formed in a basaltic parent material where slope or bedrock strata influence drainage. Surface horizons comprise loam, clay loam or silty clay loam. There is a gradual boundary to a brown or brownish black B horizon. There is no A2 horizons.

Conchoidal: A term used in relation to fracture surfaces on Aboriginal stone artefacts - bulb-like in the manner of a bulbous protrusion on a bivalve shell.

Elouera: See backed artefact definition.

Erillure scar: The small flake scar on the dorsal side of a flake next to the platform. It is the result of rebounding force during percussion flaking.

Exposure: estimates the area with a likelihood of revealing buried artefacts or deposits, not just an observation of the amount of bare ground.

Geometric microlith: See backed artefact definition.

Grinding grooves: Grinding grooves typically derive from the sharpening of stone hatchet heads on sandstone rock. Grooves appear as elliptical depressions of around 25 cm length with smooth bases. Although mostly occurring in association with water to wash the abraded stone dust away from the groove, such sites have been recorded away from water. Narrow grooves or broad abraded areas may occur less commonly and may be derived from spear sharpening or other grinding activities.

Haematite: a pigment featured in ochre used for tinting with a permanent colour.

Holocene: A period of time generally 10,000 years, which marks the end of the last ice age, to the present.

Igneous: relating to or involving volcanic or plutonic processes.

Indurated mudstone/tuff (IMT): the fine textured, very hard, yellowish, orange, reddish-brown or grey rocks from which stone artefacts are made.

Isotropic: Having a physical property that has the same value when measured in different directions. In relation to stone used for stone tools a fracture path is not hindered by layer boundaries or other favoured plane of cleavage.

Microolith: Very small fragments of flakes retouched into geometric shapes and usually present on tools like barbed spears, arrows and sickles.

Midden: A collection of shells and associated economic remains resulting from Aboriginal food gathering and processing activity. Middens comprise shellfish remains of consistent size in a rich dark earth matrix commonly associated with stone artefacts, fish bone and animal bone although shells are commonly the most obtrusive element.

Keeping place: A room or facility with the express and exclusive purpose of storing Aboriginal cultural heritage materials with accompanying documentation in a secure and accessible manner which protects their cultural heritage values.

Krasnozems: Mainly loams, clay loams and silty clay loams with a clear or gradual boundary to a dark reddish brown B horizon. Clays are typically light to medium and occasionally heavy.

Lithosols: Soils that have little or no profile development. They occur on steep slopes and are usually shallow and are left mainly as uncleared native bushland.

Open stone artefact site/stone artefact site: An unenclosed area where Aboriginal stone artefacts occur – typically exposed from a topsoil archaeological deposit by erosion. Typically the term is used to refer to two or more artefacts although this is an arbitrary distinction. A general ‘rule of thumb’ boundary definition employed by archaeologists is that artefacts or features more than 50 m apart are regarded as separate sites, however there is no theoretical imperative dictating such a rule. (The 50 m separation rule is used for the most part in EMM’s work).

Pirri point: A leaf-shaped stone implement with unifacial retouch extending from the lateral margins to a central keel running the length of the dorsal surface.

Pleistocene: A period of time 2.6 million years ago to 10,000 years ago. Reference to ‘Pleistocene sites’ generally means reference to sites older than 10,000 years.

Podosols: Soils with accumulations of organic matter, iron and aluminium. They are usually sand textured to depth. Yellow and red podosols are generally acid neutral. Yellow podosols have coarse to medium textured A horizons.

Point cluster: A group of GPS points used to identify the locations of individual artefacts in the field.

Potential Archaeological Deposit (PAD): An area where there is an inferred presence of Aboriginal objects in the soil based on the environmental context which is typically associated with discovery of Aboriginal objects in analogous areas. This is not strictly a ‘site’ type, although AHIMS records it as such for the purpose of associating Aboriginal heritage Impact Permits with geographical areas.

Red podosols: Podosols with a pronounced texture contrast and clear to abrupt boundaries between A and B horizons. A2 is often massive and gravelly.

Retouch: The modification of the edges of a flake or tool by the removal of a series of small flakes.

Siliceous Sands: Sands that are usually found on coarse-grained sandstones and in sandstone colluvium. They are often sandstone outcrops present in the landscape. The topsoil has a loamy sand to light sandy clay.

Scarp: a steep slope characterised by outcropping bedrock. In this report, scarp refers to a combination of landform elements including scarp foot slopes, scarps, and cliff lines where outcropping sandstone is present in the landscape 10% and above.

Spur: the lateral crests of land that descend from the summit of hills or ridges. Spurs typically extend, with decreasing elevation, closer to streams and valley floors than the main crest of a hill.

Taphonomic: the events and processes, such as burial in sediment, leading to the degradation, decomposition or preservation of objects.

Thumbnail scraper: A thumbnail sized thin flake with steep unidirectional retouch or use-wear around a convex working edge.

Transect: A sample unit which is walking line or corridor across the study area.

Upsidence: phenomena that occurs when mining approaches and undermines river valleys. It can result in cracking and buckling of river beds and rock bars and localised loss of water flow.

Visibility: The amount of bare ground on exposures which might reveal artefacts or other archaeological materials.

Yellow earths: predominantly sandy-textured soils with earthy porous fabric, weak profile differentiation and gradual or diffuse boundaries except for the darker A1 horizon.

Yellow podosols: Podosols which typically occur on the upper slopes of steep landscapes and on the mid to lower slopes of others. The A2 soil horizon is present in most profiles and the boundary change to the B horizon is generally clear. The B horizon is typically sandy clay to heavy clay.

Appendix A

Aboriginal consultation

Aboriginal Consultation Requirements for Proponents (DECCW 2010)*

ABORIGINAL CONSULTATION RECORD

| Project Name: Dubbo Quarry EIS | | | | Project #: J180313 | | | | | |
|--------------------------------|---|------------------------|----------------|---|-----------|--------------|---------------|--|--|
| DECCW 2010* | ORGANISATION | CONTACT TYPE | TRACKING # | SUBJECT | SENT DATE | RESPONSE DUE | RESPONSE DATE | COMMENT/S | |
| 4.1 | Stage 1: Notification of project proposal and registration of interest | | | | | | | | |
| 4.1.2 | Agency Requests | | | | | | | | |
| 4.1.2 (a) | OEH | Email | | Identification of Aboriginal parties | 9/May/19 | 23/May/19 | 16/May/19 | Provided list of Dubbo LGA stakeholders. | |
| 4.1.2 (b) | Dubbo Local Aboriginal Land Council | Email | | Identification of Aboriginal parties | 9/May/19 | 23/May/19 | 10/May/19 | Registered to be consulted. Did not identify any other individuals or organisations. | |
| 4.1.2 (c) | The Office of the Registrar, Aboriginal Land Rights Act 1983 | Email | | Identification of Aboriginal parties | 9/May/19 | 23/May/19 | 27/05/2019 | No Registered Aboriginal Owners in the project area. | |
| 4.1.2 (d) | National Native Title Tribunal | Email | | Identification of Aboriginal parties | 9/May/19 | 23/May/19 | 14/May/19 | No native title claims. Freehold tenure. | |
| 4.1.2 (e) | Native Title Services NTSCORP | Email | | Identification of Aboriginal parties | 9/May/19 | 23/May/19 | Nil | No response received. | |
| 4.1.2 (f) | Dubbo Regional Council | Email | | Identification of Aboriginal parties | 9/May/19 | 23/May/19 | Nil | No response received. | |
| 4.1.2 (g) | Central West Local Land Services | Email | | Identification of Aboriginal parties | 9/May/19 | 23/May/19 | Nil | No response received. | |
| 4.1.3 | Newspaper Notice - Request for registrations | | | | | | | | |
| 4.1.3 | Dubbo Daily Liberal | Newspaper | | Identification of Aboriginal parties | 27/May/19 | 10/Jun/19 | N/A | | |
| 4.1.3 | Aboriginal Group Notifications - Request for registrations | | | | | | | | |
| 4.1.3 | Dubbo Local Aboriginal Lands Council | Email and Express Post | 60444252940097 | Request for registrations | 27/May/19 | 10/Jun/19 | 29/May/19 | Registered. | |
| 4.1.3 | Binjang Wellington Wiradjuri Heritage Survey | Express Post | 60444252939091 | Request for registrations | 27/May/19 | 10/Jun/19 | Nil | Letter confirmed delivered via AusPost on 28-05-19. | |
| 4.1.3 | Brian Draper | Express Post | 60444252938094 | Request for registrations | 27/May/19 | 10/Jun/19 | Nil | Letter confirmed delivered via AusPost on 28-05-19. | |
| 4.1.3 | Central West Catchment Management Authority Aboriginal Reference Group | Email and Express Post | 60444252937097 | Request for registrations | 27/May/19 | 10/Jun/19 | Nil | Awaiting collection from Wellington Post Office since 28 May. | |
| 4.1.3 | Dubbo City Council Aboriginal Community Working Party | Email and Express Post | 60444252936090 | Request for registrations | 27/May/19 | 10/Jun/19 | 28/May/19 | Registered | |
| 4.1.3 | Katrina Mckinnon | Express Post | 60444252941094 | Request for registrations | 27/May/19 | 10/Jun/19 | Nil | Letter confirmed delivered via AusPost on 29-05-19. | |
| 4.1.3 | Mooka | Express Post | 60444252942091 | Request for registrations | 27/May/19 | 10/Jun/19 | Nil | Returned to sender - item not collected from Cowra Post Office. | |
| 4.1.3 | Natasha Rodgers | Express Post | 60444252943098 | Request for registrations | 27/May/19 | 10/Jun/19 | Nil | Letter redirected from West Wodonga VIC to Upper Kedron QLD. Confirmed delivered with AusPost 5-06-19. | |
| 4.1.3 | Paul Brydon | Express Post | 60444252944095 | Request for registrations | 27/May/19 | 10/Jun/19 | Nil | Letter confirmed delivered via AusPost on 29-05-19. | |
| 4.1.3 | Peter Peckham | Express Post | 60446858410097 | Request for registrations | 27/May/19 | 10/Jun/19 | Nil | Letter confirmed delivered via AusPost on 29-05-19. | |
| 4.1.3 | Trevor Robinson | Express Post | 60446858409091 | Request for registrations | 27/May/19 | 10/Jun/19 | Nil | Returned to sender - incorrect address. | |
| 4.1.3 | Wamarr Cultural Consultants | Express Post | 60446858408094 | Request for registrations | 27/May/19 | 10/Jun/19 | Nil | Letter confirmed delivered via AusPost on 28-05-19. | |
| 4.1.3 | Wellington Valley Wiradjuri Aboriginal Corporation | Express Post | 60446858407097 | Request for registrations | 27/May/19 | 10/Jun/19 | Nil | Returned to sender - receiver not known at address. | |
| 4.1.3 | Wiradjuri Council of Elders | Express Post | 60446858406090 | Request for registrations | 27/May/19 | 10/Jun/19 | Nil | Returned to sender - failed delivery from Parkes Post Office. | |
| 4.1.3 | Wiradjuri Interim Working Party | Express Post | 60446858405093 | Request for registrations | 27/May/19 | 10/Jun/19 | Nil | Returned to sender - incorrect address. | |
| 4.1.3 | Wirimbah Direct Descendants | Express Post | 60446858404096 | Request for registrations | 27/May/19 | 10/Jun/19 | Nil | Letter confirmed delivered via AusPost on 28-05-19. | |
| 4.1.6 | Notification of registered parties | | | | | | | | |
| 4.1.6 | OEH | Email | - | Submit record of registrations | 11/Jun/19 | N/A | N/A | Within 28 days from the closing date for registering an interest. | |
| 4.1.6 | Dubbo Local Aboriginal Land Council | Email | - | Submit record of registrations | 11/Jun/19 | N/A | N/A | Within 28 days from the closing date for registering an interest. | |
| 4.2/4.3 | Stage 2 – Presentation of information about the proposed project and Stage 3 – Gathering information about cultural significance | | | | | | | | |
| 4.2.1 / 4.3.2 | Dubbo City Council Aboriginal Community Working Party | Email | - | Project information, methodology and cultural | 11/Jun/19 | 9/Jul/19 | Nil | No response received. | |
| 4.2.1 / 4.3.2 | Dubbo Local Aboriginal Lands Council | Email | - | Project information, methodology and cultural | 11/Jun/19 | 9/Jul/19 | Nil | No response received. | |
| 4.2.1 / 4.3.2 | Dubbo City Council Aboriginal Community Working Party | Email | - | Reminder for responses to Stage 2 letter | 28/Jun/19 | 26/Jul/19 | Nil | No response received. | |
| 4.2.1 / 4.3.2 | Dubbo Local Aboriginal Lands Council | Email | - | Reminder for responses to Stage 2 letter | 28/Jun/19 | 26/Jul/19 | Nil | No response received. | |
| Project Update | | | | | | | | | |
| - | Dubbo City Council Aboriginal Community Working Party | Email | - | Project update | 18/Dec/19 | N/A | N/A | Update on project status. | |
| - | Dubbo Local Aboriginal Lands Council | Email | - | Project update | 18/Dec/19 | N/A | N/A | Update on project status. | |
| Project Update | | | | | | | | | |
| - | Dubbo City Council Aboriginal Community Working Party | Email | - | Project update | 16/Jul/20 | N/A | N/A | Update on project status. | |
| - | Dubbo Local Aboriginal Lands Council | Email | - | Project update | 16/Jul/20 | N/A | N/A | Update on project status. | |
| 4.4 | Stage 4 – Review of draft cultural heritage assessment report | | | | | | | | |
| 4.4.1 | Dubbo City Council Aboriginal Community Working Party | Email | - | ACHA Review | 4/Aug/20 | 2/Sep/20 | Nil | No response received. | |
| 4.4.1 | Dubbo Local Aboriginal Lands Council | Email | - | ACHA Review | 4/Aug/20 | 2/Sep/20 | Nil | No response received. | |
| 4.4.1 | Dubbo City Council Aboriginal Community Working Party | Email | - | Reminder for responses to ACHA review | 7/Sep/20 | | Nil | No response received. | |
| 4.4.1 | Dubbo Local Aboriginal Lands Council | Email | - | Reminder for responses to ACHA review | 7/Sep/20 | | Nil | No response received. | |

Morgan Wilcox

From: Morgan Wilcox
Sent: Thursday, 9 May 2019 5:21 PM
To: 'admin.centralwest@lls.nsw.gov.au'
Subject: J180131 - Dubbo Quarry Continuation Project - Consultation - Agency Request
Attachments: J180313_DubboQuarryContinuationProject_AgencyRequest_V1.0_Central West Local Land Services.pdf

To whom it may concern,

Please see attached agency request seeking to identify Aboriginal organisations or Aboriginal persons who hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or Aboriginal places in the area of the existing Dubbo Quarry, located at Sheraton Road, Dubbo NSW within the Dubbo Regional Council Local Government Area.

Please provide a list of relevant organisations or persons by **24 May 2019** to the details below:


Dubbo Quarry Continuation Project
c/o EMM Consulting Pty Ltd
Attn: Morgan Wilcox
PO Box 506
Newcastle NSW 2300
Email: mwilcox@emmconsulting.com.au

Kind regards
Morgan

Morgan Wilcox

Senior Archaeologist



T 02 4907 4800
M 0400 264 916
D 02 4907 4824
 Connect with us

NEWCASTLE | Level 1, 146 Hunter Street, Newcastle 2300

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9 May 2019

Central West Local Land Services
PO Box 6082
Dubbo NSW 2830

Re: Dubbo Quarry Continuation Project - Agency Request

Dear Sir/Madam,

EMM Consulting Pty Ltd (EMM) on behalf of Holcim (Australia) Pty Ltd (Holcim) is seeking to identify Aboriginal organisations or Aboriginal persons who hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or Aboriginal places in the area of the existing Dubbo Quarry, located at Sheraton Road, Dubbo NSW within the Dubbo Regional Council Local Government Area (LGA). Holcim are seeking approval for the continuation of operations at Dubbo Quarry through extension of the existing extraction area into part Lot 222 DP1247780 and establishment of a new extraction area on part Lot 100 DP628628 (refer to attached figure).

In accordance with the DECCW (now OEH) *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*, EMM requests information about relevant Aboriginal persons and Aboriginal organisations who you consider may have cultural knowledge and should be invited to register for consultation.

Please provide a list of relevant organisations or persons by **24 May 2019** to the details below:

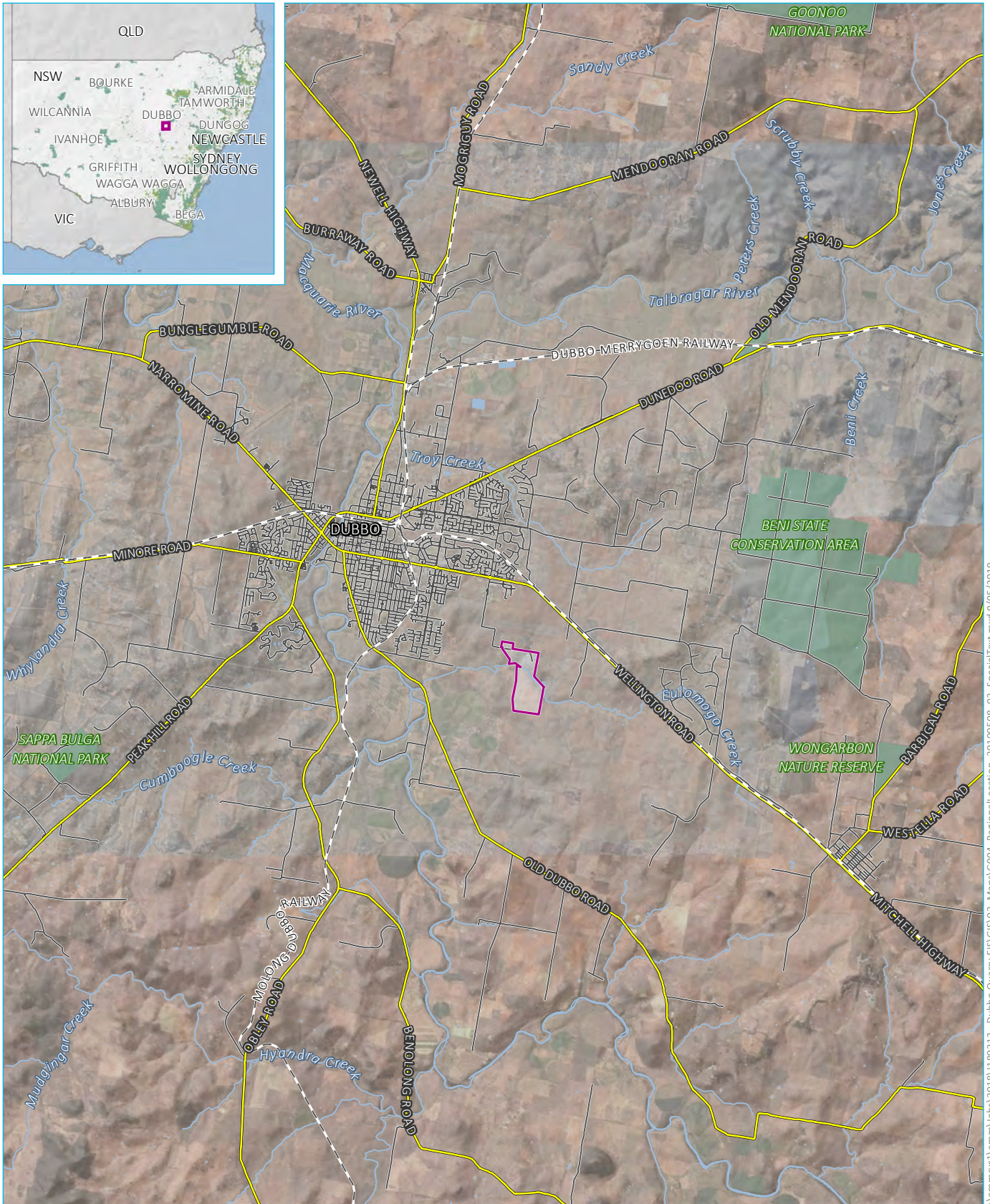
Dubbo Quarry Continuation Project
c/o EMM Consulting Pty Ltd
Attn: Morgan Wilcox
PO Box 506
Newcastle NSW 2300
Email: mwilcox@emmconsulting.com.au

Please advise me at your earliest convenience if additional time is required to provide this information. You can contact me on (02) 4901 4824 or my email as provided below.

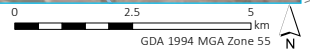
Yours sincerely



Morgan Wilcox
Senior Archaeologist
mwilcox@emmconsulting.com.au



Source: EMM (2019); DFSI (2017); GA (2011)



KEY

- Project Area
- Waterbody
- NPWS reserve
- State forest
- Rail line
- Main road
- Local road
- Watercourse/drainage line

Project area location

Dubbo Quarry Continuation Project

Morgan Wilcox

From: Morgan Wilcox
Sent: Thursday, 9 May 2019 5:16 PM
To: 'raiwyn@dialc.com.au'
Subject: J180131 - Dubbo Quarry Continuation Project - Consultation - Agency Request
Attachments: J180313_DubboQuarryContinuationProject_AgencyRequest_V1.0_Dubbo LALC.pdf

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Email: mwilcox@emmconsulting.com.au

Kind regards
Morgan

Morgan Wilcox

Senior Archaeologist



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9 May 2019

Dubbo Local Aboriginal Land Council
Cnr Darling and Wingewarra Street
Dubbo NSW 2830

Re: Dubbo Quarry Continuation Project - Agency Request

Dear Sir/Madam,

EMM Consulting Pty Ltd (EMM) on behalf of Holcim (Australia) Pty Ltd (Holcim) is seeking to identify Aboriginal organisations or Aboriginal persons who hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or Aboriginal places in the area of the existing Dubbo Quarry, located at Sheraton Road, Dubbo NSW within the Dubbo Regional Council Local Government Area (LGA). Holcim are seeking approval for the continuation of operations at Dubbo Quarry through extension of the existing extraction area into part Lot 222 DP1247780 and establishment of a new extraction area on part Lot 100 DP628628 (refer to attached figure).

In accordance with the DECCW (now OEH) *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*, EMM requests information about relevant Aboriginal persons and Aboriginal organisations who you consider may have cultural knowledge and should be invited to register for consultation.

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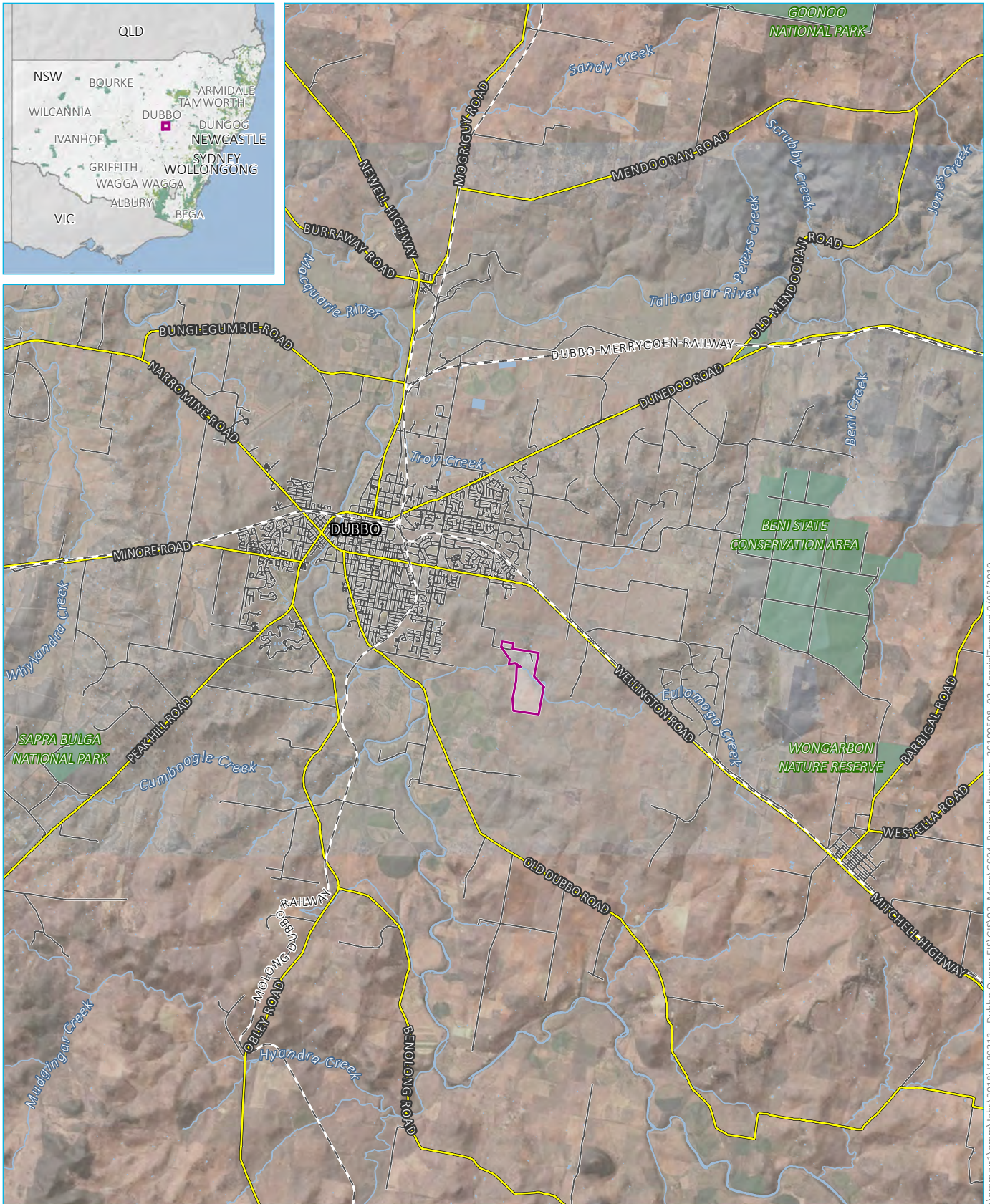
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c/o EMM Consulting Pty Ltd
Attn: Morgan Wilcox
PO Box 506
Newcastle NSW 2300
Email: mwilcox@emmconsulting.com.au

Please advise me at your earliest convenience if additional time is required to provide this information. You can contact me on (02) 4901 4824 or my email as provided below.

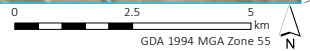
Yours sincerely



Morgan Wilcox
Senior Archaeologist
mwilcox@emmconsulting.com.au



Source: EMM (2019); DFSI (2017); GA (2011)



KEY

- Project Area
- Waterbody
- NPWS reserve
- State forest
- Rail line
- Main road
- Local road
- Watercourse/drainage line

Project area location

Dubbo Quarry Continuation Project

Morgan Wilcox

From: Morgan Wilcox
Sent: Thursday, 9 May 2019 5:20 PM
To: 'council@dubbo.nsw.gov.au'
Subject: J180131 - Dubbo Quarry Continuation Project - Consultation - Agency Request
Attachments: J180313_DubboQuarryContinuationProject_AgencyRequest_V1.0_Dubbo Regional Council.pdf

Attn: Council Heritage Officer,

Please see attached agency request seeking to identify Aboriginal organisations or Aboriginal persons who hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or Aboriginal places in the area of the existing Dubbo Quarry, located at Sheraton Road, Dubbo NSW within the Dubbo Regional Council Local Government Area.

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Kind regards
Morgan

Morgan Wilcox

Senior Archaeologist



T 02 4907 4800
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 Connect with us

NEWCASTLE | Level 1, 146 Hunter Street, Newcastle 2300

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9 May 2019

Heritage Advisor
Dubbo Regional Council
PO Box 81
Dubbo NSW 2830

Re: Dubbo Quarry Continuation Project - Agency Request

Dear Sir/Madam,

EMM Consulting Pty Ltd (EMM) on behalf of Holcim (Australia) Pty Ltd (Holcim) is seeking to identify Aboriginal organisations or Aboriginal persons who hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or Aboriginal places in the area of the existing Dubbo Quarry, located at Sheraton Road, Dubbo NSW within the Dubbo Regional Council Local Government Area (LGA). Holcim are seeking approval for the continuation of operations at Dubbo Quarry through extension of the existing extraction area into part Lot 222 DP1247780 and establishment of a new extraction area on part Lot 100 DP628628 (refer to attached figure).

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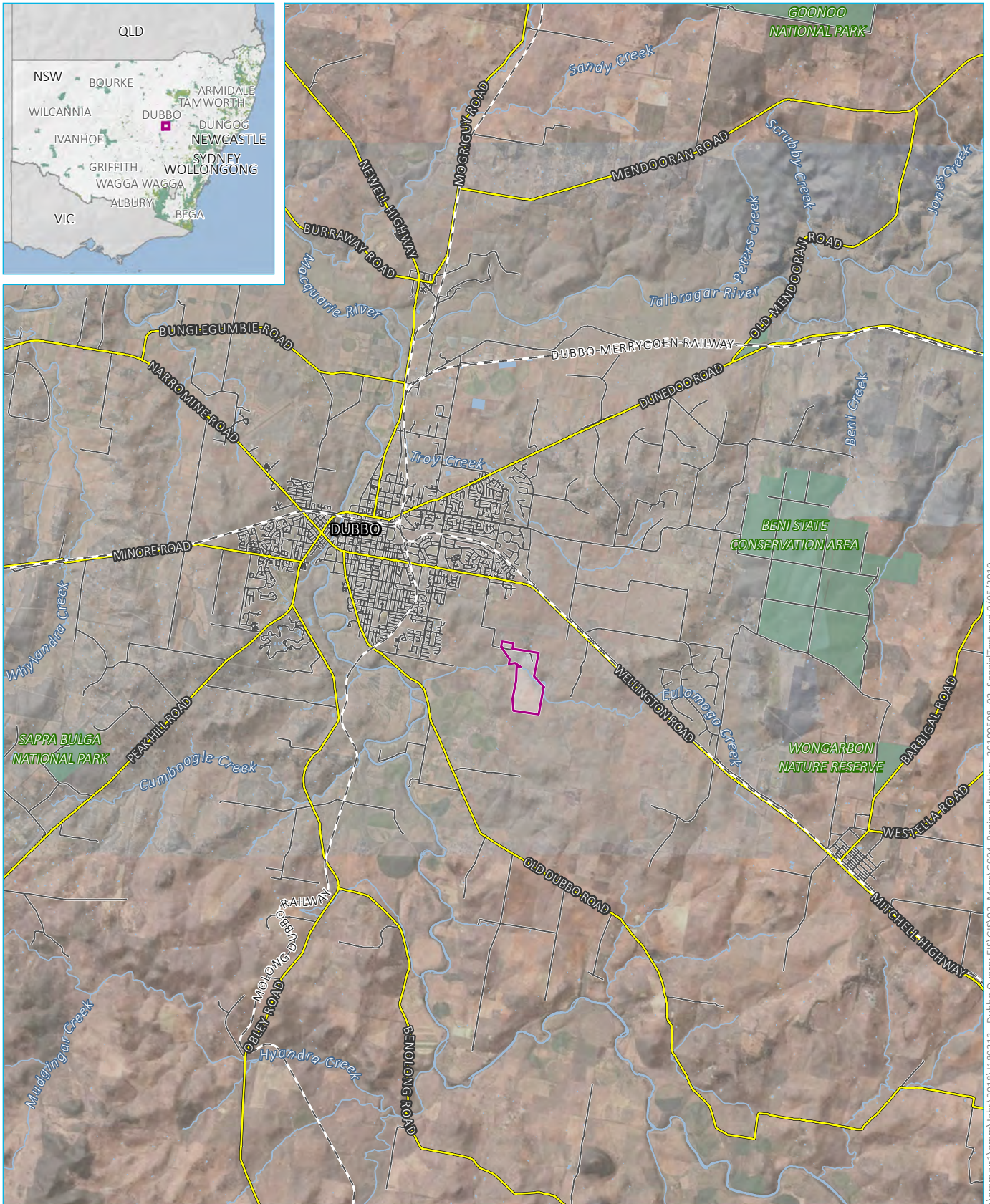
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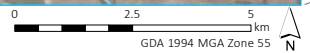
Yours sincerely



Morgan Wilcox
Senior Archaeologist
mwilcox@emmconsulting.com.au



Source: EMM (2019); DFSI (2017); GA (2011)



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- Rail line
- Waterbody
- Main road
- NPWS reserve
- Local road
- State forest
- Watercourse/drainage line

Project area location

Dubbo Quarry Continuation Project

Morgan Wilcox

From: Morgan Wilcox
Sent: Thursday, 9 May 2019 5:18 PM
To: 'nswenquiries@nntt.gov.au'; 'Geospatial Search Requests'
Subject: J180131 - Dubbo Quarry Continuation Project - Consultation - Agency Request
Attachments: J180313_DubboQuarryContinuationProject_AgencyRequest_V1.0_National Native Title Tribunal.pdf; Search Form_Request for Search of Tribunal Registers.docx

To whom it may concern,

Please see attached agency request seeking to identify Aboriginal organisations or Aboriginal persons who hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or Aboriginal places in the area of the existing Dubbo Quarry, located at Sheraton Road, Dubbo NSW within the Dubbo Regional Council Local Government Area.

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c/o EMM Consulting Pty Ltd
Attn: Morgan Wilcox
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Kind regards
Morgan

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Senior Archaeologist



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9 May 2019

National Native Title Tribunal
GPO Box 9973
Sydney NSW 2001

Re: Dubbo Quarry Continuation Project - Agency Request

Dear Sir/Madam,

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In accordance with the DECCW (now OEH) *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*, EMM requests information about relevant Aboriginal persons and Aboriginal organisations who you consider may have cultural knowledge and should be invited to register for consultation.

Please provide a list of relevant organisations or persons by **24 May 2019** to the details below:

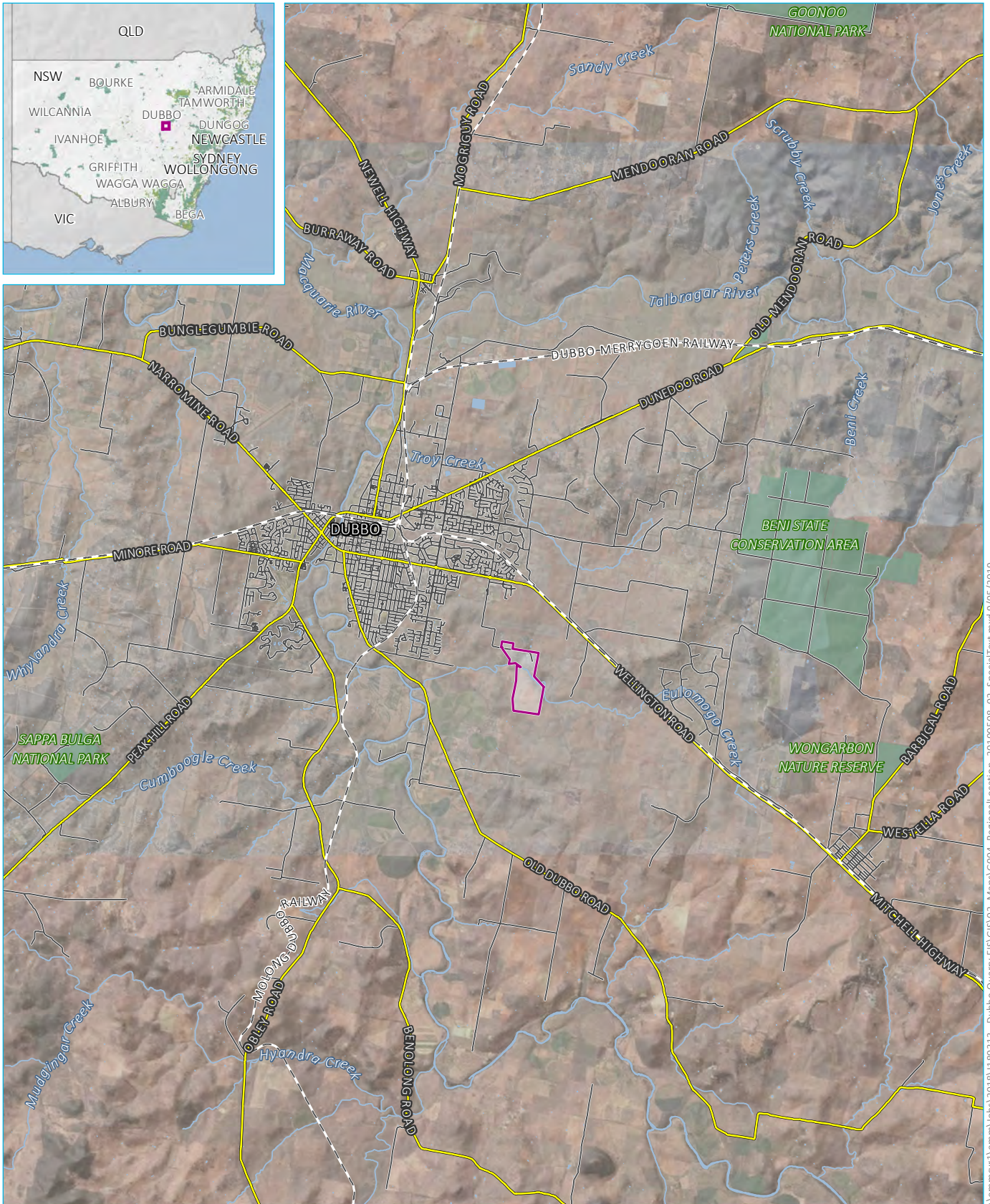
Dubbo Quarry Continuation Project
c/o EMM Consulting Pty Ltd
Attn: Morgan Wilcox
PO Box 506
Newcastle NSW 2300
Email: mwilcox@emmconsulting.com.au

Please advise me at your earliest convenience if additional time is required to provide this information. You can contact me on (02) 4901 4824 or my email as provided below.

Yours sincerely



Morgan Wilcox
Senior Archaeologist
mwilcox@emmconsulting.com.au



Source: EMM (2019); DFSI (2017); GA (2011)



KEY

- Project Area
- Waterbody
- NPWS reserve
- State forest
- Rail line
- Main road
- Local road
- Watercourse/drainage line

Project area location

Dubbo Quarry Continuation Project

Morgan Wilcox

From: Morgan Wilcox
Sent: Thursday, 9 May 2019 5:20 PM
To: 'information@ntscorp.com.au'
Subject: J180131 - Dubbo Quarry Continuation Project - Consultation - Agency Request
Attachments: J180313_DubboQuarryContinuationProject_AgencyRequest_V1.0_NTSCORP.pdf

To whom it may concern,

Please see attached agency request seeking to identify Aboriginal organisations or Aboriginal persons who hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or Aboriginal places in the area of the existing Dubbo Quarry, located at Sheraton Road, Dubbo NSW within the Dubbo Regional Council Local Government Area.

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c/o EMM Consulting Pty Ltd
Attn: Morgan Wilcox
PO Box 506
Newcastle NSW 2300
Email: mwilcox@emmconsulting.com.au

Kind regards
Morgan

Morgan Wilcox

Senior Archaeologist



T 02 4907 4800
M 0400 264 916
D 02 4907 4824
 Connect with us

NEWCASTLE | Level 1, 146 Hunter Street, Newcastle 2300

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9 May 2019

Native Title Services Corporation
PO Box 2105
Strawberry Hills NSW 2001

Re: Dubbo Quarry Continuation Project - Agency Request

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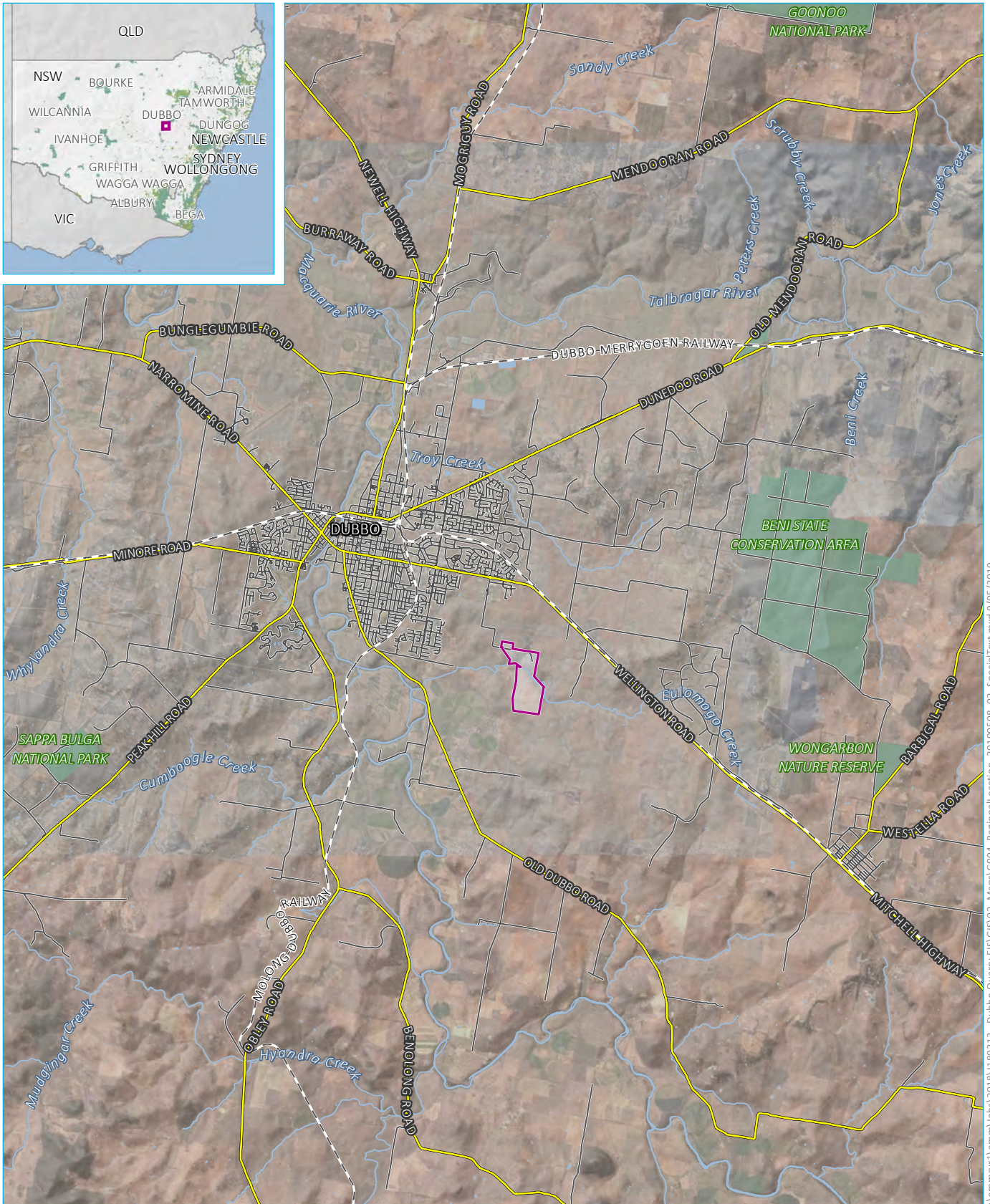
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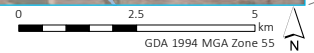
Yours sincerely



Morgan Wilcox
Senior Archaeologist
mwilcox@emmconsulting.com.au



Source: EMM (2019); DFSI (2017); GA (2011)



KEY

- Project Area
- Waterbody
- NPWS reserve
- State forest
- Rail line
- Main road
- Local road
- Watercourse/drainage line

Project area location

Dubbo Quarry Continuation Project

Morgan Wilcox

From: Morgan Wilcox
Sent: Thursday, 9 May 2019 5:15 PM
To: 'rog.nw@environment.nsw.gov.au'
Cc: 'Samantha.Wynn@environment.nsw.gov.au'; 'Phil.Purcell@environment.nsw.gov.au'
Subject: J180131 - Dubbo Quarry Continuation Project - Consultation - Agency Request
Attachments: J180313_DubboQuarryContinuationProject_AgencyRequest_V1.0_OEH.pdf

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c/o EMM Consulting Pty Ltd
Attn: Morgan Wilcox
PO Box 506
Newcastle NSW 2300
Email: mwilcox@emmconsulting.com.au

Kind regards
Morgan

Morgan Wilcox

Senior Archaeologist



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M 0400 264 916
D 02 4907 4824
 Connect with us

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9 May 2019

Office of Environment and Heritage
PO Box 2111
Dubbo NSW 2830

Re: Dubbo Quarry Continuation Project - Agency Request

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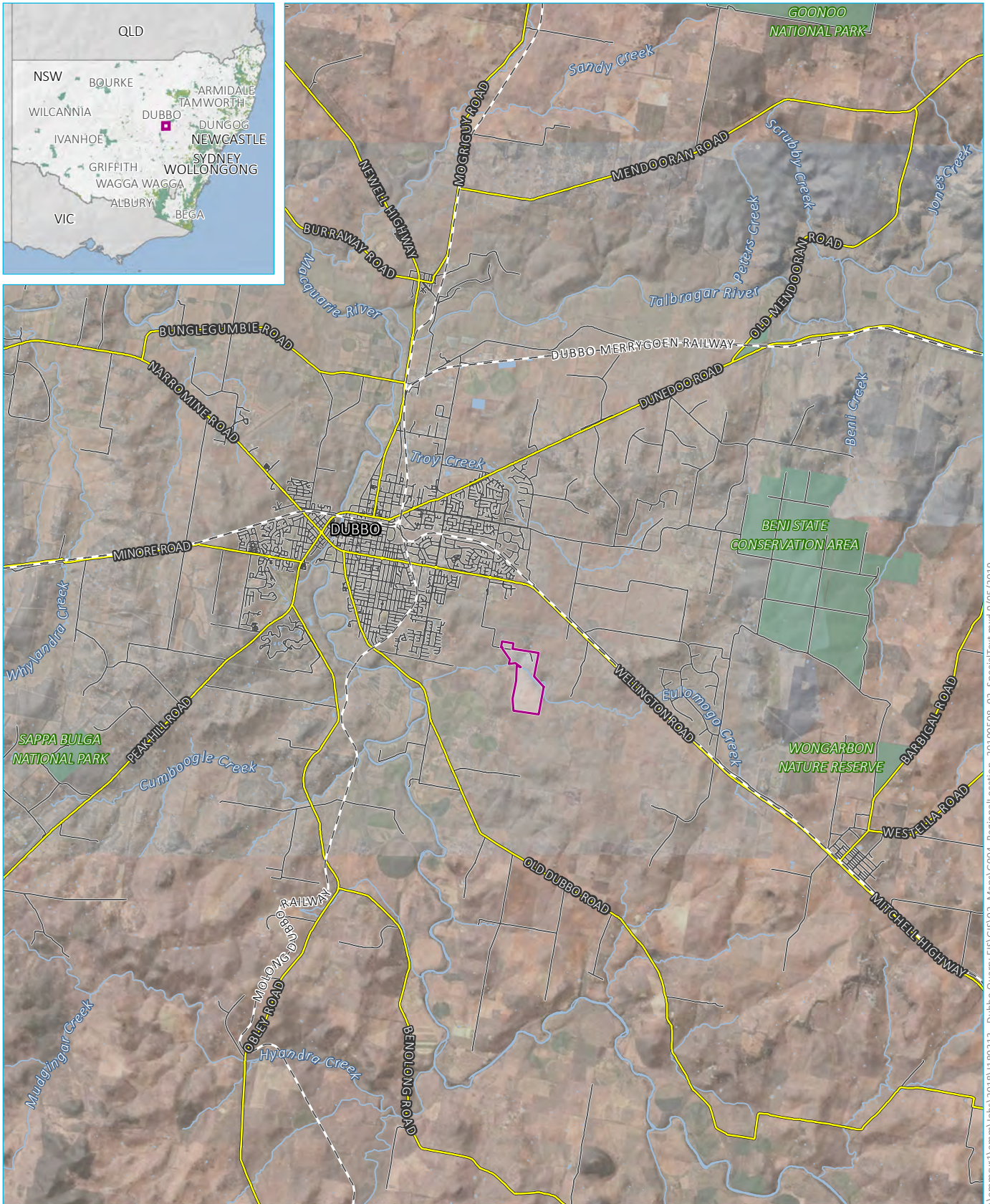
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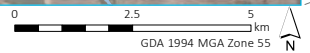
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Morgan Wilcox
Senior Archaeologist
mwilcox@emmconsulting.com.au



Source: EMM (2019); DFSI (2017); GA (2011)



KEY

- Project Area
- Waterbody
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- Local road
- Watercourse/drainage line

Project area location

Dubbo Quarry Continuation Project

Morgan Wilcox

From: Morgan Wilcox
Sent: Thursday, 9 May 2019 5:17 PM
To: 'adminofficer@oralra.nsw.gov.au'
Subject: J180131 - Dubbo Quarry Continuation Project - Consultation - Agency Request
Attachments: J180313_DubboQuarryContinuationProject_AgencyRequest_V1.0_Office of the Registrar.pdf

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Morgan Wilcox

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9 May 2019

The Office of the Registrar
Aboriginal Land Rights Act 1983
PO Box 5068
Parramatta NSW 2124

Re: Dubbo Quarry Continuation Project - Agency Request

Dear Sir/Madam,

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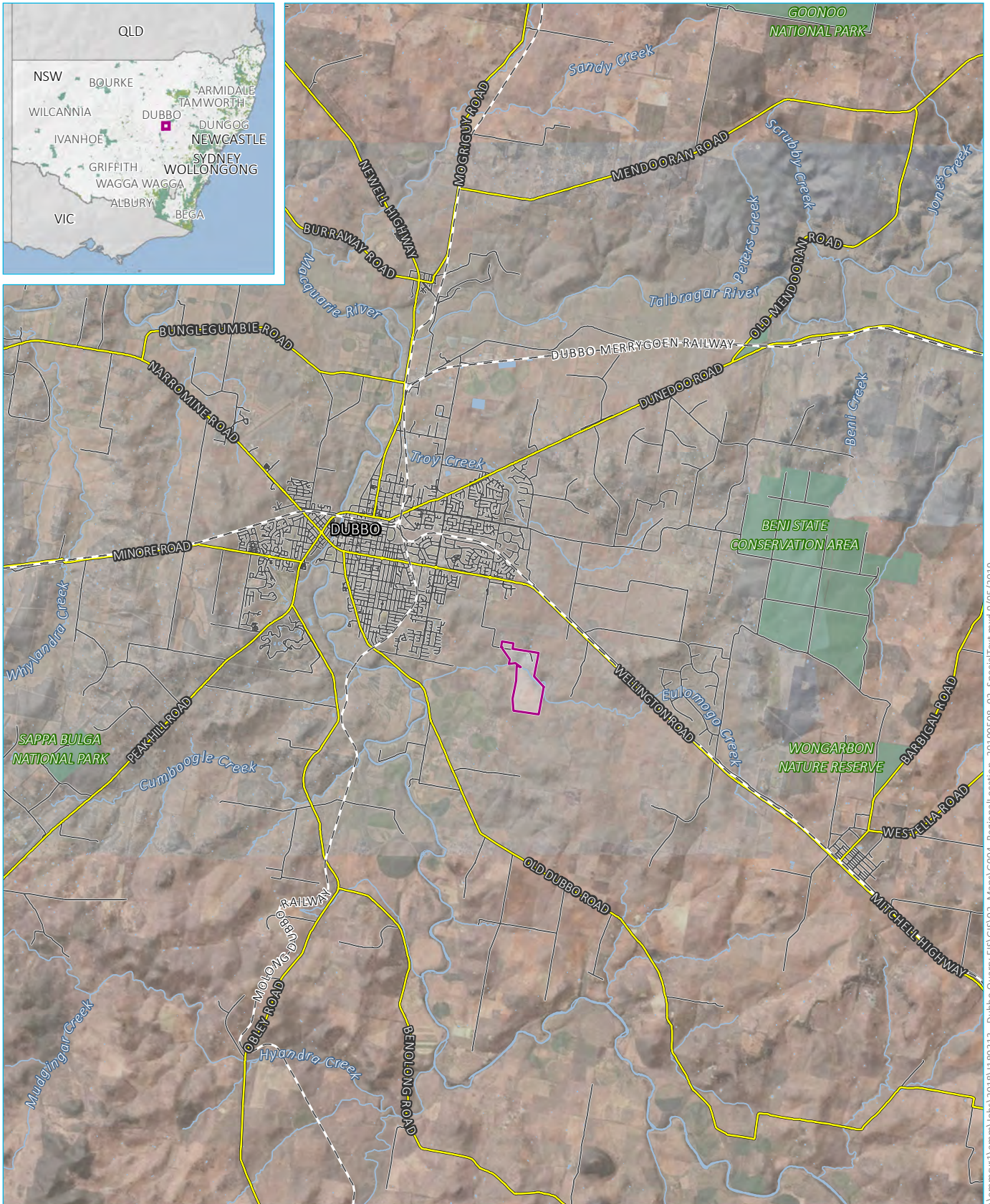
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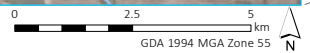
Yours sincerely



Morgan Wilcox
Senior Archaeologist
mwilcox@emmconsulting.com.au



Source: EMM (2019); DFSI (2017); GA (2011)



KEY

- Project Area
- Waterbody
- NPWS reserve
- State forest
- Rail line
- Main road
- Local road
- Watercourse/drainage line

Project area location

Dubbo Quarry Continuation Project

Morgan Wilcox

From: Suellyn Rees <suellyn@dlalc.com.au>
Sent: 10 May, 2019 9:45 AM
To: Morgan Wilcox
Subject: FW: J180131 - Dubbo Quarry Continuation Project - Consultation - Agency Request
Attachments: J180313_DubboQuarryContinuationProject_AgencyRequest_V1.0_Dubbo LALC.pdf

Hi Morgan,

Please include Dubbo Local Aboriginal Land Council as we have staff who are appropriately qualified to conduct these assessments (also a Traditional Owner) and are currently having 2 other young community members certified to conduct assessments as well.

Kind regards

Suellyn Rees

CEO

Mobile: 0427 121 912



Dubbo Local Aboriginal Lands Council|Cnr Darling & Wingewarra Sts|POBox1565|Dubbo,NSW 2830|Ph 02 6884 5276

"Dubbo LALC would like to acknowledge the traditional custodians of this land and pay respects to the Elders both past and present"

From: Morgan Wilcox <mwilcox@emmconsulting.com.au>
Sent: Thursday, 9 May 2019 5:16 PM
To: Raiwyn Towney <raiwyn@dlalc.com.au>
Subject: J180131 - Dubbo Quarry Continuation Project - Consultation - Agency Request

To whom it may concern,

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c/o EMM Consulting Pty Ltd
Attn: Morgan Wilcox
PO Box 506
Newcastle NSW 2300
Email: mwilcox@emmconsulting.com.au

Kind regards
Morgan

Morgan Wilcox
Senior Archaeologist

Morgan Wilcox

From: Morgan Wilcox
Sent: 10 May, 2019 11:07 AM
To: 'Suellyn Rees'
Subject: RE: J180131 - Dubbo Quarry Continuation Project - Consultation - Agency Request


Thank you Suellyn,

I will note your registration as a stakeholder for the project. Can you please advise of any other Aboriginal organisations or Aboriginal persons you are aware of who hold knowledge relevant to the study area who should be contacted and invited to register for this project?

Kind regards
Morgan

Morgan Wilcox
Senior Archaeologist



T 02 4907 4800
M 0400 264 916
D 02 4907 4824
 Connect with us

NEWCASTLE | Level 1, 146 Hunter Street, Newcastle 2300

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From: Suellyn Rees <suellyn@dalc.com.au>
Sent: 10 May, 2019 9:45 AM
To: Morgan Wilcox <mwilcox@emmconsulting.com.au>
Subject: FW: J180131 - Dubbo Quarry Continuation Project - Consultation - Agency Request

Hi Morgan,

Please include Dubbo Local Aboriginal Land Council as we have staff who are appropriately qualified to conduct these assessments (also a Traditional Owner) and are currently having 2 other young community members certified to conduct assessments as well.

Kind regards
Suellyn Rees
CEO
Mobile: 0427 121 912



Dubbo Local Aboriginal Lands Council|Cnr Darling & Wingewarra Sts|POBox1565|Dubbo,NSW 2830|Ph 02 6884 5276

"Dubbo LALC would like to acknowledge the traditional custodians of this land and pay respects to the Elders both past and present"

Morgan Wilcox

From: Grace Toomey <Grace.Toomey@dubbo.nsw.gov.au>
Sent: 13 May, 2019 9:59 AM
To: Morgan Wilcox
Subject: RE: J180131 - Dubbo Quarry Continuation Project - Consultation - Agency Request

Hi Morgan

I will table the attached letter at our Dubbo Aboriginal Community Working Party meeting tomorrow and get back to you on the relevant contact person for this project

Cheers

Grace Toomey

Aboriginal Liaison Officer
Dubbo Regional Council
P 02 6801 4406 **F** 02 6801 4259
M 0408 689 688
E Grace.Toomey@dubbo.nsw.gov.au



<http://dubbo.nsw.gov.au>

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From: Morgan Wilcox <mwilcox@emmconsulting.com.au>
Sent: Thursday, 9 May 2019 5:20 PM
To: DRC Mailbox <council@dubbo.nsw.gov.au>
Subject: J180131 - Dubbo Quarry Continuation Project - Consultation - Agency Request

Attn: Council Heritage Officer,

Please see attached agency request seeking to identify Aboriginal organisations or Aboriginal persons who hold knowledge relevant to determining the cultural significance of Aboriginal objects and/or Aboriginal places in the area of the existing Dubbo Quarry, located at Sheraton Road, Dubbo NSW within the Dubbo Regional Council Local Government Area.

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c/o EMM Consulting Pty Ltd
Attn: Morgan Wilcox
PO Box 506
Newcastle NSW 2300

Morgan Wilcox

From: Geospatial Search Requests <GeospatialSearch@NNTT.gov.au>
Sent: 14 May, 2019 3:52 PM
To: Morgan Wilcox
Subject: RE: SR5800 - J180131 - Dubbo Quarry Continuation Project - Consultation - Agency Request - SR5800

UNCLASSIFIED

Native title search – NSW Parcels – Lot 100 on DP628628 and Lot 222 DP1247780
Your ref: J180313 - Our ref: SR5800

Change of e-mail address for Geospatial Searches

To ensure your search requests are received and processed in a timely manner, please forward to GeospatialSearch@NNTT.gov.au with a **completed search request form**. The form is available from the Tribunal's website at this address: <http://www.nntt.gov.au/News-and-Publications/Pages/Forms.aspx>

Dear Morgan Wilcox,

Thank you for your search request received on 09 May 2019 in relation to the above area.

Please note: Records held by the National Native Title Tribunal as at 09 May 2019 indicate that the identified parcels appear to be freehold, and freehold tenure extinguishes native title.

The National Native Title Tribunal does not hold data sets for freehold tenure; consequently, we **cannot** conduct searches over freehold. For confirmation of freehold data, please contact the NSW Land and Property Information office or seek independent legal advice.

For further information, please visit our [website](#).

Cultural Heritage Searches in NSW

The National Native Title Tribunal (the Tribunal) has undertaken steps to remove itself from the formal list of sources for information about indigenous groups in development areas. The existence or otherwise of native title is quite separate to any matters relating to Aboriginal cultural heritage. Information on native title claims, native title determinations and Indigenous Land Use Agreements is available on the Tribunal's website.

Interested parties are invited to use Native Title Vision (NTV) the Tribunal's online mapping system to discover native title matters in their area of interest. Access to NTV is available at

<http://www.nntt.gov.au/assistance/Geospatial/Pages/NTV.aspx>

Training and self-help documents are available on the NTV web page under "Training and help documents". For additional assistance or general advice on NTV please contact GeospatialSearch@NNTT.gov.au

Additional information can be extracted from the Registers available at

<http://www.nntt.gov.au/searchRegApps/Pages/default.aspx>

If you have any further queries, please do not hesitate to contact us on the free call number 1800 640 501.

Regards,

Geospatial Searches

National Native Title Tribunal | Perth

Email: GeospatialSearch@nntt.gov.au | www.nntt.gov.au