

Appendix 6

Aboriginal Archaeological Due Diligence Report





COOMA ROAD QUARRY CONTINUED OPERATIONS PROJECT

Aboriginal Archaeology
Due Diligence Report

August 2012

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Prepared by
Umwelt (Australia) Pty Limited
on behalf of
Holcim (Australia) Pty Limited

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B	Extensive Search Report
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1.0 Introduction

Holcim (Australia) Pty Ltd (Holcim Australia) is seeking development consent under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for continued operations of the Cooma Road Quarry, referred to herein as the Cooma Road Quarry Continued Operations Project (the Project).

Holcim Australia currently operates a hard rock quarry, known as Cooma Road Quarry, located in New South Wales, approximately 6 kilometres south of Queanbeyan and 11 kilometres south-east of Canberra (refer to **Figure 1.1**). The quarry has been operating at the current site since 1959. The current development consent for Cooma Road Quarry was granted on 26 October 1995 by Queanbeyan City Council. Cooma Road Quarry is considered a significant regional supplier of granite and dacite hard rock aggregates with a current maximum annual extraction limit of 1 million tonnes per annum (Mtpa).

This report is concerned with Aboriginal archaeological potential and values of the Project area. The report has been completed as a due diligence exercise for the Project in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (Due Diligence Code – DECCW 2010a). Historic heritage is considered in a separate report. Members of the Ngambri Local Aboriginal Land Council, who are also representatives of the Ngambri Elders, were present during the due diligence inspections and have provided a statement on the cultural values of the site (refer to **Attachment A**).

It was determined that following the due diligence process was appropriate for the Project due to the highly disturbed nature of the Project area. The project components have been designed sympathetically to be located within previously disturbed areas or within approved disturbance areas to avoid the potential for increased impacts, including the potential to harm Aboriginal objects. In total, the Project will result in the disturbance of only 0.2 hectares outside of the existing and approved disturbance area for Cooma Road Quarry.

The proposed quarry pit extension area and proposed water management system components are located within areas that have been historically disturbed by approved quarry activities or previous land uses.

The proposed new infrastructure area has previously been approved for disturbance in the existing development consent held by Holcim Australia for Cooma Road Quarry (DA D371/94). While the area has been approved for disturbance, the area has not yet been cleared. While no known Aboriginal sites occur in this area, Holcim elected to also cover this approved disturbance area as part of the due diligence process.

The findings of the due diligence process are outlined in this report, confirming that the Project will not impact any known Aboriginal sites and has a low potential to impact any currently unknown objects.

1.1 Project Description

The current development consent for Cooma Road Quarry will expire in 2015, however, there will still be rock resources available for quarrying at the site. The Project will involve extending the life of the quarry to allow for extraction of these remaining resources. This will be achieved by extending the approved extraction boundary to extract additional granite resources. Holcim Australia also proposes to increase the production capacity of the quarry to meet predicted increases in demand for construction materials associated with future growth and development of the Canberra and Queanbeyan regions.



Source: Holcim (2012), Google Earth (2011) and Queanbeyan City Council (2006)

0 0.5 1.0 1.5 km
1:35 000

Legend

▭ Proposed Project Area

FIGURE 1.1
Locality Map

The proposed extraction area extension includes resources beneath the existing quarry infrastructure area (refer to **Figure 1.2**). In order to accommodate the proposed extraction boundary increase, it is proposed to relocate the existing workshop, truck parking area and temporary stockpiles to a new infrastructure area immediately north of the quarry which has previously been approved for disturbance but has not been constructed to date. The Project will also seek to increase the maximum annual extraction limit to 1.5 Mtpa from the presently approved 1 Mtpa.

It is also proposed to modify the water management system as part of the Project including:

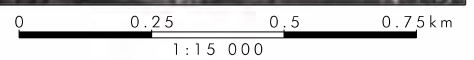
- a clean water dam (Eastern Dam) to intercept runoff from the eastern catchment; and
- additional clean water drainage channel and a clean water dam (North-West Dam) to intercept runoff from the north-west catchment.

It is expected that the proposed dams will assist in managing upslope runoff from the clean catchment areas upslope of the existing water management system.

As discussed above, a large amount of the Project area has been previously disturbed by the existing and historic quarry operations, including vegetation clearance, complete topsoil removal and quarry extraction.



Source: Holcim (2012), Google Earth (2011)



Legend

- - - Proposed Project Area
- Approved Extraction Area
- Proposed Additional Extraction Area
- Approved Disturbance Area - Workshop
- Approved Disturbance Area - Overburden Emplacement
- Proposed Dam
- - - - - Clean Drain

FIGURE 1.2
Cooma Road Quarry
Continued Operations Project

2.0 Relevant Legislation

The Office of Environment and Heritage (OEH) is primarily responsible for regulating the management of Aboriginal cultural heritage in New South Wales under the *National Parks and Wildlife Act 1974* (NPW Act as amended October 2010). The NPW Act is accompanied by the *National Parks and Wildlife Amendment (Aboriginal Objects and Aboriginal Places) Regulation 2010* (the Regulation), the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (Due Diligence Code – DECCW 2010a) and other industry-specific codes.

The objectives of the NPW Act include:

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

The NPW Act defines an Aboriginal object 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.

Under Section 84 of the NPW Act, an Aboriginal Place must be declared by the Minister as a place that, in the opinion of the Minister, is or was of special significance with respect to Aboriginal culture.

In accordance with Section 86(1) of the NPW Act, it is an offence to harm or desecrate a known Aboriginal object, whilst it is also an offence to harm an Aboriginal object under Section 86(2). Similarly, Section 86(4) states that a person must not harm or desecrate an Aboriginal place. Harm to an object or place is defined as any act or omission that:

- a) destroys, defaces or damages an object or place, or
- b) in relation to an object – moves the object from the land on which it had been situated, or
- c) is specified by the regulations, or
- d) causes or permits the object or place to be harmed in a manner referred to in paragraph (a), (b) or (c),

but does not include any act or omission that:

- e) desecrates the object or place, or
- f) is trivial or negligible, or
- g) is excluded from this definition by the regulations.

It is noted that consultation with the Aboriginal community is not a formal requirement of the due diligence process (DECCW 2010a:3). However, Holcim Australia and the Ngambri Elders/Ngambri Local Aboriginal Land Council (NLALC) have a well established working relationship and Memorandum of Understanding in place, and therefore NLALC have been involved in ongoing consultation for the Project.

Section 87(2) and (4) of the NPW Act establishes that it is a defence to prosecution under Section 86(2) (the strict liability offence) if due diligence was exercised to reasonably determine that the activity or omission would not result in harm to an Aboriginal object or if the activity or omission constituting the offence is a low impact act or omission (in accordance with Section 80B of the Regulation).

The Regulation identifies that compliance with the Due Diligence Code (DECCW 2010a) is taken to constitute due diligence in determining whether a proposed activity will harm an Aboriginal object. This Due Diligence Code identifies a process for determining whether or not Aboriginal objects are, or are likely to be, present in an area, whether an activity is likely to impact Aboriginal objects and whether an Aboriginal Heritage Impact Permit (AHIP) is required. The key elements of the due diligence process as outlined in the Code include:

- consideration of the nature of the proposed activity and whether it will cause additional ground disturbance to an area. Activities causing no additional ground disturbance – such as driving on established tracks, cultivating land that has been previously cultivated or maintenance of existing infrastructure – may be exempt from definitions of harm under the *National Parks and Wildlife Act 1974*;
- searching the Aboriginal Heritage Information Management System (AHIMS) database and analysing any other sources of information of which you are aware to identify whether there are registered Aboriginal sites in the area, or whether past archaeological investigations have identified the potential for subsurface archaeological deposits;
- assessment of landscape features, prior land use and disturbance history to identify areas that are likely to contain Aboriginal objects and areas where past activities are likely to have resulted in the removal of Aboriginal objects; and
- desktop assessment and visual inspection.

If Aboriginal objects or landscape features with potential to contain Aboriginal objects are identified during either the desktop assessment or visual inspection it becomes necessary to consider whether:

- harm to the object or disturbance of the landscape feature can be avoided; or
- further investigations and impact assessment are necessary.

Table 2.1 lists the Due Diligence stages and where these steps are addressed within this report.

Table 2.1 – Due Diligence Code of Practice for the Protection of Aboriginal Objects

Code of Practice Requirement	Section in this Report
1. Will the activity disturb the ground surface	Section 3.0
2a. Search the AHIMS database and use any other sources of information of which you are already aware	Section 5.0 and Attachment A
2b. Activities in areas where landscape features indicate the presence of Aboriginal objects	Sections 5.2, 5.3 and 6.3
3. Can you avoid harm of the object or disturbance of the landscape feature?	Sections 5.3 and 6.3.2
4. Desktop assessment and visual inspection	Sections 5.0 and 6.0
5. Further investigations and impact assessment	NA

3.0 Proposed Ground Disturbance

Table 3.1 outlines the nature of the ground disturbance required for the proposed activities, landscape features that are relevant to determining the likelihood of the existence of Aboriginal objects (as defined by the Department of Environment Climate Change and Water¹ *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW 2010a)) and previous disturbance in the area.

Table 3.1 – Proposed Ground Disturbance for Proposed Activities

Activity	Activity Ground Disturbance	Landscape Features	Previous Disturbance
Additional resource extraction	The proposed additional resource extraction will require clearance and resource extraction of approximately 3.5 hectares. It is proposed that there will be total ground disturbance in the entire proposed extraction area.	The proposed additional extraction area is located on the mid-slope of a spur between zero and approximately 300 metres from a first order tributary of Barracks Creek.	The area has been significantly disturbed by previous quarry extraction, road construction and office construction. The portion of the area that has vegetation and topsoil remaining (an area approximately 125 by 25 metres (average width dimensions, which vary between 10 and 40 metres) has previously been disturbed by vegetation clearance, subsequent erosion and access track construction. The topsoil is very shallow (5 to 10 centimetres), highly disturbed remnant A2 horizon and organic, recently formed O horizon, overlaid on petrified wood and conglomerate bedrock.
New infrastructure area	The proposed infrastructure area will require ground preparation for the construction of an amenities block, laboratory, truck wash, fuel bay, service bay, 4 bay workshop, mobile equipment parking, agg tipper parking and a workshop laydown area. Roads connecting the infrastructure will also be required. The total proposed ground disturbance will be approximately 1.6 hectares	The proposed infrastructure area is located on a spur crest and upper slopes between approximately 100 and 200 metres from Barracks Creek.	The area has previously been approved for disturbance as part of the existing Development Consent for the quarry granted by Queanbeyan City Council. The area has been disturbed by vegetation clearance, erosion, grazing, importing gravels, vehicles and historic rubbish dumping. The area has varied amounts of soil remaining. On the crest itself soils are between 10 and 20 centimetres, however on the slopes 10 centimetres is the maximum depth of soil remaining, with some areas of exposed bedrock on the steeper slopes.

¹ Now Office of Environment and Heritage.

Table 3.1 – Proposed Ground Disturbance for Proposed Activities (cont.)

Activity	Activity Ground Disturbance	Landscape Features	Previous Disturbance
Eastern Dam	The Eastern Dam will cover an area of approximately 0.2 hectares.	The proposed Eastern Dam is located on lower slopes and at the junction of a first and second order tributary of Barracks Creek.	The area has been disturbed by vegetation clearance, subsequent erosion, historic lime kiln construction and usage. The topsoil is shallow, with patches of exposed bedrock.
North-west Dam	The north-west dam will cover an area of approximately 0.1 hectares.	The proposed north-west dam is located in a modified depression at the base of a steeply sloping ridge, 140 metres from Barracks Creek.	The area has previously been disturbed by vegetation clearance, subsequent erosion and quarrying. The exposed ground surface is currently heavily cracked clay, likely dried run off from the quarry operations directly east of the quarry pit.
North-west Dam Drainage Channel	The drainage channel to the North-west Dam will cover an area of approximately 0.1 hectares.	The drainage channel to the north-west dam is located across a steep slope of a ridge, between 10 and 140 metres from Barracks Creek.	The drainage channel has previously been disturbed by vegetation clearance and quarrying, along with subsequent erosion. The slope is extremely steep and the topsoil is very shallow, with lots of exposed bedrock.

4.0 Aboriginal Party Consultation

As noted above, Holcim Australia and the local Ngambri Elders and NLALC have an ongoing working relationship. Holcim Australia undertake ongoing consultation with the local Aboriginal people and will continue to do so. The representatives of the NLALC (also representatives of the Ngambri Elders) who were present during the inspections have prepared an independent report to Holcim Australia on the Aboriginal cultural heritage values of the Project area, refer to **Attachment A**.

5.0 Desktop Assessment

5.1 Previously Recorded Archaeological Sites

A search of the OEH Aboriginal Heritage Information Management System (AHIMS) register was undertaken on 29 January 2012 and identified no previously recorded sites within the Project area. In order to comply with the due diligence code of practice, a new search was undertaken on 18 April 2012 (refer to **Attachment B**). The new search identified 25 previously registered sites surrounding the Project area (refer to **Figure 5.1** – it is noted that four of these sites are duplicated, making 21 sites in total).

As shown in **Figure 5.1**, four sites are very close to the edge of the overall Project area (57-2-0223, 57-2-0396, 57-2-0625/57-2-0628 and 57-2-0626/57-2-0630). One of these sites 57-2-0626/57-2-0630 is just inside the Project area boundary, however none of the previously identified sites are near any of the Project's proposed impacts. The known sites surrounding the Project area are small artefact scatters or isolated artefacts, with only one site having over 20 artefacts (23). Seven sites have had Aboriginal Heritage Impact Permits approved by OEH indicating that they are likely to have been destroyed. The majority of the previously registered sites are situated on gentle gradient mid and lower slopes within 100 metres of creek lines. The remaining sites are situated on spur crests and one site is located on an upper slope.

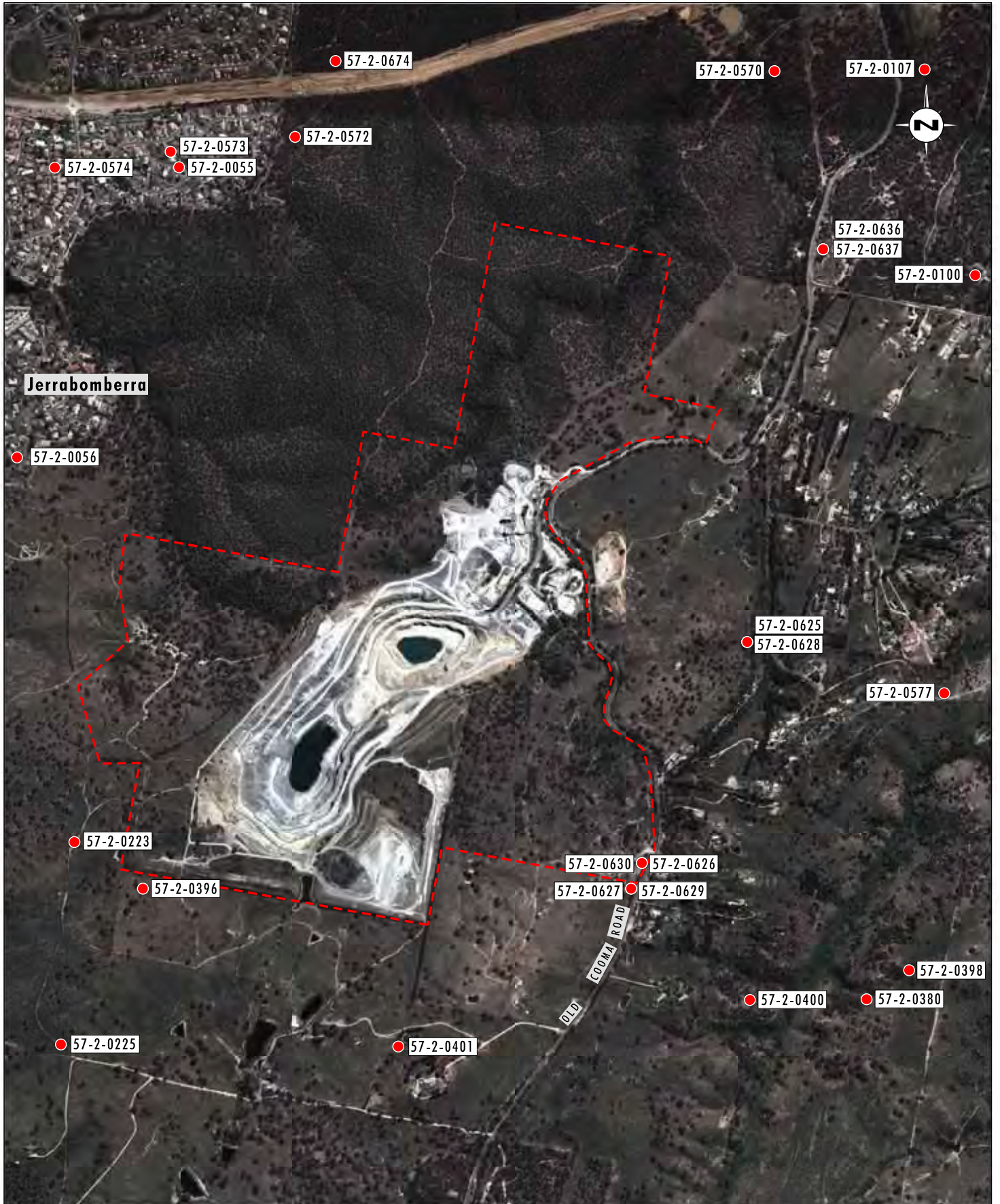
The lack of recorded sites in the Project area and the low number in its surrounds are not necessarily an accurate reflection of pre-contact² land use by Aboriginal people.

5.2 Environmental Context

The Project area is located approximately 2 kilometres east of the Queanbeyan River, a tributary of the Molonglo River. Most of the Project area is in modified landscapes. The proposed extraction area includes the remaining upper slopes of the saddle that overlooks a now highly disturbed valley containing upper tributaries of Barracks Creek. The proposed infrastructure area is located immediately north of the existing quarry area, on a spur crest and steep upper slope 100 to 200 metres from Barracks Creek (refer to **Figure 5.2**). The spur crest itself has a gentle gradient, which then slopes very steeply down to the creek. The proposed north-west dam is located in what is currently a run off area immediately adjacent to a quarry stockpile area. The proposed drain into the dam follows the edge of the existing quarry area, which is currently a steep slope running off a ridge that passes between Barracks Creek and Jerrabomberra Creek. The proposed Eastern Dam is located on a tributary of Barracks Creek, which has been interrupted by the quarry.

The proposed quarry extension is located primarily within disturbed terrain, with small areas remaining of the Burra and Celeys Creek Soil Landscapes, while the associated infrastructure area is located on a relatively undisturbed spur crest over the Campbell and Celeys Creek Soil Landscapes. The north-west dam and associated drainage channel are located on the interface of the disturbed terrain and the Campbell Soil Landscape. The Eastern Dam is situated within the Burra Soil Landscape.

² Prior to non-Aboriginal settlement



Source: Google Earth (2011)

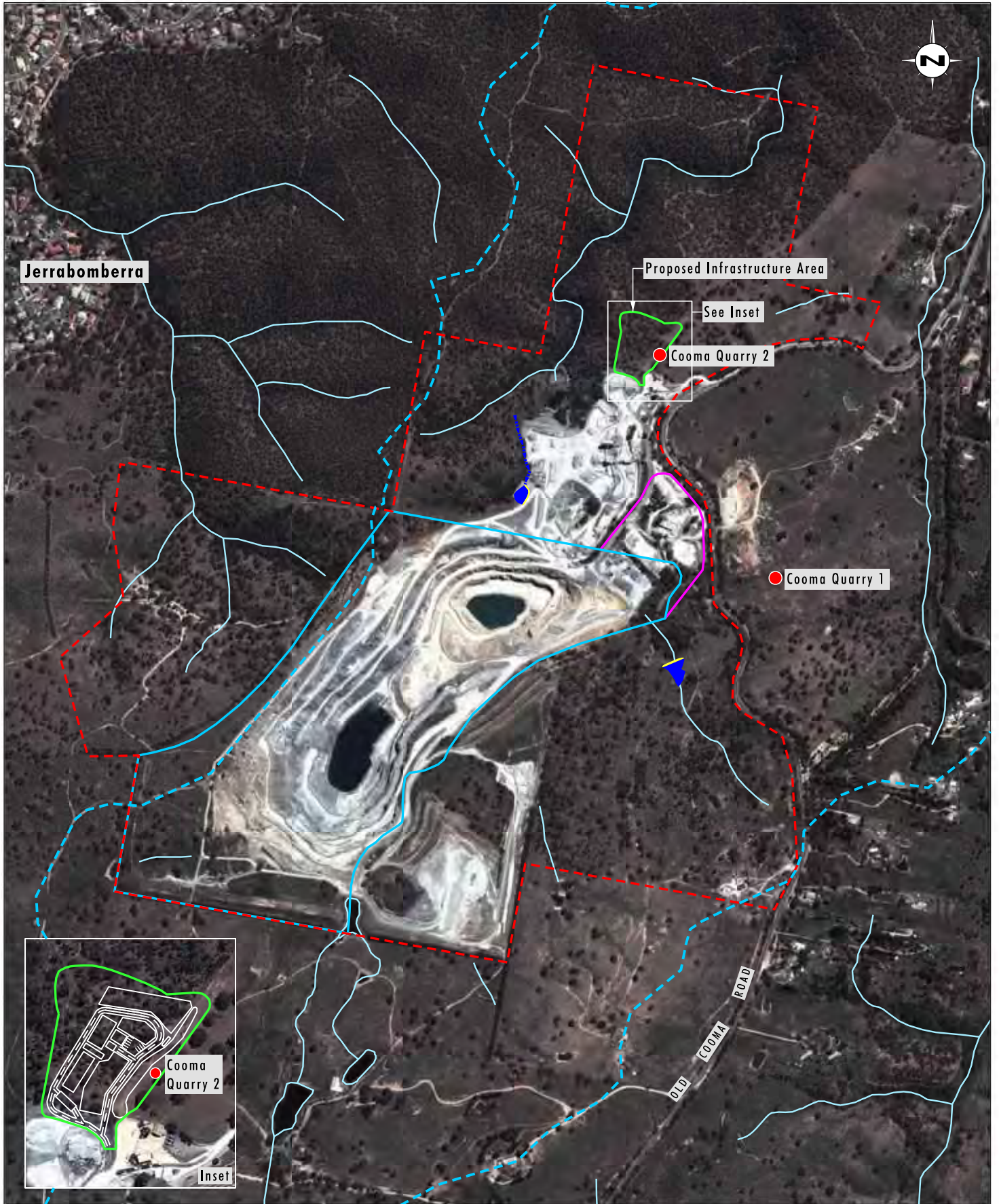
0 200 400 800m
1:16 000

Legend

- Proposed Project Area
- Artefact Scatter

FIGURE 5.1

AHIMS Previously Registered Sites



Source: Google Earth (2011)

0 100 300 600m
1:12 500

Legend

- - - Proposed Project Area
- - - Approved Extraction Area
- - - Proposed Additional Extraction Area
- - - Proposed Disturbance Area - Workshop
- - - Catchment Boundary
- - - Clean Drain
- Isolated Artefacts

FIGURE 5.2

New Archaeological Sites

The Burra Soil Landscape is characterised by undulating low hills on Silurian volcanics, long (300 metres) waning and gently to moderately inclined hillslopes, footslopes and fans. Soils tend to be shallow (<60 centimetres) and well drained on upper slopes and crests, with moderately deep soils (<90 centimetres) on midslopes, lower slopes and drainage lines. Moderate mass movement, sheet erosion and localised shallow soils are common characteristics of this soil landscape. The geology of the Burra Soil Landscape consists of Silurian volcanic, various tuff, siltstone, shale, sandstone and limestone, with highly weathered tuffs (Jenkins 2000).

Historically the Burra Soil Landscape has been almost completely cleared (>90 per cent) savanna woodland, with introduced and native grasses. Remaining trees include *Eucalyptus melliodora* (yellow box) and *Eucalyptus pauciflora* (snow gum).

The Celeys Creek Soil Landscape is an erosional soil landscape characterised by rolling low hills on granitic rock, with moderately inclined slopes with occasional gently inclined crests and saddle slopes. Flats are aggraded and narrow, while rock outcrops are common on slopes and crests. Soils tend to be shallow (<40 centimetres) and well drained on upper slopes and moderately deep (<80 centimetres) and moderately-well drained on lower slopes. Soils tend to be shallow and non-cohesive, with seasonal waterlogging and localised rock outcropping. The geology of the Celeys Creek Soil Landscape is comprised of various granitic phases including the Boro Granite and Lockhart Igneous Complex (Jenkins 2000).

The Celeys Creek Soil Landscape is extensively cleared open-forest with low woodland in frost hollows with a wide variety of species. Remaining species include *Eucalyptus rubida* (candlebark), *Eucalyptus viminalis* (ribbon gum), *Eucalyptus pauciflora* (snowgum) and *Eucalyptus dives* (broad-leaved peppermint), various species of *Acacia*, *hakea eriantha* (tree hakea), *Persoonia silvatica* (forest geebung), *Pteridium esculentum* (bracken) and *Themeda australis* (kangaroo grass).

The Campbell Soil Landscape is a colluvial soil landscape characterised by step to rolling volcanic mountains and hills. Vertically dipping tuff rock outcropping is common. Soils tend to be shallow (<30 centimetres) and well drained on crests and near rock outcrops, moderately deep (<70 centimetres) on side slopes and variable depths along drainage lines. The soils are shallow, infertile and acidic, and are characterised by steep slopes, rock outcropping, risk of sheet erosion and localised waterlogging. The geology of the Campbell Soil Landscape is comprised of Silurian volcanic, various tuffs, siltstones, rhyolites, dacites and limestones (Jenkins 2000).

Approximately 20 per cent of the Campbell Soil Landscape has been cleared historically for pasture, with additional thinning of the open-forest to low savanna woodland. Remaining species in exposed areas include *Eucalyptus pauciflora* (snow gum), *Eucalyptus mannifera* (brittle gum), *Eucalyptus rossii* (scribbly gum), *Eucalyptus dives* (broad-leaved peppermint), *Eucalyptus rubida* (candlebark) and various species of *Acacia* and *Danthonia* (wallaby grasses).

The Project area is situated within the Southern Tablelands and has a typically cool, dry climate, with warm dry summers and cool winters (Jenkins 2000: 4-5). The topography of the Canberra region is varied, and this affects the overall climate, with high altitudes, escarpments, aspect and proximity to the coast causing frost hollows, altitudinal cols, climatic gradients, rain shadows and areas of high rainfall. Elevation in the Project area is between 680 and 740 metres above sea level. Rainfall increases with altitude, and snowfall is more common at elevations above 500 metres above sea level (Jenkins 2000: 5). Prevailing winds come from the west, and are cold in the winter, when blown in from the alpine region.

The creek lines in the Project area are all upper order tributaries of Barracks Creek, a third order tributary of the Queanbeyan River. A number of first order tributaries appear to have come together in the Project area before being interrupted by the quarry. These upper order tributaries are likely to have been ephemeral in nature prior to quarrying. These drainage lines are likely to have been ephemeral in nature and only held water after periods of heavy rainfall.

5.3 Implications for the Current Proposed Works

This section presents the implications for the Project area, based on the understanding of Aboriginal land use and archaeological site survival from the review of the information presented in **Section 4.1** and **Section 4.2**.

The previously registered sites around the Project area are mostly situated on low gradient slopes within 100 metres of creek lines, with some sites located on spur crests. The Eastern Dam is on a drainage line with gentle gradient lower slopes either side. The proposed infrastructure area is located on a gentle spur crest and steep upper slopes between 100 and 200 metres from Barracks Creek. The remaining areas proposed for impact are steep gradient slopes, drainage lines and modified areas.

The elevation of the country within the Project area, with an outlook over the Queanbeyan River valley would have provided an extensive view across the valley, that may have allowed people to become aware of the movements of other people (through the observance of fires or smoke) and/or game, and perhaps plan hunting expeditions.

Based on the previously registered sites, and topography around the Project area, the lower slopes around the Eastern Dam and the spur crest within the proposed infrastructure area are the most likely areas for artefacts to be identified. Traditionally areas of low gradient associated with high order creeks would have supplied attractive short terms camping locations for small numbers of people, while it is likely that campsites of longer duration or for larger groups of people would be situated closer to the Queanbeyan River. The unmodified slopes within the Project area are moderately to steeply inclined and are unlikely to have been utilised by Aboriginal people for camping. Their use was likely transient in nature and therefore, would not result in the discard of large amounts of cultural material making the use of these areas harder to discern archaeologically. The saddle opposite Cooma Road from the existing quarry has a north-west/south-east orientation which would not provide much protection from harsh westerly winds. The low-lying valleys between spurs would have provided more protection from the winds.

As noted above, the creek lines within the Project area are likely to have been ephemeral, and only hold water after rainfall events. A Nineteenth century lime kiln was constructed on the bank, near the confluence of two of the tributaries in the vicinity of the Eastern Dam, which may indicate that in the past it had an increased flow³.

³ The lime kilns will be discussed in a separate report (Umwelt 2012).

6.0 Inspection Methodology and Results

6.1 Participants

The due diligence inspection of the proposed extraction area and the saddle area opposite Cooma Road (where the infrastructure area was originally proposed) was undertaken on 3 April 2012. The inspection was carried out by Amanda Reynolds (Umwelt archaeologist), Joe House, Michelle House, Geoffrey Murray and Harry Williams (NLALC). The due diligence inspection of the proposed dams and drainage channels was undertaken on 16 May 2012 by Amanda Reynolds (Umwelt archaeologist), Michelle House, Ambrose House, Geoffrey Murray and Harry Williams (NLALC). The due diligence inspection of the new infrastructure area was undertaken on 11 July 2012 by Amanda Reynolds (Umwelt archaeologist), Geoffrey Murray and Daniel Williams (NLALC).

6.2 Methodology

Pedestrian due diligence inspections were undertaken of the proposed works impact areas. During the inspections participants were spaced approximately 5 metres apart to cover the proposed impact areas. All exposed areas were examined during the inspection and the landforms within the Project area were assessed for subsurface archaeological potential. The first inspection was of the proposed extraction area and initial proposed infrastructure area, a second inspection was of the two proposed dam locations and associated drainage channels, while a third inspection was undertaken of the current proposed infrastructure area.

As noted above the proposed impact areas were inspected on foot, with GPS information, while one member of the survey team recorded. For each proposed impact area relevant environmental information was also recorded such as:

- landform units;
- distance to resources (e.g. water source, raw materials, food sources);
- vegetation;
- soils;
- gradient and aspect;
- area and type of exposure;
- visibility;
- land use and disturbance;
- potential for intact archaeological deposit; and
- Aboriginal cultural significance (as assessed by the Aboriginal stakeholders if provided).

Based on these factors, the proposed impact areas were characterised based on their archaeological potential. The three archaeological potential categories are defined below.

- **Low archaeological potential:** landscape areas that may have been utilised by Aboriginal people in the past, but at a lower intensity relative to all surrounding landforms, resulting in a lower artefact density than all surrounding landforms. This category also includes landscape areas of low terrain integrity, where geomorphic processes or human action may have redistributed artefacts from their deposited locations, such as stripping of soil to create levees or excavation to create dams, resulting in site disturbance or destruction.
- **Moderate archaeological potential:** landscape areas that are predicted to have been utilised by Aboriginal people in the past, but not intensively or repeatedly. There is therefore potential for artefactual deposition, but at a lower frequency and density than in areas of high archaeological potential. Terrain integrity in these areas may be variable, but as most sites are in open contexts, they are unlikely to have high integrity.
- **High archaeological potential:** landscape areas predicted to have been intensively or repeatedly utilised by Aboriginal people in the past, such as creek confluences or elevated landforms above major watercourses or floodplains. In these areas, site and artefact density is expected to be higher than the surrounding landscape, and sites in these areas may possibly be more complex. Terrain integrity in these areas may be variable, but as most sites are in open contexts, they are unlikely to have high integrity. An important characteristic of areas of high archaeological potential is the research potential or the capacity of sites to provide valuable information on past Aboriginal land use, which is most evident in sites of high integrity.

6.3 Results

6.3.1 Aboriginal Archaeological Sites and Archaeological Potential

A large portion of the Project area is previously disturbed land, with only small areas of unmodified landscape. Previous ground disturbing works in the Project area include vegetation clearance, erosion, as well as quarrying, importing fill, bulk earthmoving, road construction in the modified areas. The potential for subsurface artefacts in the modified areas is zero, with all areas having previously been quarried, removing all potential.

There were no Aboriginal objects located within the proposed impact areas during the due diligence inspections for the proposed works. An isolated artefact, a silcrete broken flake, was located on the spur crest adjacent to the proposed infrastructure area (refer to **Figure 5.2** and **Section 6.3.2**). The artefact is approximately 7 metres east of the visual and noise bund that is proposed for construction to the east of the new infrastructure area. Holcim Australia has committed to not impacting on the surface artefact.

The spur crest around the isolated artefact was inspected thoroughly however no further artefacts were present on the surface. The depth of soil on the spur crest varies between five centimetres and fifteen centimetres. The slope of the saddle between high points on the spur crest is gentle, with a slight change in elevation. Although an increased depth of soil increases the potential for subsurface archaeological deposits (deposits that are likely to contain Aboriginal archaeological material that has stratigraphic and/or spatial integrity or that are likely to contain high numbers of objects or a complex assemblage), the spur crest and saddle are exposed to the elements, especially west and northwest winds. It is unlikely that in winter especially, this would have been a camping location. Disturbance from stock, clearance and erosion has also impacted on the spur crest. Therefore, it is assessed that the potential for subsurface artefacts on the spur crest is limited.

The southern end of the proposed extraction area, northern most end and southern most end of the proposed infrastructure area, the proposed Eastern Dam and associated drainage and drainage to the north-western dam are modified landscape. Within these modified parts of the Project area there is low potential for subsurface archaeological deposits. The modified slopes are moderate to steep and have shallow soils, with numerous outcrops of bedrock, limiting archaeological potential. These areas have been inspected and no sites were found.

In addition to the artefact identified adjacent to the proposed infrastructure area, one Aboriginal object, a quartz flake, was located on the eastern side of Cooma Road, approximately 25 metres south-east of the initial proposed surface infrastructure area (refer to **Figure 5.2** and **Section 6.3.2**). Due to the nature of the terrain and disturbed nature of this area, it was predicted that the potential for subsurface artefacts to be present at the site was low, however, due to other Project constraints the surface infrastructure has been relocated inside the existing quarry area.

6.3.2 Newly Identified Archaeological Sites

Cooma Quarry 1

One previously unidentified Archaeological site, Cooma Quarry 1, was located on the eastern side of Cooma Road (refer to **Figure 5.2** and **Attachment C**). The artefact was located on a mid-slope within an exposure created by a stock track. The exposure was approximately 20 metres long and 1 metre wide, with a 3 metre by 3 metre expanse, where the artefact was identified, with approximately 40 per cent visibility. The site is approximately 400 metres west of a first order tributary of the Queanbeyan River.

The site is located outside all proposed impact areas and will not be impacted by the proposed works.

Cooma Quarry 2

One previously unidentified Archaeological site, Cooma Quarry 2, was located on the western side of Cooma Road (refer to **Figure 5.2** and **Attachment C**). The artefact was located on a spur crest within a 25 m² exposure with 10 percent visibility, created by stock trampling. The overall exposure had small areas of increased visibility, with the artefact in one of these smaller areas (less than 1 m²) with 40 per cent visibility. The site is approximately 200 metres east of Barracks Creek.

The site is located seven metres east of the disturbance footprint of the proposed infrastructure area and will not be impacted by the proposed works.

7.0 Risk Assessment

Table 7.1 summarises the risk of the proposed works harming an Aboriginal object and an assessment regarding the possibility of avoiding harm through an appropriate management measure(s).

This risk assessment is based on the Due Diligence Code of Practice. The Project area is assessed, from an archaeological perspective, as having low potential to contain subsurface artefacts or intact archaeological deposits. It is therefore determined that, from an archaeological perspective, the works can proceed with caution in accordance with the recommendations in **Section 8.1**.

Table 7.1 – Risk Assessment for the Proposed Activities

Activity	Aboriginal Objects	Risk of Harm	Risk of Harm
Additional resource extraction	Previously unidentified objects	Low	<p>The area has been significantly disturbed by quarry extraction, road construction and workshop construction.</p> <p>The portion of the area that has vegetation and topsoil remaining (an area approximately 125 by 25 metres (average width dimensions, which vary between 10 and 40 metres) has previously been disturbed by vegetation clearance, subsequent erosion and access track construction. The topsoil is very shallow (5 to 10 centimetres), highly disturbed remnant A2 horizon and organic, recently formed O horizon, overlaid on petrified wood and conglomerate bedrock.</p> <p>It is assessed that the risk of harming an Aboriginal object as a result of the proposed additional resource extraction is low.</p>
New infrastructure area	Previously unidentified objects	Low	<p>The area is between 50 and 250 metres from Barracks Creek and includes a spur crest and steep slopes to the creek. Previous impacts include vegetation clearance, erosion, grazing, importing gravels, historic rubbish dumping and vehicle movements. On the steep slopes outcropping bedrock is visible.</p> <p>This area is approved for disturbance under the existing development consent for Cooma Road Quarry.</p>
	Newly identified objects	Low	<p>It is assessed that the risk of harming an Aboriginal object as a result of the construction of the new infrastructure area is low.</p> <p>Cooma Quarry 2 is situated 7 metres outside the disturbance footprint of the proposed infrastructure area. All works and machinery are to be kept within the proposed works area. As a result of precautions to be taken to avoid harm it is assessed that the risk of harm to the newly identified object is low.</p>

Table 7.1 – Risk Assessment for the Proposed Activities (cont.)

Activity	Aboriginal Objects	Risk of Harm	Risk of Harm
Eastern Dam	Previously unidentified objects	Low	<p>The area includes a tributary of Barracks Creek and the lower slopes 50 metres either side. The slopes have gentle to moderate gradients down to the creek channel. The creek channel is eroded to varying degrees. Historic heritage items (lime kilns) are present. Previous impacts include vegetation clearance, erosion and lime kiln construction and use. Outcropping stone is visible.</p> <p>It is assessed that the risk of harming an Aboriginal object as a result of the construction of the proposed Eastern Dam is low.</p>
North-west Dam	Previously unidentified objects	Low	<p>The area has been significantly disturbed by previous quarrying.</p> <p>The existing depression has no remaining topsoil and during inspection was observed to be dried clay, with large cracks. The slopes on the north-west side of the dam are steep with shallow soils and moderate amounts of vegetation.</p> <p>As a result, it is assessed that the risk of harming an Aboriginal object as a result of the proposed north-west dam is low.</p>
North-west Dam Drainage	Previously unidentified objects	Low	<p>The area at the base of the slopes has been significantly disturbed by previous quarrying. The slopes are extremely steep and have been disturbed by vegetation clearance and erosion.</p> <p>The proposed drainage channel is to be cut into the steep slopes above the existing quarry pit, and will flow into the north-west dam.</p> <p>It is assessed that the risk of harming an Aboriginal object as a result of the proposed drainage line into the north-west dam is low.</p>

8.0 Heritage Advice

The heritage advice outlined below has been prepared solely from an Archaeological perspective, with regard to:

- the risk of harm to Aboriginal objects by the proposed works;
- the requirements of s.86 (1) and (2), 87 (1) and (2) and s.90 of the NPW Act, under which all Aboriginal objects are protected from harm or desecration without the written consent of the Director-General of OEH;
- providing clear guidance regarding appropriate management and protection of Aboriginal archaeological values; and
- the results of the current archaeological due diligence inspection.

It is understood that the Aboriginal stakeholder representatives present during the inspections will be preparing a separate report about the Project area from an Aboriginal cultural perspective.

8.1 Archaeological Recommendations

The proposed activities are assessed as having a low risk of directly harming Aboriginal objects (refer to **Section 7.0**). It is recommended that the proposed works **can proceed with caution** and that the following recommendations are implemented:

- A report on the Aboriginal cultural values of the Project area is obtained from the Aboriginal stakeholder representatives on site during the inspections.
- All Holcim Australia employees and contractors are to be made aware of the location of Cooma Quarry 1 and Cooma Quarry 2.
- Holcim Australia should inform the landowner of the presence of Aboriginal objects on his land, and the penalties that apply for harm to Aboriginal objects.
- From an archaeological perspective, temporary fencing of Cooma Quarry 2 is recommended to avoid any unintended impacts to the site during construction.
- Consultation with the Ngunnawul Elders and NLALC be undertaken to develop a culturally appropriate management strategy to avoid unintended impacts to Cooma Quarry 1 and Cooma Quarry 2.
- All works undertaken are to be kept within the areas discussed in this report. Any changes to the works undertaken or impact areas will require further assessment.
- If during the course of ground disturbing works Holcim Australia becomes aware of any previously unknown Aboriginal archaeological material, all work likely to affect the material (site) shall cease immediately and OEH, relevant Aboriginal stakeholders and a suitably qualified archaeologist will be consulted to determine an appropriate course of action prior to the recommencement of work at that site.

- If during the course of construction Holcim Australia becomes aware of any human/possibly human skeletal material, all work likely to affect the site(s) shall cease immediately. Holcim Australia must notify the NSW Police Department (police coroner) in the first instance. The area becomes a crime scene and is under the control of the NSW Police Department until the Police have declared otherwise. If the Police determine the skeletal remains are not of a criminal nature, Holcim Australia must notify OEH (Enviroline 131555), a suitably qualified forensic archaeologist/anthropologist and the relevant Aboriginal stakeholders to determine an appropriate course of action prior to the recommencement of work at that site.
- If at any stage of the proposed works Holcim Australia proposes to impact an Aboriginal site (whether previously known or located during the course of the proposed works), then an application for an Aboriginal Heritage Impact Permit will need to be submitted to the OEH and consultation with the Aboriginal community will be required following current guidelines (DECCW 2010c).

It is recommended that this report be provided to the Ngambri Elders and NLALC for their comment and input on the management recommendations and Aboriginal cultural heritage values of the area.

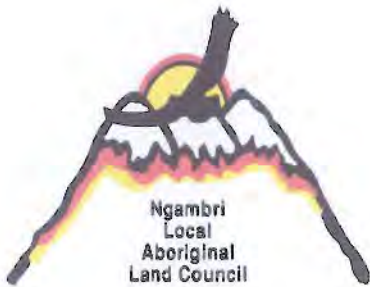
9.0 References

Jenkins, B. R. 2000. *Soil Landscapes of the Canberra*. Department of Land and Water Conservation.

Umwelt 2012. *Statement of Heritage Impact, Cooma Road Quarry*. Report prepared for Holcim (Australia) Pty Ltd.

ATTACHMENT A

Ngambri Local Aboriginal Land Council Correspondence



Ngambri Local Aboriginal Land Council
PO Box 150 Queanbeyan,
NSW 2620

ABN 95902355609

P 02 6297 4152

F 02 6299 3941

E nialc1@bigpond.net.au

13 August 2012

Peter Hewson
ACT - Operations Manager
Holcim (Australia) Pty Ltd
RMB 500 Old Cooma Road
Queanbeyan NSW 2620

Dear Peter

It is with pleasure I provide this reference relating directly to the partnership formed under the Memorandum of Understanding signed by Hocim Australia and The Ngambri Local Aboriginal Land Council (NLALC) on 19 June 2012.

This partnership was developed under the spirit of Reconciliation, and intent of goodwill between our organisations staff and members. Which observes respect for our cultural and heritage values, and proposed restoration and management of lands currently owned by Holcim and the NLALC.

We are appreciative of the current Aboriginal employment program currently operating with Holcim and the NLALC, with the planned commencement of Ngambri Native Nursery operation due to commence in March 2013 in partnership between our organisations.

Opportunities by NLALC to participate in Archaeological assessments relating to Holcim lands recognises and respects Aboriginal history with these lands, this involvement is observed and guided by National Parks and Wildlife regulatory guidelines and principles.

We look forward to a long and productive partnership with Holcim, under the goodwill our agreed values have highlighted in the MOU and certainly intend to expand our endeavours carbon and bio-banking areas

Our membership would like to convey our sincere thanks to yourself and staff and advise that if we could be of assistance in the future please simply contact me on 02 6297 4152 or 0402 623 097

Yours sincerely

Col Williams
Chief Executive Officer on behalf of members of
Ngambri Local Aboriginal Land Council



Ngambri Local Aboriginal Land Council
PO Box 150 Queanbeyan,
NSW 2620

T 02 6297 4152
F 02 6299 3941
E nlaic1@bigpond.com

13 August 2012

John Merrell
UMWELT Pty Ltd
Environmentalists Consultants
2/20 The Boulevard
PO Box 838
Toronto NSW 2283

Dear John,

Re: Aboriginal Cultural Heritage Assessment of Cooma Road Quarry Continued Operations Project

1. Introduction

Holcim (Australia) Pty Ltd (Holcim Australia) is seeking development consent under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for continued operations of the Cooma Road Quarry, referred to herein as the Cooma Road Quarry Continuation Operations Project (the Project).

Umwelt (Australia) Pty Limited prepared an Archaeological due diligence report relating to the archaeological values and impacts proposed by the Project. This due diligence report was provided to the Ngambri Local Aboriginal Land Council for review. This letter presents the Aboriginal Cultural values of the Cooma Road Quarry Continuation Operations Area.

2. Survey

The Ngambri Local Aboriginal Land Council provided representatives to undertake pedestrian surveys on 3rd April, 16th May and 11th July 2012 of the continuation operations impact areas.

- *Nambri LALC Site officers participation identified only two partial scatters on the site and agree with Holcim under the appropriate legislation the requirements of s.86 (1) and (2), 87 (1) and (2) and s.90 of the NPW Act.*

Two new archaeological sites of Aboriginal heritage were identified during the surveys, both isolated artefacts which can be avoided from impacts.

3. Archaeological Assessment

Most of the proposed works will be in previously disturbed landforms, or on very steep slopes, therefore the archaeological assessment identified that there is a low risk of harm to Aboriginal objects/sites by the current project.



Ngambri Local Aboriginal Land Council
PO Box 150 Queanbeyan,
NSW 2620

P 02 6297 4152
F 02 6299 3941
E nlalc1@bigpond.com

The Ngambri LALC agree with this assessment.

4. Aboriginal Cultural Assessment

The Ngambri LALC confirm nil Aboriginal Cultural values associated with the Project area.
The Nambri LALC confirm nil constraints to the project from an Aboriginal Cultural perspective.

5. Recommendations

The archaeological recommendations provided included:

- All Holcim Australia employees and contractors are to be made aware of the location of
- Cooma Quarry 1 and Cooma Quarry 2.

Yes – The Ngambri LALC agree and consider these instructions to be a best practice model.

- Holcim Australia should inform the landowner of the presence of Aboriginal objects on his land, and the penalties that apply for harm to Aboriginal objects.

Yes - The Ngambri LALC agree and consider this to be a best practice model.

- From an archaeological perspective, temporary fencing of Cooma Quarry 2 is recommended to avoid any unintended impacts to the site during construction.
- Consultation with the Ngambri Elders and NLALC be undertaken to develop a culturally appropriate management strategy to avoid potential impacts to Cooma Quarry 1 and Cooma Quarry 2.

The Ngambri LALC supports the proposal for temporary fencing prior to any works being carried out on the Quarry.

The Ngambri LALC recommend the following:

- Sites identified in the current heritage assessment i.e. two partial scatters, undertake salvage for relocation into a more suitable location e.g. conservation area.

Yours sincerely

Colin Williams

Chief Executive Officer

On behalf of Member and Elders of the Ngambri Local Aboriginal land Council

ATTACHMENT B

Extensive Search Report



SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
57-2-0100	Gale Precinct 1; Contact	AGD	55	703370	6081550	Open site	Valid	Artefact : -	Open Camp Site	2083
57-2-0055	Jerrabomberra/1 Contact	AGD	55	701010	6081870	Open site	Valid	Artefact : -	Open Camp Site	794
57-2-0056	Jerrabomberra/2 Contact	AGD	55	700530	6081010	Open site	Valid	Artefact : -	Open Camp Site	794
57-2-0223	SQBN-W1 Contact	AGD	55	700700	6079870	Open site	Valid	Artefact : -		
57-2-0225	SQBN-W3 Contact	AGD	55	700660	6079270	Open site	Valid	Artefact : -		
57-2-0380	GA14 (Googong) Contact	AGD	55	703048	6079404	Open site	Valid	Artefact : 3		
57-2-0396	GA30 (Googong) Contact	AGD	55	700903	6079732	Open site	Valid	Artefact : 1		
57-2-0398	GA32 (Googong) Contact	AGD	55	703174	6079490	Open site	Valid	Artefact : 15		
57-2-0400	GA34 (Googong) Contact	AGD	55	702702	6079402	Open site	Valid	Artefact : 5		
57-2-0401	South Queanbeyan West 2 Contact	AGD	55	701660	6079264	Open site	Valid	Artefact : 3		
57-2-0107	Gale Precinct 8; Contact	AGD	55	703220	6082160	Open site	Valid	Artefact : -	Open Camp Site	2083
57-2-0570	ELP 5 Contact	GDA	55	702887	6082339	Open site	Valid	Artefact : 13		
57-2-0572	ELP 3 Contact	GDA	55	701466	6082144	Open site	Valid	Artefact : 9		3048
57-2-0573	ELP 2 Contact	GDA	55	701097	6082100	Open site	Valid	Artefact : 2		3048
57-2-0574	ELP 1 Contact	GDA	55	700754	6082053	Open site	Valid	Artefact : 2		3048
57-2-0577	THIF1 Contact	GDA	55	703390	6080495	Open site	Valid	Artefact : 1		

Report generated by AHIMS Web Service on 18/05/2012 for Amanda Reynolds for the following area at Datum :GDA, Zone : 55, Eastings : 700460 - 703650, Northings : 6079320 - 6082380 with a Buffer of 0 meters.Additional Info : due diligence. Number of Aboriginal sites and Aboriginal objects found is 25

This information is not guaranteed to be free from error omission. Office of Environment and Heritage (NSW) and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.



SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
57-2-0627	OCR3	GDA	55	702462	6079916	Open site	Valid	Artefact : -		101523
	Contact	Recorders	Mr.Kelvin Officer					Permits	3160	
57-2-0625	OCR1	GDA	55	702806	6080647	Open site	Valid	Artefact : -		101523
	Contact	Recorders	Mr.Kelvin Officer					Permits	3160	
57-2-0626	OCR2	GDA	55	702494	6079992	Open site	Valid	Artefact : -		101523
	Contact	Recorders	Mr.Kelvin Officer					Permits	3160	
57-2-0628	OCR 1 SAME AS 57-2-0625	GDA	55	702806	6080647	Open site	Valid	Artefact : 1		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits		
57-2-0629	OCR 3 SAME AS 57-2-0627	GDA	55	702462	6079916	Open site	Valid	Artefact : 1		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits		
57-2-0630	OCR 2 SAME AS 57-2-0626	GDA	55	702494	6079992	Open site	Valid	Artefact : 1		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits		
57-2-0636	OCR 4	GDA	55	703031	6081811	Open site	Valid	Artefact : 1		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits		
57-2-0637	OCR 5	GDA	55	703031	6081811	Open site	Valid	Artefact : 1		
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd					Permits		
57-2-0674	ELP 1-2-3 (relocated)	GDA	55	701586	6082369	Open site	Valid	Artefact : 23		
	Contact	Recorders	Mr.Charles Dearling					Permits		

Report generated by AHIMS Web Service on 18/05/2012 for Amanda Reynolds for the following area at Datum :GDA, Zone : 55, Eastings : 700460 - 703650, Northings : 6079320 - 6082380 with a Buffer of 0 meters.Additional Info : due diligence. Number of Aboriginal sites and Aboriginal objects found is 25

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ATTACHMENT C

Previously Unidentified Archaeological Site



Aboriginal Site Recording Form



AHIMS Registrar
PO Box 1967, Hurstville NSW 2220

Office Use Only

Site Number

Date received / / Date entered into system / / Date catalogued / /

Entered by (I.D.)

Information Access

Gender/male Gender/female Location restriction General restriction No access

For Further Information Contact:

Nominated Trustee

Title	Surname	First Name	Initials
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Organisation <input type="text"/>			
Address <input type="text"/>			
Phone number <input type="text"/>		Fax <input type="text"/>	

Knowledge Holder

Title	Surname	First Name	Initials
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Organisation <input type="text"/>			
Address <input type="text"/>			
Phone number <input type="text"/>		Fax <input type="text"/>	

Aboriginal Heritage Unit or Cultural Heritage Division Contacts

Office Use Only

Client on system

Client on system

Geographic Location

Site Name

Easting Northing AGD/GDA

Mapsheet

Zone Location Method

Other Registration

Primary Recorder

Title	Surname	First Name	Initials
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Organisation <input type="text"/>			
Address <input type="text"/>			
Phone number <input type="text"/>		Fax <input type="text"/>	
Date recorded <input type="text"/>			

Client on system

OPEN/CLOSE SITE Open Site

Site Context

Landform

- Mountainous
- Plain
- Rolling hills
- Steep hills
- Undulating plain

Slope

degrees

Landform Unit

- Beach
- Coastal rock platform
- Dune
- Intertidal flat
- Lagoon
- Tidal Creek

- Tidal Flat
- Cliff
- Crest
- Flat
- Lower slope
- Mid slope

- Upper slope
- Plain
- Ridge
- Tor
- Valley flat
- Levy

- Stream bank
- Stream channel
- Swamp
- Terrace
- Terrace flat

Vegetation

- Closed forest
- Grasslands
- Isolated clumps of trees
- Open forest
- Open woodland
- Scrub
- Woodland
- Cleared
- Revegetated
- N/A

Land use

- Conservation
- Established urban
- Farming-intensive
- Farming-low intensity
- Forestry
- Industrial
- Mining
- Pastoral/grazing
- Recreation
- Semi-rural
- Service corridor
- Transport corridor
- Urban expansion
- Residential

Water

Distance to permanent water source metres

Distance to temporary water source metres

Name of nearest permanent water source

Name of nearest temporary water

Directions for Relocation

The site is located on the eastern side of Cooma Road approximately 2 kilometers from Queanbeyan

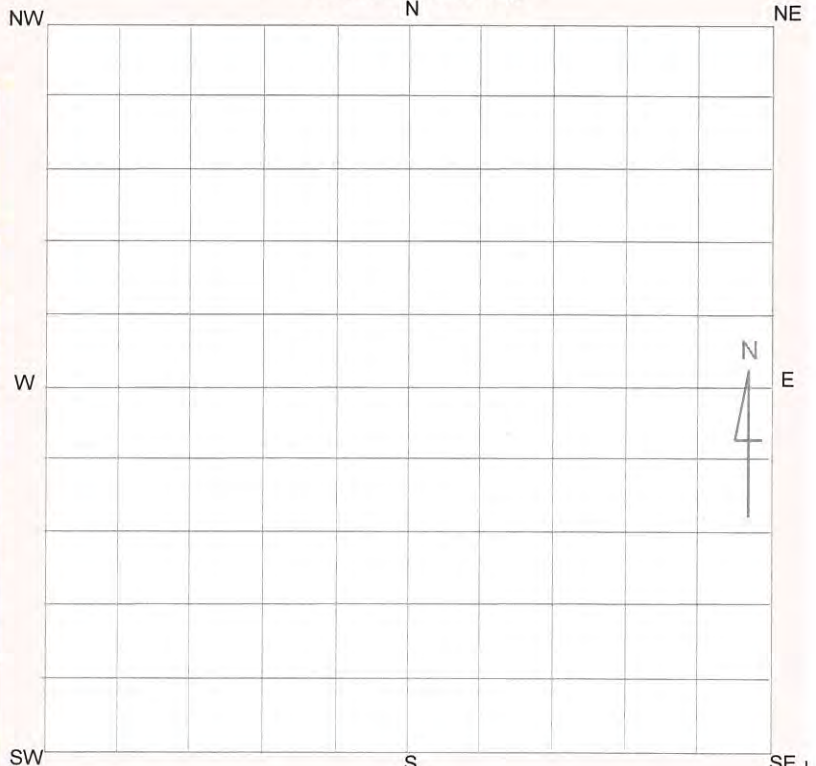
Current Land Tenure

Public National Park / other Government Dept.

Private

Primary report I.D. (I.D. Office Use only)

Site Location Map



General Site Information

Closed Site

Shelter/Cave Formation

- Boulder
- Wind erosion
- Water erosion
- Rock collapse

Rock Surface Condition

- Boulder
- Sandstone platform
- Silica gloss
- Tessellated
- Weathered
- Other platform

Open Site

Site Orientation

- N-S
- NE-SW
- E-W
- SE-NW
- N/A

Condition of Ceiling

- Boulder
- Sandstone platform
- Silica gloss
- Tessellated
- Weathered
- Other platform

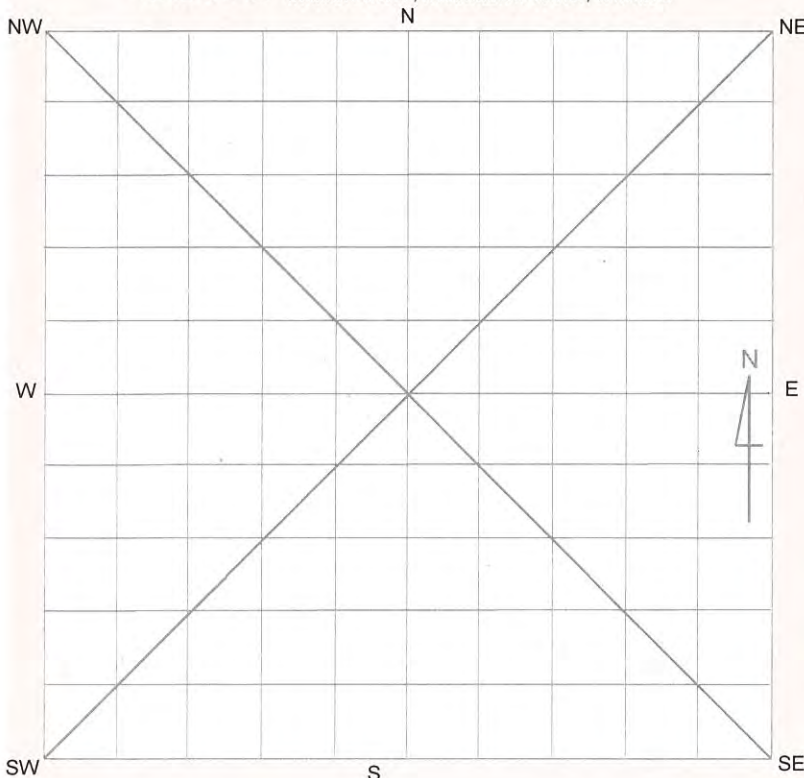
Shelter Aspect

- North
- North East
- East
- South East
- South
- South West
- West
- North West

Features

- 1. Aboriginal Ceremony & Dreaming
- 2. Aboriginal Resource & Gathering
- 3. Art
- 4. Artefact
- 5. Burial
- 6. Ceremonial Ring
- 7. Conflict
- 8. Earth Mound
- 9. Fish Trap
- 10. Grinding Groove
- 11. Habitation Structure
- 12. Hearth
- 13. Non Human Bone & Organic Material
- 14. Ochre quarry
- 15. Potential Archaeological Deposit
- 16. Stone Quarry
- 17. Shell
- 18. Stone Arrangement
- 19. Modified Tree
- 20. Water Hole

Site Plan Indicate scale, boundaries of site, features



Site Dimensions

Closed Site Dimensions (m)

- Internal length
- Internal width
- Shelter height
- Shelter floor area

Open Site Dimensions (m)

- Total length of visible site
- Average width of visible site
- Estimated area of visible site
- Length of assessed site area

Aboriginal Community Interpretation and Management Recommendations

Preliminary Site Assessment

Site Cultural & Scientific Analysis and Preliminary Management Recommendations

This section should only be filled in by the Endorsees

Endorsed by: Knowledge Holder Nominated Trustee Native Title Holder Community Consensus

Title	Surname	First Name	Initials
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Organisation	<input type="text"/>		
Address	<input type="text"/>		
Phone number	<input type="text"/>	Fax	<input type="text"/>

Attachments (No.)

- A4 location map
- B/W photographs
- Colour photographs
- Slides
- Aerial photographs
- Site plans, drawings
- Recording tables
- Other
- Feature inserts-No.

Comments

The site consists of a single quartz flake on a mid-slope within an exposure created by a cattle or sheep track. The exposure was approximately 20 metres long and one metre wide, with a three metre by three metre expanse, where the artefact was identified, with approximately 40 percent visibility.

While the exposure the artefact was situated in was created by stock, the artefact had no visible evidence of stock damage.

NPWS FEATURE RECORDING FORM - ARTEFACT

Site I.D. Site Name

First recorded date Importance

No. of instances

Recorded by

Yes No

Stone artefacts only

Artefacts collected

Permit issued

Percentage of Non-stone Artefacts to Percentage of Stone Artefacts

0-9% 10-19% 20-29% 30-39% 40-49% 50-59% 60-69% 70-79% 80-89% 90-100%

Feature Context & Condition

Scatter No. Easting Northing

Density (Artefact count per square metre) **Dimensions** Length (m) Width (m) Depth (m)

In situ Stratified

Feature Condition

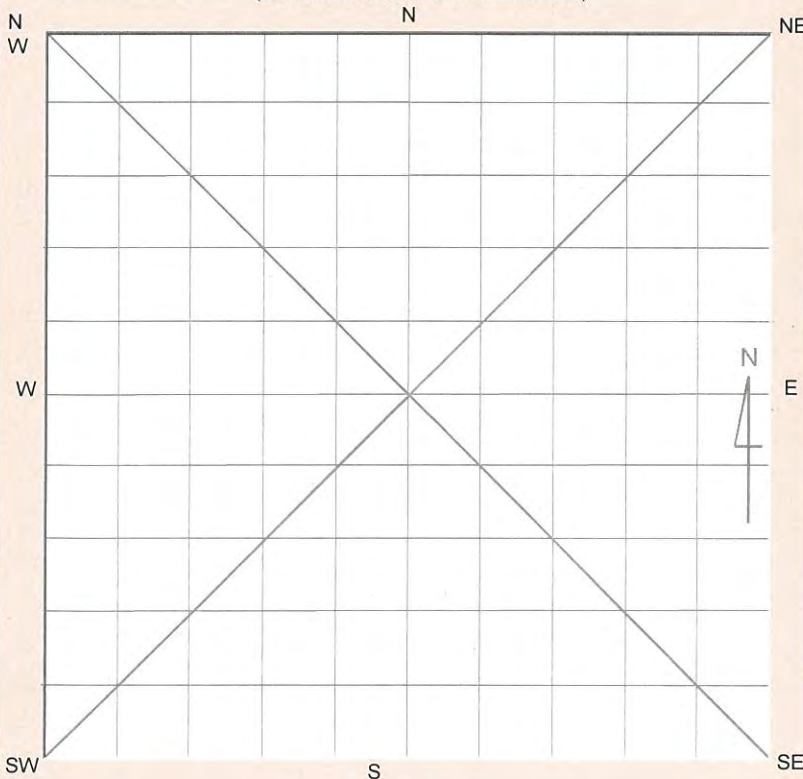
General Condition

Recommended Action

- Very good
- Good
- Poor
- Weathered
- Vehicle damage
- Surface water wash
- Fire damage
- Erosion
- Stock damage
- Exposed archaeological material

- Boardwalk
- Fencing
- Closure to public
- Continued inspection
- Fire hazard reduction
- Expert assessment
- Meeting with land manager
- Revegetation
- Signage
- Soil erosion control
- Track closure/re-routing
- Additional recording

Feature Plan (Indicate scale, location of instances)



Feature Environment

(Complete when feature environment differs to site environment, use attributes from cover card, p. 2)

- Land form
- Land form unit
- Slope
- Vegetation
- Land use

Water

- Distance to permanent water source metres
- Distance to temporary water source metres
- Name of nearest permanent water source
- Name of nearest temporary water

Stone Artefact

Instance No.	Recording Date	Artefact Material	Artefact Type	Platform Surface	Platform Type	Termination	Cross Section	Length (mm)	Width (mm)	Thickness (mm)
1	03/04/2012	Quartz	Flake					20	15	5

Other Artefact Type

Instance No.	Recording Date	Artefact Material	Artefact Type	Description	Length (mm)	Width (mm)	Thickness (mm)

Material		Artefact Description	Platform Surface	Termination
Basalt	Clear glass	Adze	Cortex	Feather
Chert	Ceramic	Anvil	Flake scar	Hinge
Fine grained siliceous	Porcelain	Axe	More than one flake scar	Step
Granite	Tin can	Backed blade	Faceted	Outrepassed
Quartz	Wire	Blade	Ground	Bipolar
Quartzite	Nail	Core	Indeterminate	
Sandstone	Button	Core tool	Bipolar	
Silcrete	Shell	Cyclon		
Green glass	Bone	Distal fragment		
Amber glass	Wood	Eloura	Platform Type	Cross Section
Amethyst glass	Resin	Flake	W	High/strong
			Focal	High/weak
			Shattered	Low/weak
			Indeterminate	Irregular
			Bipolar	

Comments:

Site I.D. Site Name

First recorded date Importance Aboriginal Information Recorded?

No. of instances

Recorded by

Feature description

No. of scars No. of carved panels

Feature Condition

Very good
 Good
 Poor

Condition

Weathered
 Ringbarked
 Fire damage
 Vehicle damage
 Insects/termites
 Rot
 Limb fall
 Stock damage

Recommended Action

Fencing
 Closure to public
 Continued inspection
 Expert assessment
 Fire hazard reduction
 Insect removal
 Meeting with land manager
 Rubbish removal
 Signage

Tree health assessment
 Track closure/re-routing
 Additional recording

Easting Northing

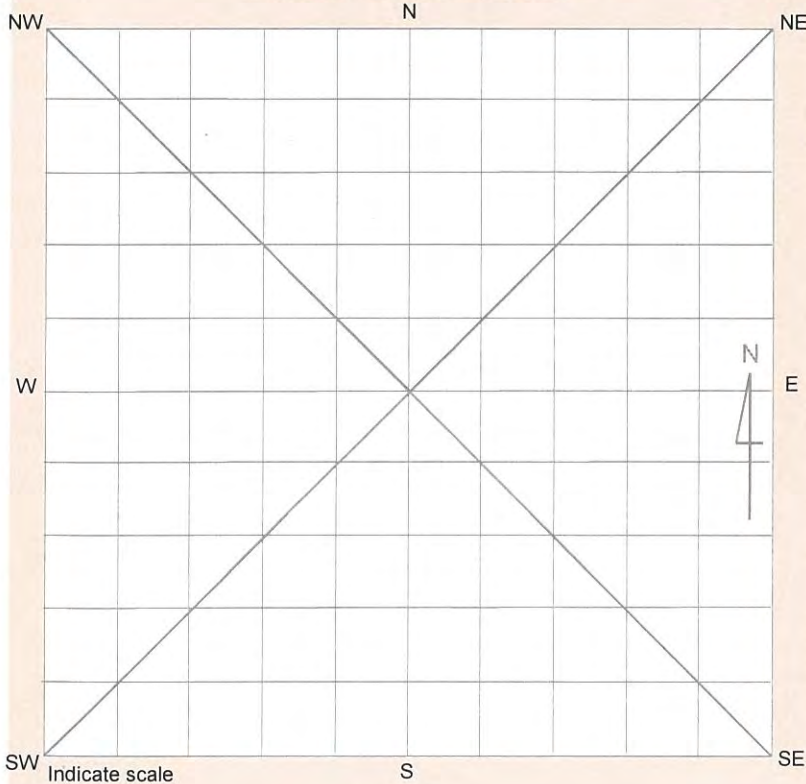
Feature environment (Complete when feature environment differs to site environment, use attributes from cover card, page 2)

Land form
 Land form unit
 Slope
 Vegetation
 Land use

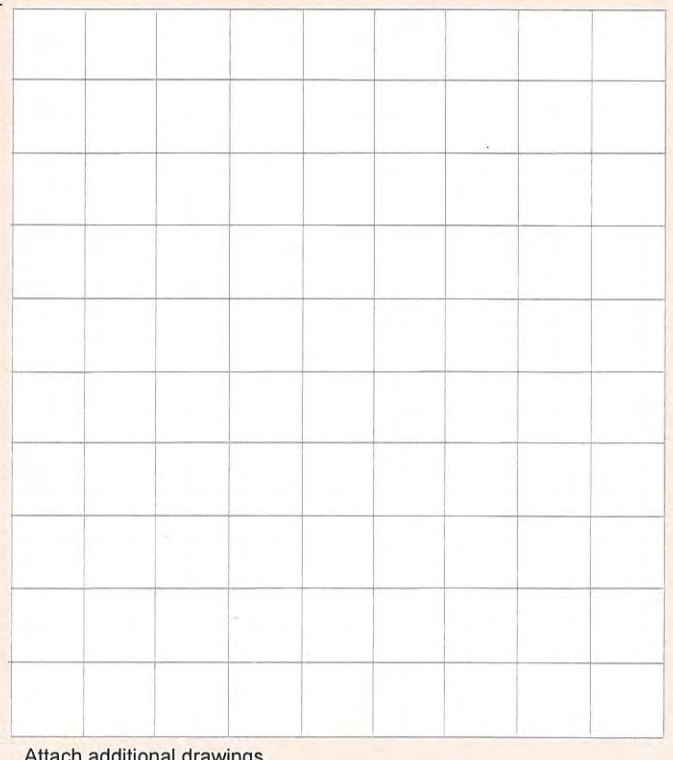
Water

Distance to permanent water source metres
 Distance to temporary water source metres
 Name of nearest permanent water source
 Name of nearest temporary water

Feature Location Plan



Scar/Carved Panel Drawing



NPWS FEATURE RECORDING TABLE - MODIFIED TREE

Instance No.	Recording Date	Type	Species	Living Status	Tree Status	Regrowth	Length of Scar	Width of Scar	Depth	Height Above Ground	No. of Scars	Shape	No. of Carved Panels	Carving Type	Orientation	Axe Marks

Type of Tree	Tree Species	Living Status	Tree Status	Regrowth	Scar Shape	Carving Type	Axe Marks	Orientation
Carved Tree	Eucalypt	Dead	Standing	Yes	Oval	Linear	Metal	North East
Scarred Tree	Red Gum	Alive	Lying down	No	Rectangular	Geometric	Stone	East
Carved/Scarred Tree	Angotha	Dying	Partially felled		Square	Pictorial	Indeterminate	South East
			Subject to salinity		Round			South
			Not <i>in situ</i>		Other			South West
								West
								North West
								North

Comments:

Site I.D. Site Name

First recorded date Importance Aboriginal Information Recorded?

No. of instances

Recorded by

Feature Description

Type of Grinding Feature Broad Narrow/point Hollow Flat

Profile Shape 'U' shaped 'V' shaped Flat

Seed Species Present

Groove Function

Dimensions

Smallest	Largest	
Length (mm) <input type="text"/>	Length (mm) <input type="text"/>	Groove count <input type="text"/>
Width (mm) <input type="text"/>	Width (mm) <input type="text"/>	Cluster count <input type="text"/>
Depth (mm) <input type="text"/>	Depth (mm) <input type="text"/>	

Recording date

Feature Context & Condition

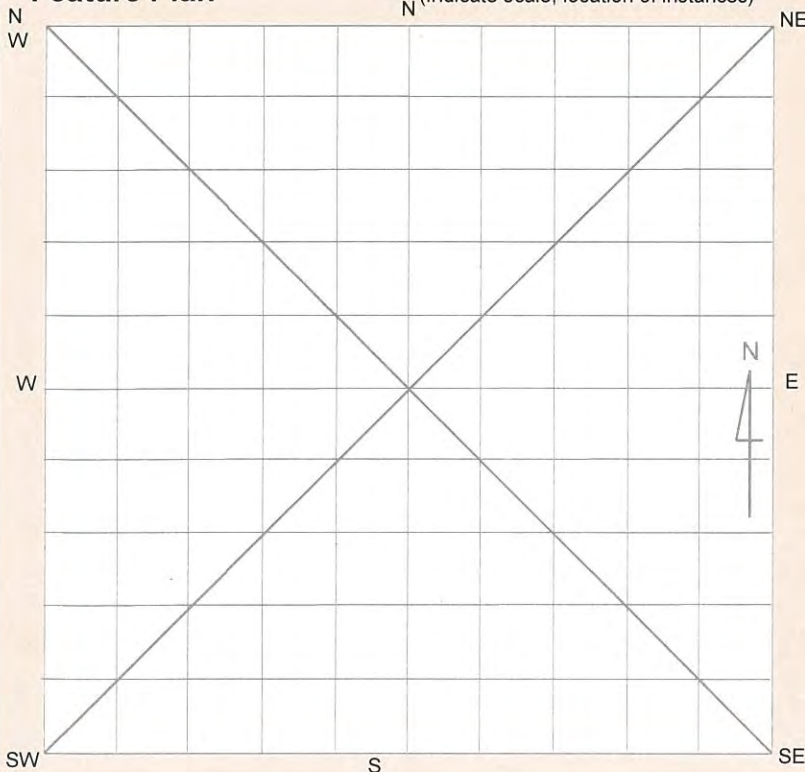
Easting Northing

Dimensions of Whole Feature Length (m) Width (m)

Feature Condition	General Condition ctd	Recommended Action
<input type="checkbox"/> Very good	<input type="checkbox"/> Fire damage	<input type="checkbox"/> Boardwalk
<input type="checkbox"/> Good	<input type="checkbox"/> Surface water wash	<input type="checkbox"/> Cage/barrier/fencing
<input type="checkbox"/> Poor	<input type="checkbox"/> Graffiti	<input type="checkbox"/> Closure to public
General Condition	<input type="checkbox"/> Vehicle damage	<input type="checkbox"/> Continued inspection
<input type="checkbox"/> Weathered	<input type="checkbox"/> Erosion	<input type="checkbox"/> Expert assessment
<input type="checkbox"/> Vandalised	<input type="checkbox"/> Stock damage	<input type="checkbox"/> Graffiti removal
		<input type="checkbox"/> Meeting with land manager
		<input type="checkbox"/> Revegetation
		<input type="checkbox"/> Rubbish removal
		<input type="checkbox"/> Signage
		<input type="checkbox"/> Erosion control
		<input type="checkbox"/> Track closure/re-routing
		<input type="checkbox"/> Additional recording

Feature Plan

(Indicate scale, location of instances)



Feature Environment

(Complete when feature environment differs to site environment, use attributes from cover card, p. 2)

Land form

Land form unit

Slope

Vegetation

Land use

Water

Distance to permanent water source metres

Distance to temporary water source metres

Name of nearest permanent water source

Name of nearest temporary water

Site I.D. Site Name

First recorded date / / Importance Aboriginal Information Recorded?

No. of instances

Recorded by

Feature Context & Condition

Easting Northing

Pigment Engraved Super-impositioning

Artwork Condition

Very good
 Good
 Poor

General Condition

Weathered
 Vandalised
 Surface water wash
 Mineralisation
 Graffiti
 Fire damage
 Insects/termites
 Erosion
 Stock
 Unstable structure

Recommended Action

Boardwalk
 Cage/barrier/fencing
 Closure to public
 Continued inspection
 Dripline
 Expert assessment
 Fire hazard removal
 Graffiti removal
 Insect/bird nest removal
 Meeting with land manager

Rubbish removal
 Signage
 Erosion control
 Track closure/re-routing
 Additional recording

Feature Environment

(Complete when *feature* environment differs to *site* environment, use attributes from cover card, p. 2)

<input type="text"/>	Land form	Water	
<input type="text"/>	Land form unit	Distance to permanent water source	<input type="text"/> metres
<input type="text"/>	Slope	Distance to temporary water source	<input type="text"/> metres
<input type="text"/>	Vegetation	Name of nearest permanent water source	<input type="text"/>
<input type="text"/>	Land use	Name of nearest temporary water	<input type="text"/>

Art Sketch Plan

Sketch and number motif groups



Site I.D. Site Name

First recorded date Importance Aboriginal Information Recorded?

No. of instances

Recorded by

Feature Context & Condition

Easting Northing

Dimensions of Whole Feature Length (m) Width (m) Depth (m)

Shell Distribution

Surface scatter Distance to high water mark (m)

Stratified deposit

Mounded

Feature Condition

Very good

Good

Poor

General Condition

Weathered

Vandalised

Surface water wash

Mineralisation

Graffiti

General Condition ctd

Fire damage

Vehicle damage

Insects/termites

Erosion

Stock damage

Unstable structure

Exposed bone material

Exposed archaeological material

Recommended Action

Boardwalk

Cage/barrier/fencing

Closure to public

Continued inspection

Expert assessment

Fire hazard removal

Graffiti removal

Meeting with land manager

Insect/bird nest removal

Revegetation

Rubbish removal

Signage

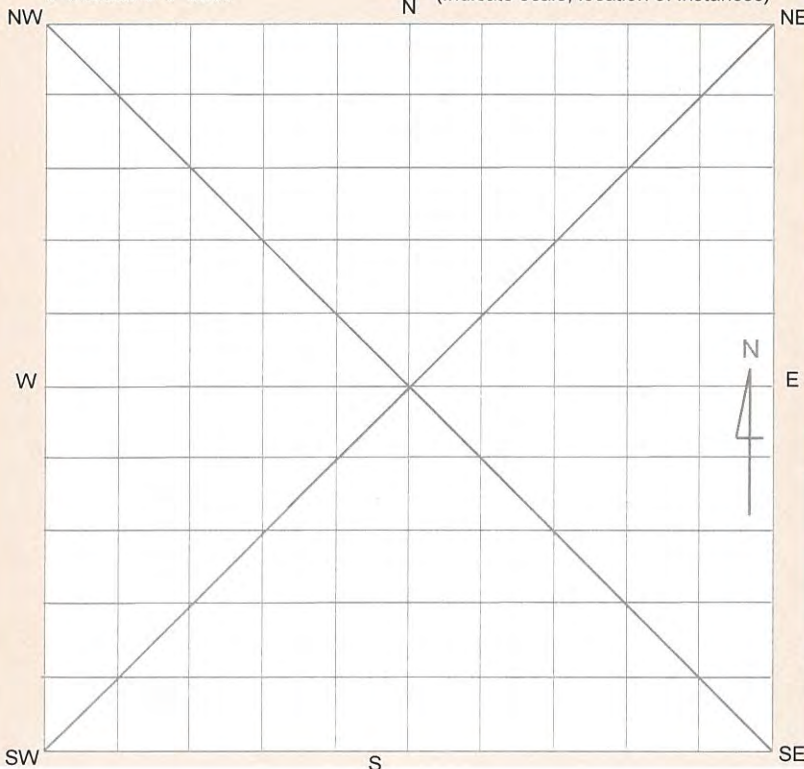
Erosion control

Track closure/re-routing

Additional recording

Feature Plan

(Indicate scale, location of instances)



Feature Environment

(Complete when feature environment differs to site environment, use attributes from cover card, p. 2)

Land form

Land form unit

Slope

Vegetation

Land use

Water

Distance to permanent water source metres

Distance to temporary water source metres

Name of nearest permanent water source

Name of nearest temporary water



PLATE 1
Cooma Quarry 1 view to southeast

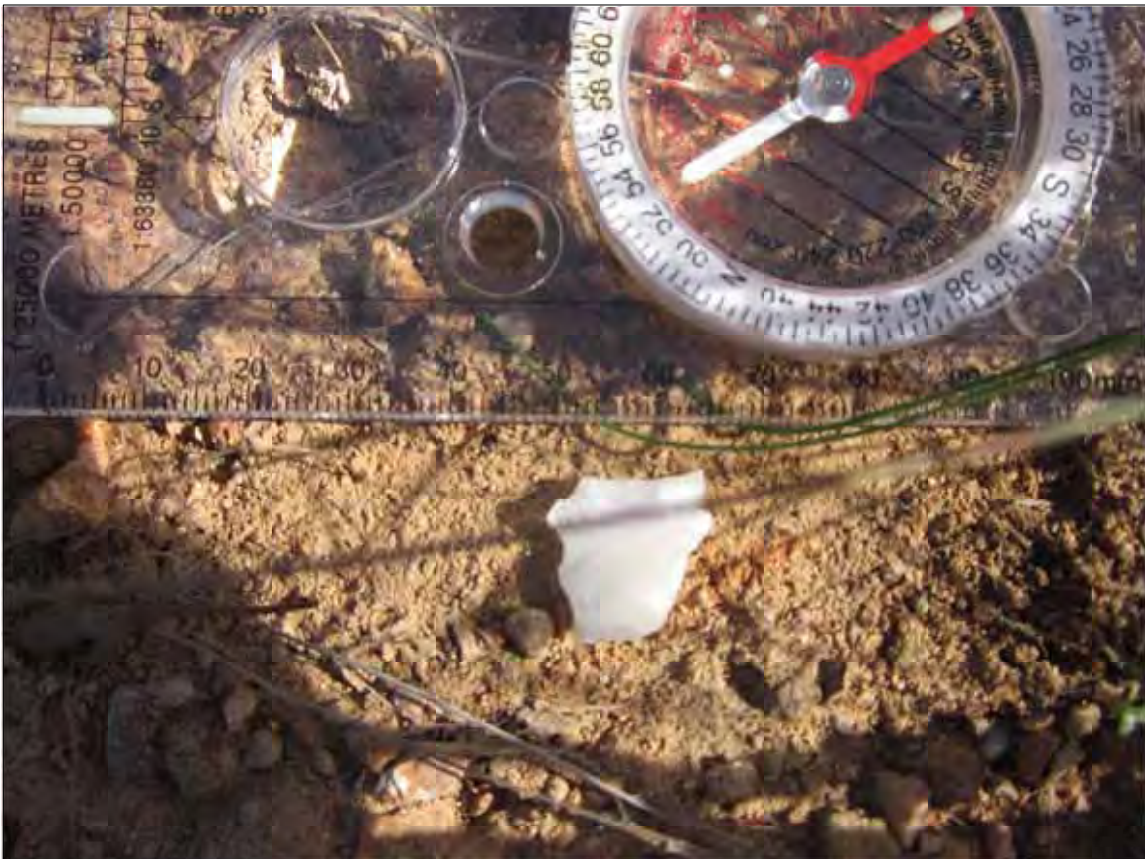


PLATE 2
Cooma Quarry 1 artefact detail



Aboriginal Site Recording Form



Office of Environment & Heritage

AHIMS Registrar

PO Box 1967, Hurstville NSW 2220

Office Use Only

Site Number

Date received / / Date entered into system / / Date catalogued / /

Entered by (I.D.)

Information Access

Gender/male Gender/female Location restriction General restriction No access

For Further Information Contact:

Nominated Trustee

Title	Surname	First Name	Initials
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Organisation <input type="text"/>			
Address <input type="text"/>			
Phone number <input type="text"/>		Fax <input type="text"/>	

Knowledge Holder

Title	Surname	First Name	Initials
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Organisation <input type="text"/>			
Address <input type="text"/>			
Phone number <input type="text"/>		Fax <input type="text"/>	

Aboriginal Heritage Unit or Cultural Heritage Division Contacts

Office Use Only

Client on system

Client on system

Geographic Location

Site Name C o o m a Q u a r r y 2

Easting 7 0 2 2 1 3 Northing 6 0 8 1 2 1 7 AGD/GDA GDA

Mapsheet T u g g e r a n o n g 1 : 2 5 0 0 0

Zone 55 Location Method Non-Differential GPS

Other Registration

Primary Recorder

Title	Surname	First Name	Initials
<input type="text"/>	<input type="text"/> R e y n o l d s <input type="text"/>	<input type="text"/> A m a n d a <input type="text"/>	<input type="text"/>
Organisation <input type="text"/> U m w e l t <input type="text"/> (A u s t r a l i a) <input type="text"/> P t y <input type="text"/> L t d <input type="text"/>			
Address <input type="text"/> 2 / 2 0 <input type="text"/> T h e <input type="text"/> B o u l e v a r d e <input type="text"/> T o r o n t o <input type="text"/>			
Phone number <input type="text"/> 2 4 9 5 0 5 3 2 2 <input type="text"/>		Fax <input type="text"/> 2 4 9 5 0 5 7 3 7 <input type="text"/>	
Date recorded <input type="text"/> 11/07/2012 <input type="text"/>			

Client on system

OPEN/CLOSE SITE Open Site

Site Context

Landform

- Mountainous
- Plain
- Rolling hills
- Steep hills
- Undulating plain

Landform Unit

- Beach
- Coastal rock platform
- Dune
- Intertidal flat
- Lagoon
- Tidal Creek

- Tidal Flat
- Cliff
- Crest
- Flat
- Lower slope
- Mid slope

- Upper slope
- Plain
- Ridge
- Tor
- Valley flat
- Levy

- Stream bank
- Stream channel
- Swamp
- Terrace
- Terrace flat

Slope

degrees

Vegetation

- Closed forest
- Grasslands
- Isolated clumps of trees
- Open forest
- Open woodland
- Scrub
- Woodland
- Cleared
- Revegetated
- N/A

Land use

- Conservation
- Established urban
- Farming-intensive
- Farming-low intensity
- Forestry
- Industrial
- Mining
- Pastoral/grazing
- Recreation
- Semi-rural
- Service corridor
- Transport corridor
- Urban expansion
- Residential

Water

Distance to permanent water source metres
 Distance to temporary water source metres
 Name of nearest permanent water source
 Name of nearest temporary water

Directions for Relocation
 The site is located on the western side of Cooma Road
 approximately 2 kilometers from Queanbeyan

Current Land Tenure

Public National Park / other Government Dept.
 Private

Primary report I.D. (I.D. Office Use only)



General Site Information

Closed Site

Shelter/Cave Formation

- Boulder
- Wind erosion
- Water erosion
- Rock collapse

Rock Surface Condition

- Boulder
- Sandstone platform
- Silica gloss
- Tessellated
- Weathered
- Other platform

Open Site

Site Orientation

- N-S
- NE-SW
- E-W
- SE-NW
- N/A

Condition of Ceiling

- Boulder
- Sandstone platform
- Silica gloss
- Tessellated
- Weathered
- Other platform

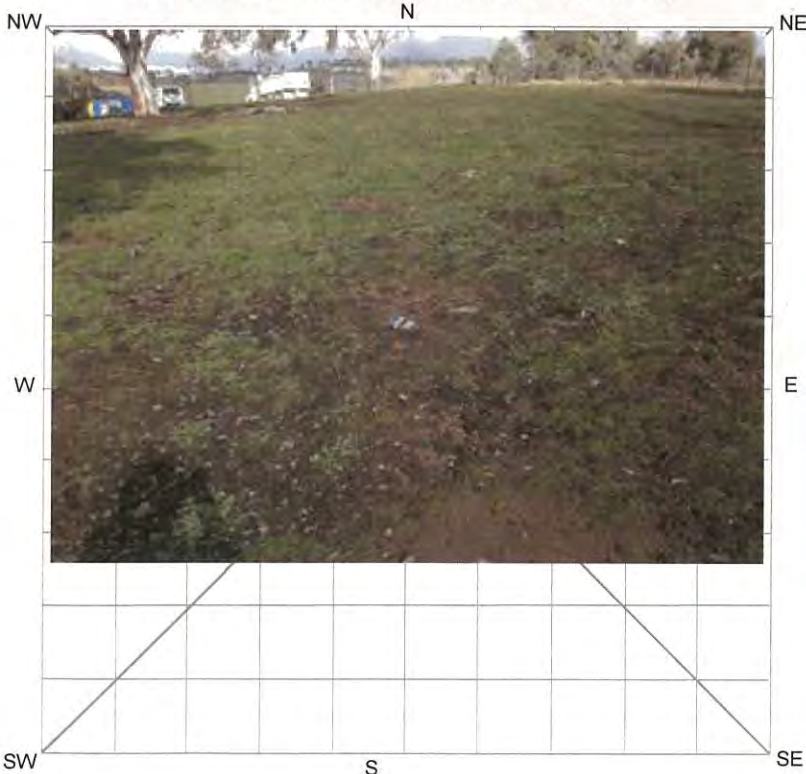
Shelter Aspect

- North
- North East
- East
- South East
- South
- South West
- West
- North West

Features

- 1. Aboriginal Ceremony & Dreaming
- 2. Aboriginal Resource & Gathering
- 3. Art
- 4. Artefact
- 5. Burial
- 6. Ceremonial Ring
- 7. Conflict
- 8. Earth Mound
- 9. Fish Trap
- 10. Grinding Groove
- 11. Habitation Structure
- 12. Hearth
- 13. Non Human Bone & Organic Material
- 14. Ochre quarry
- 15. Potential Archaeological Deposit
- 16. Stone Quarry
- 17. Shell
- 18. Stone Arrangement
- 19. Modified Tree
- 20. Water Hole

Site Plan Indicate scale, boundaries of site, features



Site Dimensions

Closed Site Dimensions (m)

- Internal length
- Internal width
- Shelter height
- Shelter floor area

Open Site Dimensions (m)

- Total length of visible site
- Average width of visible site
- Estimated area of visible site
- Length of assessed site area

Aboriginal Community Interpretation and Management Recommendations

Preliminary Site Assessment

Site Cultural & Scientific Analysis and Preliminary Management Recommendations

This section should only be filled in by the Endorsees

Endorsed by: Knowledge Holder Nominated Trustee Native Title Holder Community Consensus

Title	Surname	First Name	Initials
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Organisation	<input type="text"/>		
Address	<input type="text"/>		
Phone number	<input type="text"/>	Fax	<input type="text"/>

Attachments (No.)

- A4 location map
- B/W photographs
- Colour photographs
- Slides
- Aerial photographs
- Site plans, drawings
- Recording tables
- Other
- Feature inserts-No.

Comments

The site consists of a single silcrete broken flake on a spur crest within an exposure created by grazing stock. The exposure was approximately 25 square metres with approximately 10 percent visibility. The overall exposure had small areas of increased visibility, with the artefact in one of these smaller (less than 1m2) with 40 percent visibility. The paddock with the artefact has been disturbed by stock, vehicles and gravel dumping.

NPWS FEATURE RECORDING FORM - ARTEFACT

Site I.D. Site Name

First recorded date Importance

No. of instances

Recorded by

Yes No

Stone artefacts only

Artefacts collected

Permit issued

Percentage of Non-stone Artefacts to Percentage of Stone Artefacts

0-9% 10-19% 20-29% 30-39% 40-49% 50-59% 60-69% 70-79% 80-89% 90-100%

Feature Context & Condition

Scatter No. Easting Northing

Density (Artefact count per square metre) **Dimensions** Length (m) Width (m) Depth (m)

In situ Stratified

Feature Condition

General Condition

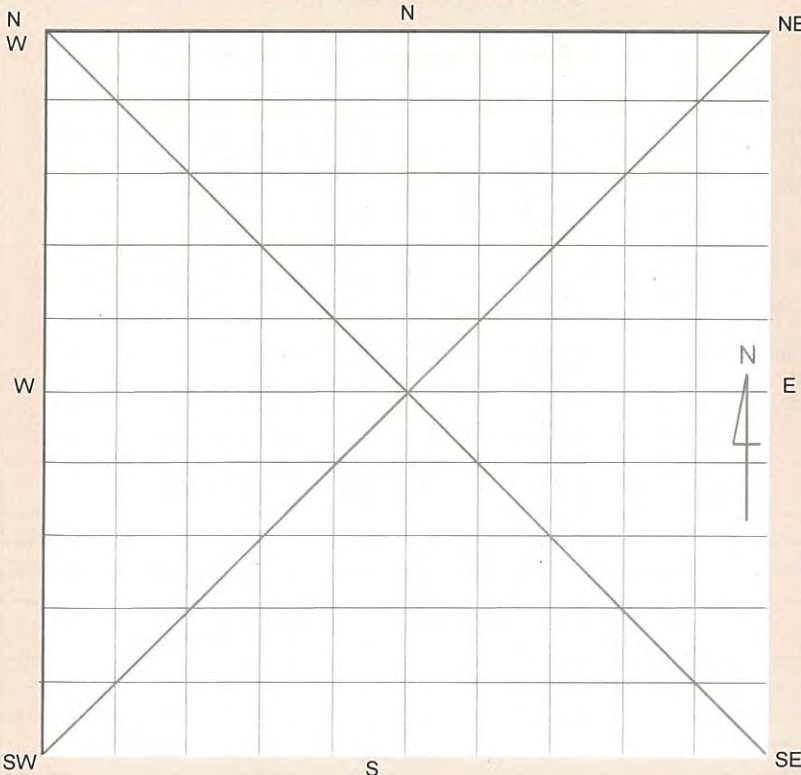
Recommended Action

- Very good
- Good
- Poor

- Weathered
- Vehicle damage
- Surface water wash
- Fire damage
- Erosion
- Stock damage
- Exposed archaeological material

- Boardwalk
- Fencing
- Closure to public
- Continued inspection
- Fire hazard reduction
- Expert assessment
- Meeting with land manager
- Revegetation
- Signage
- Soil erosion control
- Track closure/re-routing
- Additional recording

Feature Plan (Indicate scale, location of instances)



Feature Environment

(Complete when feature environment differs to site environment, use attributes from cover card, p. 2)

Land form

Land form unit

Slope

Vegetation

Land use

Water

Distance to permanent water source metres

Distance to temporary water source metres

Name of nearest permanent water source

Name of nearest temporary water

Site I.D. Site Name

First recorded date Importance Aboriginal Information Recorded?

No. of instances

Recorded by

Feature description

No. of scars

No. of carved panels

Feature Condition

Very good

Good

Poor

Condition

Weathered

Ringbarked

Fire damage

Vehicle damage

Insects/termites

Rot

Limb fall

Stock damage

Easting

Northing

Recommended Action

Fencing

Closure to public

Continued inspection

Expert assessment

Fire hazard reduction

Insect removal

Meeting with land manager

Rubbish removal

Signage

Tree health assessment

Track closure/re-routing

Additional recording

Feature environment

(Complete when feature environment differs to site environment, use attributes from cover card, page 2)

Land form

Land form unit

Slope

Vegetation

Land use

Water

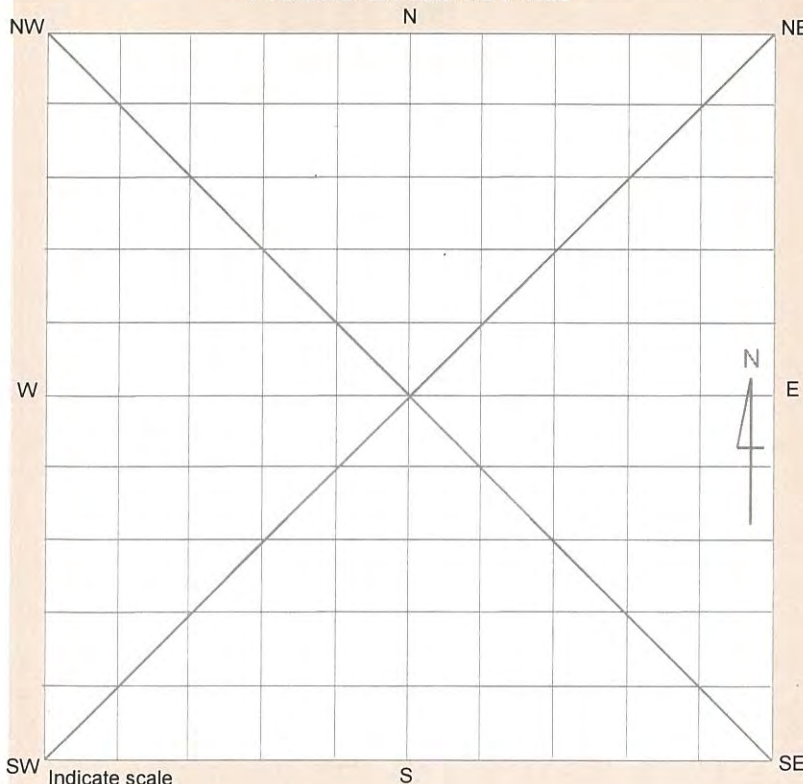
Distance to permanent water source metres

Distance to temporary water source metres

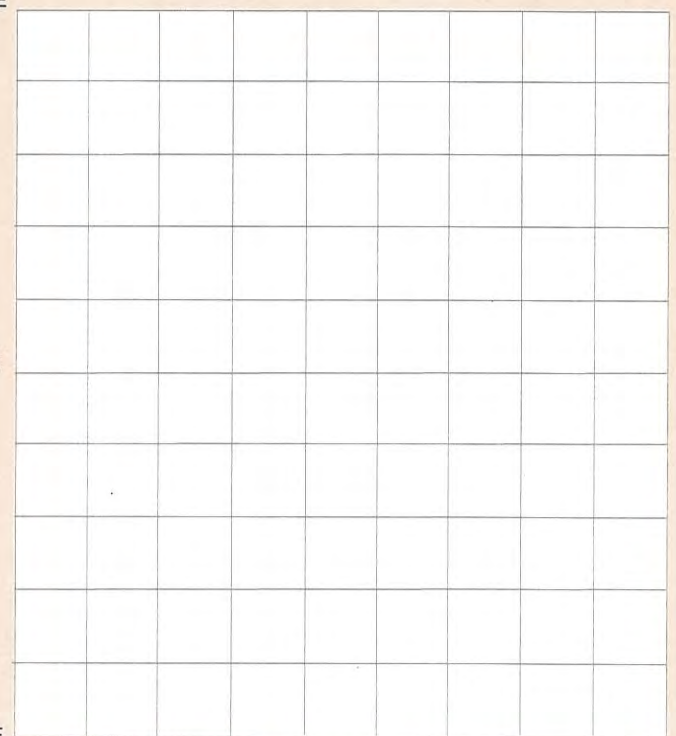
Name of nearest permanent water source

Name of nearest temporary water

Feature Location Plan



Scar/Carved Panel Drawing



NPWS FEATURE RECORDING TABLE - MODIFIED TREE

Instance No.	Recording Date	Type	Species	Living Status	Tree Status	Regrowth	Length of Scar	Width of Scar	Depth	Height Above Ground	No. of Scars	Shape	No. of Carved Panels	Carving Type	Orientation	Axe Marks

Type of Tree	Tree Species	Living Status	Tree Status	Regrowth	Scar Shape	Carving Type	Axe Marks	Orientation
Carved Tree	Eucalypt	Dead	Standing	Yes	Oval	Linear	Metal	North East
Scarred Tree	Red Gum	Alive	Lying down	No	Rectangular	Geometric	Stone	East
Carved/Scarred Tree	Angotha	Dying	Partially felled Subject to salinity Not <i>in situ</i>		Square	Pictorial	Indeterminate	South East
					Round			South
					Other			South West
								West
								North West
								North

Comments:

Site I.D. Site Name

First recorded date Importance Aboriginal Information Recorded?

No. of instances

Recorded by

Feature Description

Type of Grinding Feature Broad Narrow/point Hollow Flat

Profile Shape 'U' shaped 'V' shaped Flat

Seed Species Present

Groove Function

Dimensions

Smallest	Largest	
Length (mm) <input type="text"/>	Length (mm) <input type="text"/>	Groove count <input type="text"/>
Width (mm) <input type="text"/>	Width (mm) <input type="text"/>	Cluster count <input type="text"/>
Depth (mm) <input type="text"/>	Depth (mm) <input type="text"/>	

Recording date

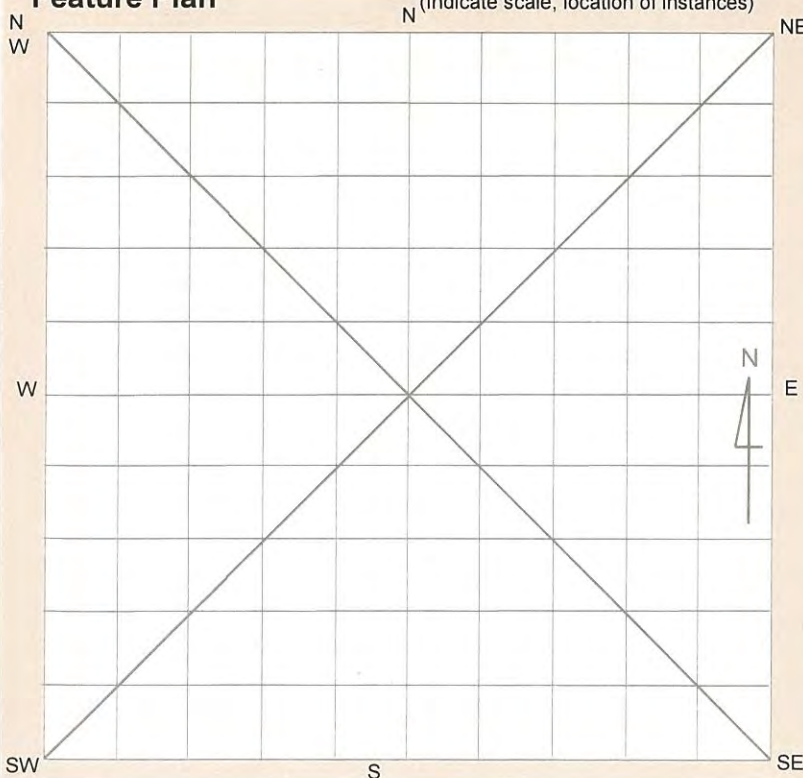
Feature Context & Condition

Easting Northing

Dimensions of Whole Feature Length (m) Width (m)

Feature Condition	General Condition ctd	Recommended Action	
<input type="checkbox"/> Very good	<input type="checkbox"/> Fire damage	<input type="checkbox"/> Boardwalk	<input type="checkbox"/> Revegetation
<input type="checkbox"/> Good	<input type="checkbox"/> Surface water wash	<input type="checkbox"/> Cage/barrier/fencing	<input type="checkbox"/> Rubbish removal
<input type="checkbox"/> Poor	<input type="checkbox"/> Graffiti	<input type="checkbox"/> Closure to public	<input type="checkbox"/> Signage
General Condition	<input type="checkbox"/> Vehicle damage	<input type="checkbox"/> Continued inspection	<input type="checkbox"/> Erosion control
<input type="checkbox"/> Weathered	<input type="checkbox"/> Erosion	<input type="checkbox"/> Expert assessment	<input type="checkbox"/> Track closure/re-routing
<input type="checkbox"/> Vandalised	<input type="checkbox"/> Stock damage	<input type="checkbox"/> Graffiti removal	<input type="checkbox"/> Additional recording
		<input type="checkbox"/> Meeting with land manager	

Feature Plan



Feature Environment

(Complete when feature environment differs to site environment, use attributes from cover card, p. 2)

Land form

Land form unit

Slope

Vegetation

Land use

Water

Distance to permanent water source metres

Distance to temporary water source metres

Name of nearest permanent water source

Name of nearest temporary water

Site I.D. Site Name

First recorded date / / Importance Aboriginal Information Recorded?

No. of instances

Recorded by

Feature Context & Condition

Easting Northing

Pigment Engraved Super-impositioning

Artwork Condition

Very good
 Good
 Poor

General Condition

Weathered
 Vandalised
 Surface water wash
 Mineralisation
 Graffiti
 Fire damage
 Insects/termites
 Erosion
 Stock
 Unstable structure

Recommended Action

Boardwalk
 Cage/barrier/fencing
 Closure to public
 Continued inspection
 Dripline
 Expert assessment
 Fire hazard removal
 Graffiti removal
 Insect/bird nest removal
 Meeting with land manager

Rubbish removal
 Signage
 Erosion control
 Track closure/re-routing
 Additional recording

Feature Environment

(Complete when feature environment differs to site environment, use attributes from cover card, p. 2)

<input type="text"/>	Land form	Water	
<input type="text"/>	Land form unit	Distance to permanent water source	<input type="text"/> metres
<input type="text"/>	Slope	Distance to temporary water source	<input type="text"/> metres
<input type="text"/>	Vegetation	Name of nearest permanent water source	<input type="text"/>
<input type="text"/>	Land use	Name of nearest temporary water	<input type="text"/>

Art Sketch Plan

Sketch and number motif groups

Site I.D. Site Name

First recorded date / / Importance Aboriginal Information Recorded?

No. of instances

Recorded by

Feature Context & Condition

Easting Northing

Dimensions of Whole Feature Length (m) Width (m) Depth (m)

Shell Distribution

Surface scatter Distance to high water mark (m)

Stratified deposit

Mounded

Feature Condition

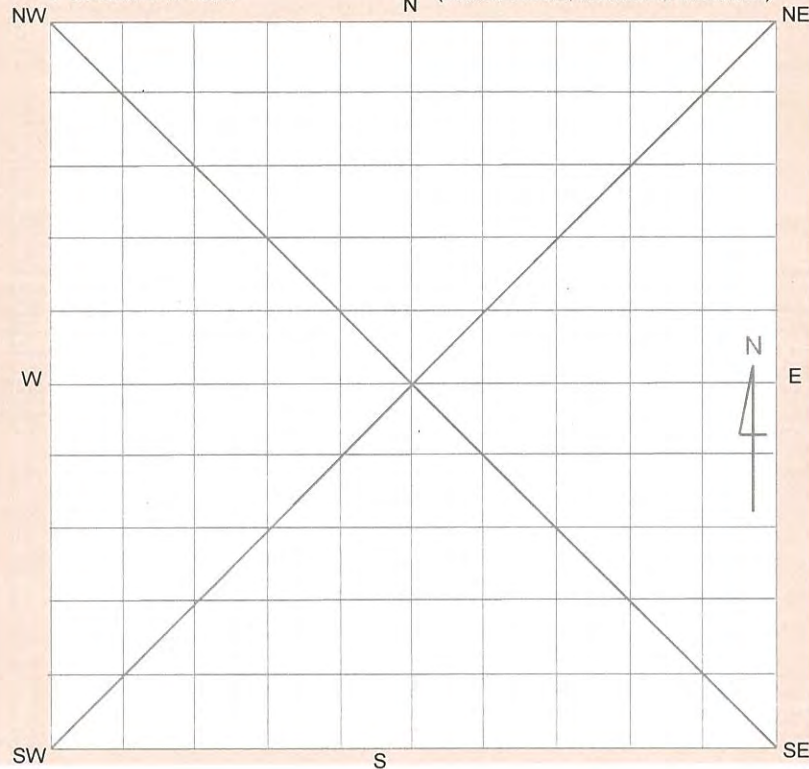
General Condition ctd

Recommended Action

<input type="checkbox"/> Very good	<input type="checkbox"/> Fire damage	<input type="checkbox"/> Boardwalk	<input type="checkbox"/> Revegetation
<input type="checkbox"/> Good	<input type="checkbox"/> Vehicle damage	<input type="checkbox"/> Cage/barrier/fencing	<input type="checkbox"/> Rubbish removal
<input type="checkbox"/> Poor	<input type="checkbox"/> Insects/termites	<input type="checkbox"/> Closure to public	<input type="checkbox"/> Signage
General Condition	<input type="checkbox"/> Erosion	<input type="checkbox"/> Continued inspection	<input type="checkbox"/> Erosion control
<input type="checkbox"/> Weathered	<input type="checkbox"/> Stock damage	<input type="checkbox"/> Expert assessment	<input type="checkbox"/> Track closure/re-routing
<input type="checkbox"/> Vandalised	<input type="checkbox"/> Unstable structure	<input type="checkbox"/> Fire hazard removal	<input type="checkbox"/> Additional recording
<input type="checkbox"/> Surface water wash	<input type="checkbox"/> Exposed bone material	<input type="checkbox"/> Graffiti removal	
<input type="checkbox"/> Mineralisation	<input type="checkbox"/> Exposed archaeological material	<input type="checkbox"/> Meeting with land manager	
<input type="checkbox"/> Graffiti		<input type="checkbox"/> Insect/bird nest removal	

Feature Plan

(Indicate scale, location of instances)



Feature Environment

(Complete when feature environment differs to site environment, use attributes from cover card, p. 2)

Land form

Land form unit

Slope

Vegetation

Land use

Water

Distance to permanent water source metres

Distance to temporary water source metres

Name of nearest permanent water source

Name of nearest temporary water

Instance No.	Recording Date	Shell Species	% of this species shell to % total of other shell

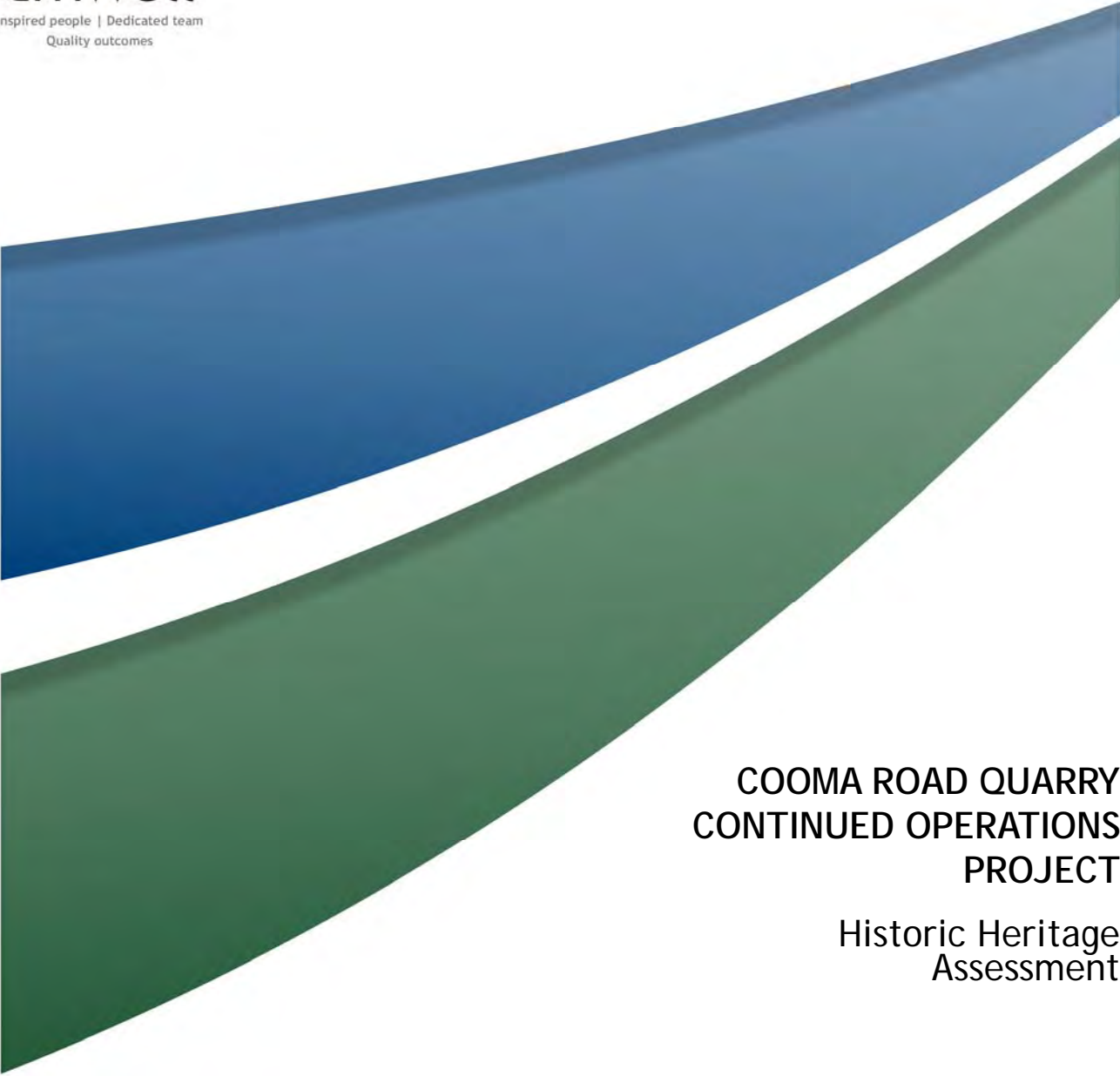
Species		Percentage of this Species Shell to Percentage Total of other Shell
Anadara	Nerita	0 – 9%
Bimbala	Ocean Snail	10 – 19%
Chiton	Periwinkle	20 – 29%
Cowrie	P	30 – 39%
Dog Cockle	Ribbed Cockle	40 – 49%
Duck Bill	Rock Oyster	50 – 59%
Limpit	Whiad	60 – 69%
Mud oyster	Triton	70 – 79%
Mutton Fish	Turban (large)	80 – 89%
		90 – 100%

Comments:

Appendix 7

Historic Heritage Assessment





COOMA ROAD QUARRY CONTINUED OPERATIONS PROJECT

Historic Heritage
Assessment

August 2012

COOMA ROAD QUARRY CONTINUED OPERATIONS PROJECT

Historic Heritage Assessment

August 2012

Prepared by
Umwelt (Australia) Pty Limited
on behalf of
Holcim (Australia) Pty Limited

Project Director: **John Merrell**
Project Manager: **Kirsty Davies**
Report No. **2992/R06/Final**
Date: **August 2012**



Newcastle

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Teralba NSW 2284

Ph. 02 4950 5322

www.umwelt.com.au

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3.14 May 2012 photograph of second stone structure, view to east3.2

1.0 Introduction

This historic heritage assessment, which includes a Statement of Heritage Impact (SOHI) has been prepared by Umwelt (Australia) Pty Limited (Umwelt) on behalf of Holcim (Australia) Pty Ltd (Holcim Australia). The report examines the historic heritage issues associated with the proposal to extend the currently approved extraction boundary of Cooma Road Quarry as part of the Cooma Road Quarry Continued Operations Project (the Project).

Umwelt has been commissioned by Holcim Australia to prepare an Environmental Impact Statement (EIS) for the Project. As such this historic heritage assessment accompanies a broader EIS of the Project prepared by Umwelt.

1.1 Location

Cooma Road Quarry, is an existing hard rock quarry located approximately 6 kilometres south of Queanbeyan (refer to **Figure 1.1**).

1.2 Overview of the Project

The current development consent for Cooma Road Quarry will expire in October 2015, however, as this time there will still be rock resources available for quarrying at the site. The Project will involve extending the life of the quarry to allow for extraction of these remaining resources, and increasing the maximum annual production capacity to 1.5 Mtpa. The Project will provide important construction resources to support the planned future growth and development of the Canberra and Queanbeyan regions.

Approval is sought for the following:

- extension of the approved extraction boundary;
- construction of surface water management system components (including the proposed Eastern Dam);
- relocation of the existing workshop, truck parking and temporary stockpiles;
- addition of a mobile pug mill;
- increasing the maximum annual production limit from 1 Mtpa to 1.5 Mtpa;
- allowance to receive quarry materials from other sites for crushing and screening (as required) and then sale. Total product (including from both material quarried from the site and from materials imported to the site) will be maintained within the total production limit of 1.5 Mtpa; and
- recycling of concrete on site for re-use as product.



Source: Holcim (2012), Google Earth (2011) and Queanbeyan City Council (2006)

0 0.5 1.0 1.5 km
1:35 000

Legend

▭ Proposed Project Area

FIGURE 1.1
Locality Map

1.3 Background

A heritage assessment was undertaken in 1993 on behalf of Cooma Road Quarry to identify 'industrial items of archaeological significance in particular with respect to the adjacent old limestone kilns' (O'Keefe & McGowan 1993). The report included historical and physical analysis, significance assessment and recommended management in relation to the stone constructed kiln and associated outbuildings (Moses Morley's Lime Kiln) located immediately to the east of the existing quarry pit (refer to **Figure 1.2**).

The Director General's environmental assessment requirements (DGR's) issued for the Project require the preparation of a historic heritage assessment including a SOHI for any State or locally significant items and any proposed mitigation and management measures. This assessment has been prepared to satisfy this requirement.

1.4 Methodology

This assessment has been undertaken in accordance with guidelines set out in the *NSW Heritage Manual 1996* (Heritage Office and Department of Urban Affairs & Planning), including *Statements of Heritage Impact* and *Assessing Heritage Significance* and with consideration of the principles contained in the *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance 1999* (Australia ICOMOS. 2000).

Inspections of the Project area were undertaken by an Umwelt archaeologist on 3 April, 16 May and 11 July 2012.

This report identifies the heritage sites or items contained within or in the immediate vicinity of the Project area and considers if there are any impacts on these sites potentially resulting from the Project. A SOHI has been prepared for any State or locally significant items, namely Moses Morley's Lime Kiln located immediately to the east of the existing quarry pit (refer to **Figure 1.2**).

As there are no proposed physical impacts to the stone constructed kiln site, previous historical research, significance assessment and comparative analysis is utilised in this report; predominantly from the O'Keefe & McGowan 1993 assessment (*Heritage Assessment Cooma Road Quarry Queanbeyan*), rather than fully re-assessing the already identified locally significant item.

This report does not include an assessment or consideration of any Aboriginal heritage issues related to the Project. Aboriginal heritage issues are discussed in a separate report prepared by Umwelt.

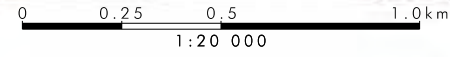
1.5 Heritage Listings

In order to identify the historical heritage items located within or in the immediate vicinity of the Project area desktop searches were conducted of the NSW State Heritage Register (SHR) and State Heritage Inventory, the Australian Heritage Database (including Commonwealth and National Heritage lists and the Register of the National Estate (RNE)), and local planning instruments (Queanbeyan Local Environmental Plan (LEP) 1998 and Draft LEP 2011).

The draft Queanbeyan LEP 2011 Schedule 5 Environmental Heritage Part 3 Archaeological Sites lists the following historic heritage sites as being locally significant:



Source: Google Earth (2011)



- Legend**
- Proposed Project Area
 - Moses Morley's Lime Kiln Site

FIGURE 1.2
Cooma Road Quarry

- Moses Morley's Lime Kiln, Quarry, 501 Cooma Road (Part Lots 103 and 104 DP754881 as being of local significance. This site comprises the previously assessed lime kiln and associated stone structures located within the Project area.
- McCawley 'Sunset' homestead at 141 Googong Dam Road (Lot 2 255492) – to the southeast of the Project area.
- Marchiori's Lime Kiln located on the south east corner of Jumping Creek (Part Lot 1 DP711905) - to the northeast of the Project area.
- White Rocks Limestone Kilns located on the Queanbeyan River, Gale, 300 Cooma Street (Part Lot 86 DP452240) - to the northeast of the Project area.

Note the draft Queanbeyan LEP 2011 Heritage Map – Sheet HER_006 has located Moses Morley's lime kiln on the east side of Cooma Road rather than in its actual location on the west side of the road (refer to **Figure 1.2**).

Of these sites only Moses Morley's Lime Kiln is located within the Project area (refer to **Figure 1.3**). While the remaining sites are locally significant they are located outside of the Project area (i.e. in the immediate vicinity of the Project area) (refer to **Figure 1.3**).



Source: Halcim (2012), Google Earth (2011) and Queanbeyan City Council (2011)

0 0.5 1.0 1.5 km
1:30 000

Legend

- Proposed Project Area
- Moses Morley's Lime Kiln Site
- Historical Heritage Items (From Draft Queanbeyan LEP)

FIGURE 1.3

Draft Queanbeyan LEP 2011 Listed Items

2.0 Historical Context

As part of NSW heritage assessment procedures it is essential to have a full understanding of a site or item based on its historical and physical context.

The following historical background has been prepared utilising the 1993 Heritage Assessment *Heritage Assessment Cooma Road Quarry Queanbeyan* (O'Keefe and McGowan 1993).

2.1 Limeburning Industry

For approximately the first thirty years of European settlement in NSW lime for use as mortar and plaster was produced by burning shell deposits. Although the exploitation of the shell deposits for the production of lime continued until the end of the nineteenth century in some coastal areas, in general by the 1820s locally found limestone was being burnt to produce lime. As new inland areas of colonial development opened small scale limeburning enterprises developed throughout inland NSW (O'Keefe and McGowan 1993:5).

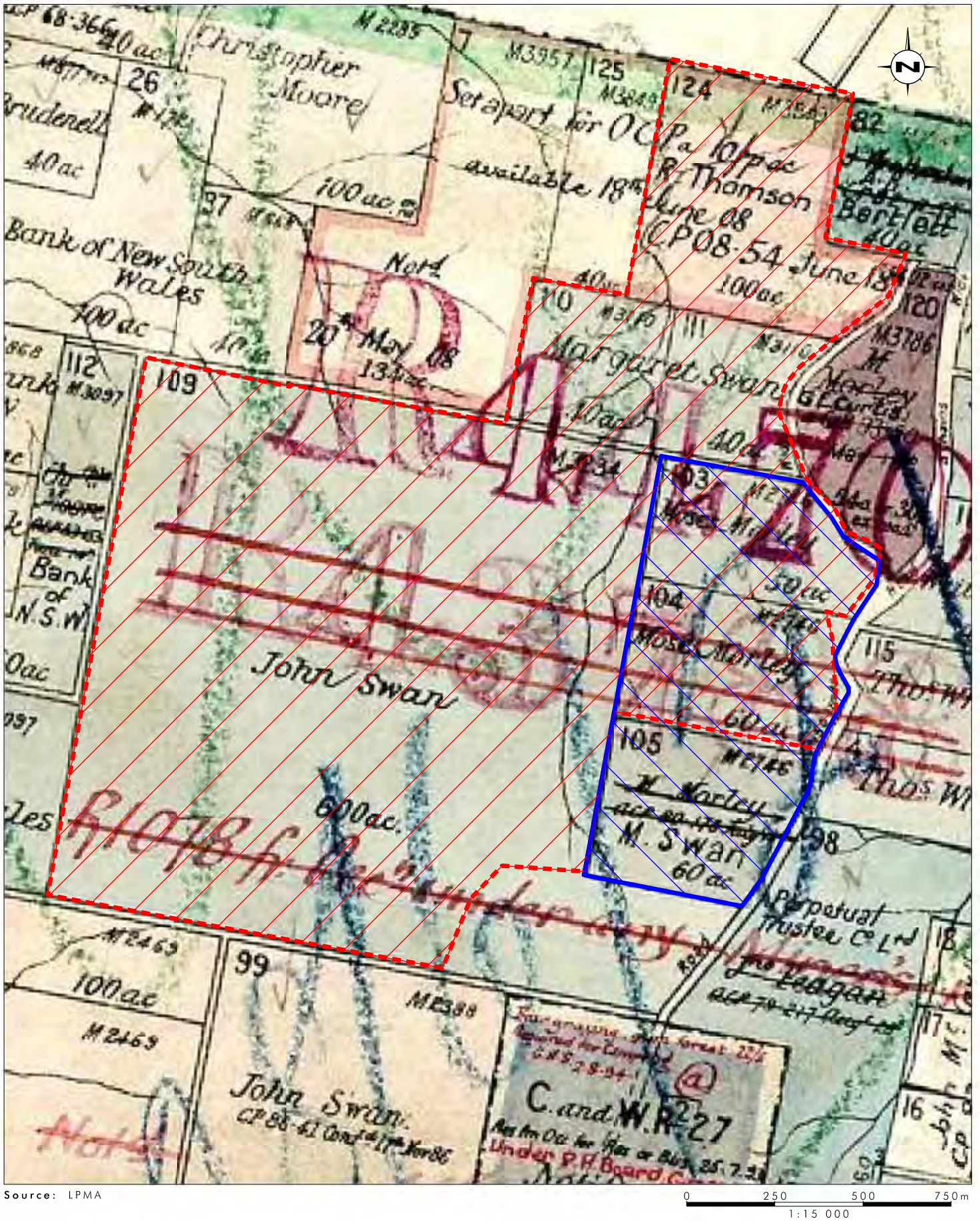
2.1.1 Limeburning in the Canberra-Queanbeyan Region

In the early 1830s it is reported that Tom Sayersbury built a lime kiln on the Molonglo River approximately 13 kilometres 'below Yarralumla'. Sayersbury operated the kiln for approximately 30 years and held a monopoly on the supply of lime in the district during that time. It wasn't until approximately 1860 that George Rottenbury commenced operation of a kiln, likely on his small leasehold property, also on the banks of the Molonglo River. By 1867 the Gibbs family were also operating a lime kiln on a property in Primrose Valley, now called Jumping Creek Valley. The competition from Rottenbury and the Gibbs family forced Sayersbury to move his operations to Majura; closer to the markets of Queanbeyan and Bungendore. The death of Sayersbury in 1871 meant that Rottenbury and the Gibbs family were the only recorded limeburners operating in the Canberra-Queanbeyan area at the time. By the late 1870s both the Gibbs family business and Rottenbury's kilns had ceased operating due to deaths in the families and a renewed focus on farming their properties rather than limeburning (O'Keefe and McGowan 1993:6-8).

The nature of the limeburning industry, with lime being produced in response to demand meant that Rottenbury, the Gibbs family and later Moses Morley (refer to **Section 2.2.2**) would all have combined lime manufacture with other forms of employment. Rottenbury, the Gibbs family and Morley all farmed their properties at the same time as operating the kilns. Even Sayersbury, who had been the longest established limeburner in the region, supplemented his income with selling berries (O'Keefe and McGowan 1993:10-11).

2.1.2 Cooma Road Lime Kiln (Moses Morley's Lime Kiln)

By 1877 Moses Morley had constructed and was operating a lime kiln on his property (Kimberley) on Stringybark Hill just south of the town of Queanbeyan (refer to **Figure 2.1**). Morley was a bricklayer by trade who arrived in Australia in May 1857 from Nottinghamshire. Morley is reported to have charged very high prices for his lime (one shilling and threepence a bushel of lime) in 1877, suggesting the Gibbs family business and Rottenbury's kilns were not operating at this time to provide any competition to Morley. The 1880s saw a period of growth for Queanbeyan and there would have been a high demand for lime for mortar and plaster. With little or no competition Morley's business would have flourished in this period (O'Keefe and McGowan 1993:7-9).



Source: LPMA

0 250 500 750 m
1:15 000

Legend

- Proposed Project Area
- Lots Owned by Moses Morley

FIGURE 2.1

Detail of 1905 Googong Parish Map

However, in 1887 the rail line from Sydney reached Queanbeyan; exposing local companies to competition from products that were efficiently mass-produced in Sydney or other main centres in both Australia and overseas. A large scale limeburning operation at Kingsdale near Goulburn would have been approximately an hour's train journey from Queanbeyan and presented serious competition to Morley. In 1890 NSW entered into a severe economic depression which led to a reduction of population in rural centres and the inevitable slowing of new construction. This period of economic hardship would have created very little demand for lime. In January 1895 Morley is reported to have described himself as a farmer with no mention of his limeburning business. Soon after 1895 he made an agreement with the owners of the neighbouring property (Margaret Swan) that they would acquire Kimberley after his death in return for rent for its use in the meantime. He died in February 1912 (O'Keefe and McGowan 1993:9-10).

The kiln site present within the Project area is Moses Morley's kiln.

3.0 Physical Context of the Project Area

3.1 Project Area and Surrounding Land Use

The Project area has historically been used for quarrying activities, including the extraction and processing of quarry materials. The primary land uses in the vicinity of the Project area include agriculture, woodland, rural residential and residential uses.

Grazing land characterised by gently undulating slopes and plains are located to the south and east of the Project area. Large areas of remnant vegetation occur adjacent to the quarry to the north and west. Cuumbuen Nature Reserve is located approximately 3.5 kilometres to the northeast and Jerrabomberra Mountain Reserve is 2 kilometres to the northwest.

The existing rural residential area of Googong is located approximately 0.5 kilometres to the east of the quarry. The residential area of Jerrabomberra is located approximately 1 kilometre to the west, and Karabar is located approximately 2 kilometre to the north. The undulating slopes of the area provide topographical shielding for the quarry including a ridgeline separating Cooma Road Quarry from the residential area of Jerrabomberra.

The new townships of Googong and Tralee have been approved to the south and west of Cooma Road Quarry. The new township of Googong is to be located approximately 3 kilometres southeast of Cooma Road Quarry and will be developed over 20 to 25 years to accommodate 16,000 people. The township of Tralee is to be located approximately 3 kilometres west of Cooma Road Quarry and will accommodate 5000 new homes.

Googong Dam, the largest dam in the region, is located approximately 4.5 kilometres south east of Cooma Road Quarry.

3.2 Land Ownership

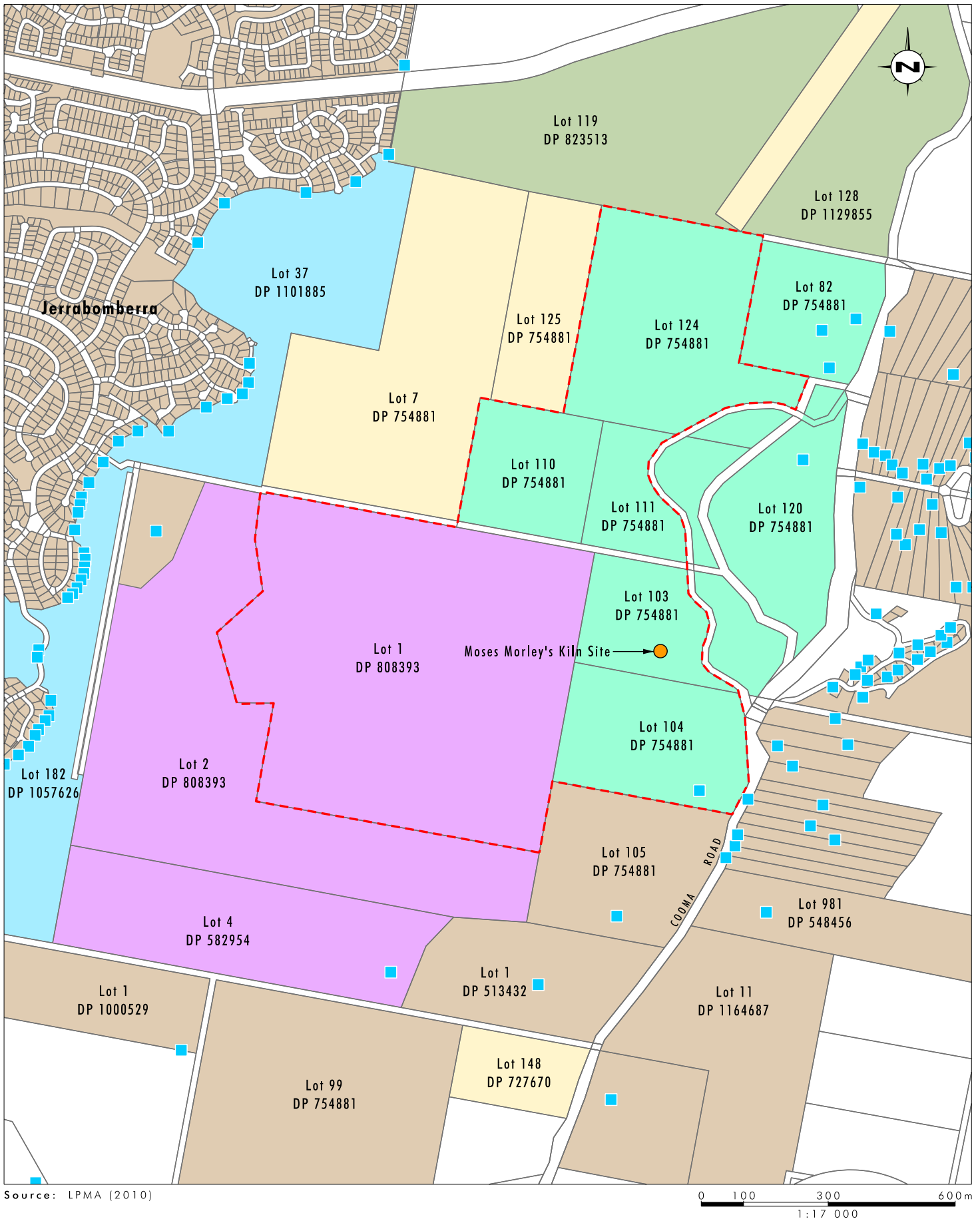
A large portion of the existing quarry site is located on land owned by Holcim Australia, as shown in **Figure 3.1**. These parcels of land include Lot 1 DP 808393, Lot 2 DP 1087429 and Lot 4 DP 582954. The remainder of the Project area is located on privately owned land currently leased by Holcim Australia. These parcels of land include Lot 110 DP 754881, Lot 111 DP 754881, Lot 103 DP 754881, Lot 104 DP 754881 and Lot 124 DP 754881. Moses Morley's kiln site is located on Lot 103 DP 754881 (leased by Holcim Australia).

The proposed extraction area, as shown on **Figure 3.2** is located on Lot 111 DP 754881 and Lot 103 DP 754881. The proposed infrastructure area is located on a portion of Lot 111 DP 754881 and Lot 124 DP 754881, all of which are privately owned or currently leased by Holcim Australia.

3.3 Site Inspection

Inspections of the Project area were undertaken by an Umwelt archaeologist on 3 April, 16 May and 11 July 2012. The inspections included survey of:

- the proposed extraction area;
- the area associated with the proposed water management system components. This area has been previously substantially disturbed; and
- the proposed infrastructure area. This area is approved for disturbance under the existing approval.



Source: LPMA (2010)

0 100 300 600m
1:17 000

Legend

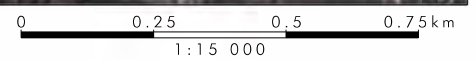
- Proposed Project Area
- Holcim Owned Land
- Privately Owned Land Leased by Holcim
- Crown Land
- Queanbeyan City Council
- Ngambri Local Aboriginal Land Council
- Private
- Indicative Dwelling Location
- Moses Morley's Lime Kiln Site

FIGURE 3.1

Land Ownership



Source: Holcim (2012), Google Earth (2011)



Legend

- - - Proposed Project Area
- Approved Extraction Area
- Proposed Additional Extraction Area
- Approved Disturbance Area - Workshop
- Approved Disturbance Area - Overburden Emplacement
- Moses Morley's Lime Kiln Site

FIGURE 3.2

**Cooma Road Quarry
Continued Operations Project**

The kiln site was also inspected at this time in order to assess its current physical condition and to identify whether any obvious increased deterioration had taken place since the 1993 inspection and Heritage Assessment by O'Keefe and McGowan. As part of the inspection photographs were taken in similar locations to photographs taken as part of the 1993 assessment in order to compare the condition of the site with that recorded in 1993 (refer to **Section 3.4** for discussion and **Plates 3.1 to 3.14**). The location of the fence around the kiln site prohibited a number of the photographs being accurately reproduced. In these instances as close a photographic match as possible was taken.

No other potential heritage items/sites were identified within the Project area during the site inspections. No further potential historical archaeological sites associated with the kiln site were identified in the vicinity of the kiln and associated stone structures.

3.4 Physical Description

The Cooma Road Quarry kiln (Moses Morley's kiln) site comprises the kiln and the remains of two stone buildings (refer to **Figure 3.3**). The 1993 report notes the kiln and the remains of two stone buildings to be in 'remarkably good condition' (O'Keefe and McGowan 1993:13). On comparing the 1993 photographs with the condition of the site today suggests the structures are in a relatively similar condition. There is some evidence however of minor collapse and slippage of the dry stone work having occurred since 1993. The vegetation in the area is overgrown and potentially poses a threat if not managed (refer to **Plates 3.1 to 3.14**).

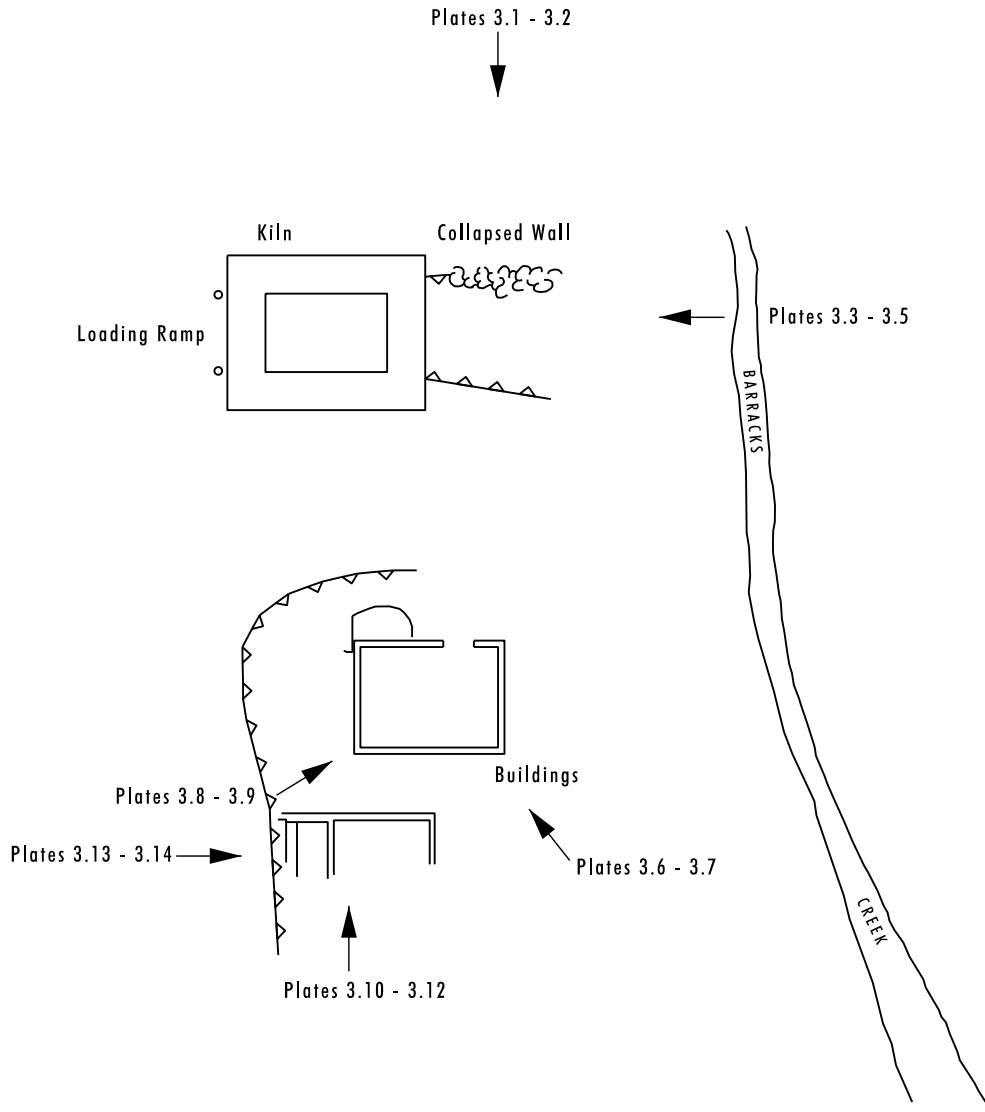
As described in the 1993 assessment, the kiln is a 'D'-shaped kiln as described by Michael Pearson in his paper *The Lime Industry in Australia – An Overview* (Australian Journal of Historical Archaeology Vol 8 1990). Pearson provided a basic structural typology of kiln types; the 'D'-shaped kiln being the most common type in NSW in the late nineteenth and early twentieth century's. Pearson's description of 'D'-shaped kilns includes the following:

...shaped in plan like the letter 'D', being dug into the face of a bank with a vertical masonry wall built across the front of the pit to create a firing chamber....although the 'D' kiln was cheap to construct, it was expensive to operate both in terms of the labour required and the wasteful use of fuel, and the fact that each kiln was out of operation while being loaded and while it was cooling and being emptied (Pearson 1990:30).

Morley's kiln is of stone construction and built into a bank to allow for top loading (refer to **Plates 3.3 to 3.5**). It measures six metres in length and five metres in width. There is a single draw hole at the base, beneath the firing chamber. A large tree trunk, laid transversely across the draw hole, reinforces the firing chamber. There are two angled stone buttresses at the front of the kiln, one of which has partly collapsed (O'Keefe and McGowan 1993:13).

Approximately seven metres to the south of the kiln are the remains of two stone constructed buildings set into an embankment. The main structure measures 5 by 3.5 metres (refer to **Plates 3.6 to 3.9**). The walls are approximately one metre high and 400 millimetres thick. The second building is located two metres further south and comprises a two metre east to west aligned side wall with two shorter wall returns at either end (refer to **Plates 3.10 to 3.14**). A small internal wall separates an area one metre wide in the northwest corner of the structure (O'Keefe and McGowan 1993:14).

The stone construction of the two buildings is unusual in an area where timber was plentiful. The use of stone and the lack of any fireplace suggests the structures were built as storerooms rather than residences. However, they are likely to have also provided temporary accommodation for Morley when limeburning was in progress as the operation took between 48 and 90 hours to complete and required continual monitoring and feeding of the fire (O'Keefe and McGowan 1993:14).



0 2 5 10 m
Approx 1:250

FIGURE 3.3

1993 Sketch Plan of Kiln Site with
Photograph Locations Indicated



PLATE 3.1
1993 photograph of kiln site, general view to south



PLATE 3.2
May 2012 photograph of kiln site, general view to south



PLATE 3.3
1993 photograph of kiln structure, view to west



PLATE 3.4
May 2012 photograph of kiln structure, view to west



PLATE 3.5
May 2012 photograph of kiln structure, view to west



PLATE 3.6
1993 photograph of main stone structure, view to northwest



PLATE 3.7
May 2012 photograph of main stone structure, view to northwest



PLATE 3.8
1993 photograph of main stone structure, view to northeast



PLATE 3.9
May 2012 photograph of main stone structure, view to northeast



PLATE 3.10
1993 photograph of second stone structure, view to north



PLATE 3.11
May 2012 photograph of second stone structure, view to north



PLATE 3.12
May 2012 photograph of second stone structure, view to north



PLATE 3.13
1993 photograph of second stone structure, view to east



PLATE 3.14
May 2012 photograph of second stone structure, view to east

4.0 Comparative Analysis

The 1993 assessment identified the remains of two other lime kilns in the area:

- at White Rocks on the Queanbeyan River approximately two kilometres south of Queanbeyan. This kiln was likely constructed in the 1920s or 1930s; and
- on the 'Millpost' property between Queanbeyan and Bungendore. This kiln was reported as being in very good condition in 1993 and of more recent construction than Morley's kiln.

The Queanbeyan LEP 1998 listed the following lime kiln:

- Limestone Kilns - Land bounded by Cooma Street and Wickerslack Lane, known as the Gale Precinct – to the northeast of the Project area.

The draft Queanbeyan LEP 2011 lists the following lime kilns:

- Marchiori's Lime Kiln located on the south east corner of Jumping Creek (Part Lot 1 DP711905) - to the northeast of the Project area (refer to **Figure 1.3**).
- White Rocks Limestone Kilns located on the Queanbeyan River, Gale, 300 Cooma Street (Part Lot 86 DP452240) - to the northeast of the Project area (refer to **Figure 1.3**).

The White Rocks lime kilns (likely the same kilns listed in the Gale Precinct on the 1998 LEP) and the kilns on the 'Millpost' property are likely to date to the twentieth century. The Marchiori's Lime Kiln listed on the draft 2011 LEP is also thought to be associated with a twentieth century limeburning enterprise (O'Keefe and McGowan 1993:7).

The *Goat Island Conservation Management Plan (CMP) 2009* presented examples of early nineteenth century convict related lime kilns and mid to late century lime kilns in Australia. Note this study identified the Gale Precinct lime kilns as being associated with the Tralee Homestead and being dated to the nineteenth century rather than the twentieth century. Other mid to late nineteenth century lime kilns were noted in the CMP at:

- Cock Renoyo Point, Carrington, NSW (nineteenth century).
- Ipswich, Queensland (1869s).
- Rye Victoria (1840s).
- Portsea, Victoria (approximately 1842).

The evidence provided by the other known remaining kiln structures in the area indicates that Morleys Cooma Road Lime kiln is either the oldest or one of the oldest known surviving lime kilns in the region.

5.0 Significance

5.1 Introduction

Moses Morley's Lime Kiln is listed as a locally significant item on the draft Queanbeyan LEP 2011. As the kiln is recognised as a locally significant item, has been subject to previous significance assessment and is not proposed to be physically impacted, the brief Statement of Significance below has been prepared utilising the significance assessment from the 1993 assessment.

5.2 Statement of Significance

Moses Morley's kiln is likely the only surviving example of a nineteenth century lime kiln in the Canberra-Queanbeyan region and an intact representation of an early industry crucial to the spread of European settlement in the region. Morley would have supplied lime for mortar and plaster essential for the construction of many of Queanbeyans' buildings from 1876 to approximately 1895. The kiln itself, while being an example of the common 'D' type of kiln, is a well preserved and intact example demonstrating a high level of technical accomplishment in a rural setting. The site has archaeological significance and research value for its potential to reveal further information on the workings of the kiln and the functions of the associated stone constructed buildings (O'Keefe and McGowan 1993:15-16).

6.0 Potential Impacts

The Project is unlikely to result in any impacts which affect the historical heritage values of Moses Morley's kiln with the exception of potential impacts associated with:

- the proposed construction of the Eastern Dam in the general vicinity of the kiln; and
- vibration resulting from blasting.

These potential impacts are discussed below and in **Section 7.0**.

6.1 Eastern Dam Construction

The Eastern Dam is proposed to be constructed in the vicinity of the kiln site.

In addition to the heritage constraints presented by the kiln site, the location, form and function of the dam have been determined through consideration of topographical (the steep natural terrain etc) and ecological constraints. These constraints are further discussed in the main text of the EIS.

The proposed Eastern Dam will comprise an earthen bund forming an approximately 2 metre high, 5 metre wide (at base) and 55 metre long dam wall. The dam wall is proposed to be located approximately 40 metres to the north of the kiln site.

The dam is not designed to permanently retain water but rather act as a detention basin to manage higher volumes of water during heavy rain episodes.

It is estimated that during periods of rain the maximum extent of inundation would be approximately 1 metre below the base of the kiln and associated buildings (i.e. in vertical elevation) and 5 metres away from the kiln and associated buildings (i.e. in horizontal distance).

At present the form of the dam is at concept design phase only. The detailed design phase of the Eastern Dam will ensure the construction of the dam, and any potential associated changes to flooding, will have negligible impact to the kiln site.

The setting of the kiln site is important as the site is considered to have high aesthetic significance. Its relationship to Barracks Creek and the immediate surrounding topography are important factors to the setting (as a result of the need for a water supply and the construction methodology of being excavated into the slope). These relationships will be maintained and, with the exception of temporary inundation of the area adjacent to the kiln site during rain periods, the immediate setting of the kiln site will be retained.

6.2 Vibration

Indirect impacts such as vibration from blasting have the theoretical potential to damage historical heritage items such as the kiln site (refer to **Section 7.0**).

Quarrying has been undertaken at the site since 1959. The previous blasting activities associated with quarrying operations have exposed the kiln site to vibration levels similar to those predicted for the Project. There has been some minor slippage and collapsing of the kiln site in the period since the previous assessment was undertaken in 1994, however, whether this was caused by vibration associated with Cooma Road Quarry or natural deterioration over time is unknown. The kiln site will continue to be exposed to vibration levels from blasting similar to those currently experienced. Proposed controls to further limit the potential for any impact in regard to blasting and vibration are discussed in **Section 8.2.4**.

7.0 Statement of Heritage Impact

The following assesses the impact of the Project on the significance of both Moses Morley's Lime Kiln and the Project area in accordance with questions in the Heritage Branch guideline *Statement of Heritage Impact* (2002).

The following aspects of the proposal respect or enhance the heritage significance of the item or conservation area for the following reasons:

- The proposed extension to the currently approved extraction boundary of Cooma Road Quarry will not physically impact the kiln site.
- As recommended in the 1993 assessment, there has been, and will be, no building or quarrying in the area of the kiln and a fence has been erected around the site.
- Other than the kiln site there are no known potential heritage items or archaeological sites at risk of impact from the Project.
- The location, form and function of the proposed Eastern Dam have been determined through consideration of heritage, topographical and ecological constraints.
- The immediate setting of the kiln site will be retained with the potential exception of temporary periods of inundation of the area adjacent to the kiln site during periods of rain.
- The detailed design phase of the Eastern Dam will ensure the construction of the dam and any potential associated changes to flooding will have negligible impact to the kiln site.

The following aspects of the proposal could detrimentally impact on heritage significance. The reasons are explained as well as the measures to be taken to minimise impacts:

Indirect Blasting Impacts

Indirect impacts such as vibration from blasting have the potential to damage historical heritage items, such as the kiln site.

There is little reliable information available regarding the threshold of vibration induced damage to standing ruins and older 'heritage' buildings that may be more sensitive to vibration induced damage. There are several international standards in place for sensitive buildings, however, there are currently no Australian Standards. The international standards provide limits ranging from 3 mm/s to 10 mm/s.

Quarrying has been undertaken at the site since 1959. The previous blasting activities associated with quarrying operations have exposed the kiln site to vibration levels similar to those predicted for the Project. There has been some minor slippage and collapsing of the kiln site in the period since the previous assessment was undertaken in 1994, however, whether this was caused by vibration associated with Cooma Road Quarry or natural deterioration over time is unknown. The kiln site will continue to be exposed to vibration levels from blasting similar to those currently experienced.

Due to the proximity of the kiln site to the existing quarry pit and proposed extension area, it is not practical to enforce a criteria based on international standards. However, Holcim Australia will maintain current blast practices by continuing to meet appropriate vibration limits at surrounding residential receivers, to ensure the kiln site is not exposed to any greater level of vibration than currently experienced. Holcim Australia will also implement additional management measures to further limit the potential for impact on this item of local significance. These additional management measures are outlined in **Section 8.2.4**.

Proposed Eastern Dam

The area to the south of the proposed Eastern Dam is likely to flood during periods of rain. The size and volume of the dam has been reduced in order to prevent inundation of the kiln. The detailed design phase of the proposed Eastern dam will ensure the construction of the dam and any potential associated changes to flooding will have negligible impact to the kiln site.

The maximum extent of inundation would be approximately 1 metre below the base of the kiln and associated buildings (i.e. in vertical elevation) and 5 metres away from the kiln and associated buildings (i.e. in horizontal distance).

The following sympathetic solutions have been considered and discounted for the following reasons:

Proposed Eastern Dam

The location, form and function of the proposed Eastern Dam have been determined through consideration of heritage, topographical and ecological constraints. Although considered, locating the proposed dam elsewhere was not a viable option as a result of ecological, topographical and water management constraints. The proposed location of the dam is located as far from the kiln as possible with the consideration of the ecological and topographical constraints.

Public Access

The 1993 assessment recommended providing a defined pathway to the site to enable public access.

Public access has been granted to various groups over the years but a defined pathway has not been established and access is at present only via the quarry. Although the construction of a pathway has been considered and discussed, there is no safe parking facilities on Old Cooma Road for people to leave their cars if a pathway were constructed from the road. In addition, the kiln is located on privately owned land currently leased by Holcim Australia and agreement is required with the land owner to establish a nominated pathway for public access. Such agreement has not been achieved to date.

Holcim Australia will continue to provide access via the quarry to groups as appropriate.

8.0 Conclusions and Recommended Management Measures

8.1 Conclusions

The Project will not physically impact Moses Morley's Lime Kiln and is very unlikely to affect the identified heritage significance of the locally listed kiln site.

The identified technical and archaeological significance and research value of the kiln site is unlikely to be adversely affected by the proposed extension of the quarry. The immediate setting of the kiln site may be temporarily affected during periods of inundation following rain.

The detailed design phase of the Eastern Dam will ensure the construction of the dam and any potential associated changes to flooding will have negligible impact to the kiln site.

Other than the kiln site, there are no known potential historical heritage items or archaeological sites at risk of impact from the Project.

8.2 Management Measures

8.2.1 Exclusion Zone

An exclusion zone of at least 20 metres will be established around the kiln site during construction activities associated with the proposed Eastern Dam, or any future works, to ensure no physical impacts occur and the immediate setting is retained.

8.2.2 Fencing

The current fencing will be maintained and the opportunity for extending the fencing out to include the exclusion zone should be investigated.

8.2.3 Vegetation Management

A program of vegetation management will be developed to ensure the growth of vegetation does not further increase any natural deterioration of the site. The vegetation growing in the soil within the fenced area should be cut, while the vegetation growing in the walls of the stone kiln and associated buildings should be poisoned and left *in situ*.

8.2.4 Vibration Limits and Blast Monitoring

Blasting will be managed such that the kiln site is not subjected to peak particle velocity vibration levels in excess of those currently experienced at the kiln site.

A program of blast monitoring will be implemented to verify the vibration levels from blasting activities do not exceed the existing vibration levels. The physical condition of the kiln site will be compared with the photographs contained in this report on a six-monthly basis and reported in the site's annual environmental reporting.

If appropriate, detailed examination and structural analysis of the kiln site may be undertaken to further define blasting tolerance.

8.2.5 Photographic Recording

Prior to any blasting or construction activities, including those associated with the Eastern Dam, photographic recording of the kiln site will be undertaken generally in accordance with Heritage Branch, OEH guidelines *Photographic Recording of Heritage Items Using Film or Digital Capture* (2006).

As part of the ongoing monitoring of potential impacts to the site associated with blast activities and vibration levels, the photographic record will be updated every five years until the cessation of quarrying activities.

8.2.6 Further Assessment

In the event that any impacts not discussed in this report are required in the vicinity of the kiln site, further assessment and comparative analysis should be undertaken.

8.2.7 Unexpected Finds

Section 146 *Heritage Act 1977* (NSW)

In the unlikely event that unexpected archaeological remains or potential heritage items not identified as part of this report are discovered during the Project, all works in the immediate area should cease. The remains and potential impacts should be assessed by a qualified archaeologist or heritage consultant and, if necessary, the Heritage Branch, OEH notified in accordance with Section 146 of the *Heritage Act 1977* (NSW).

Human Skeletal Material

In the event that a potential burial site or human skeletal material is exposed within the Project area, the following procedure should be followed in accordance with the *Policy Directive – Exhumation of Human Remains* (NSW Department of Health 2008), *Skeletal Remains – Guidelines for the Management of Human Skeletal Remains under the Heritage Act 1977* (NSW Heritage Office 1998) and the *Aboriginal Cultural Heritage Standards and Guidelines Kit* (NPWS 1997):

- as soon as remains are exposed, work is to halt immediately to allow assessment and management;
- contact local police, OEH and the Heritage Branch;
- a physical or forensic anthropologist should inspect the remains *in situ*, and make a determination of ancestry (Aboriginal or non-Aboriginal) and antiquity (pre-contact, historic or forensic);
- if the remains are identified as forensic the area is deemed as crime scene;
- if the remains are identified as Aboriginal, the site is to be secured and OEH and all registered Aboriginal parties are to be notified in writing; or
- if the remains are non-Aboriginal (historical) remains, the site is to be secured and the Heritage Branch is to be contacted.

The above process functions only to appropriately identify the remains and secure the site. From this time, the management of the remains is to be determined through liaison with the appropriate stakeholders (New South Wales Police Force, forensic anthropologist, OEH, Heritage Branch, registered Aboriginal parties etc) and in accordance with the *Public Health Act 1991*.

9.0 Evaluation of Management Measures

Apart from Moses Morley's kiln site, no potential heritage items/sites have been identified within the Project area.

9.1 Fencing/Exclusion Zone

Maintaining fencing and establishing an exclusion zone of at least 20 metres around the kiln site during construction works should ensure there are no physical impacts to the kiln site.

9.2 Vegetation Management

The development of a program of vegetation management should ensure the growth of vegetation does not further expedite the deterioration of the kiln site.

9.3 Vibration Limits and Blast Monitoring

As discussed in **Section 6.0**, indirect impacts such as vibration from blasting have the potential to damage/destroy/disturb historical heritage items.

Blasting operations will be undertaken in accordance with a detailed design process that considers operational, geological and environmental constraints. By limiting vibration from blasting to that currently experienced at the kiln site, it is reasonable to expect that the Project is unlikely to further expedite the deterioration of the kiln site.

9.4 Photographic Recording

The preparation, and updating, of a photographic record of the kiln site will help mitigate and monitor any potential indirect/accidental impacts, such as resulting from vibration, and ensure that a full understanding and record of the kiln site will be available for future generations.

9.5 Section 146 *Heritage Act 1977* (NSW)

Adherence to Section 146 of the Heritage Act, including the cessation of work and notification of relevant stakeholders, in the event unexpected archaeological remains (including potential human skeletal material) or potential heritage items not identified as part of this report are discovered during the Project will ensure that any unexpected archaeological remains or potential heritage items are appropriately managed in accordance with relevant statutory controls and protections.

10.0 References

Heritage Office and Department of Urban Affairs & Planning 1996, revised 2002. *Statements of Heritage Impact*.

O'Keefe & McGowan 1993. Heritage Assessment Cooma Road Quarry Queanbeyan.

Paul Davies Pty Ltd 2009. *Goat Island Conservation Management Plan*. Report prepared for Department of Environment, Climate Change and Water.

Pearson M, 1990. *The Lime Industry in Australia – An Overview* (Australian Journal of Historical Archaeology Vol 8 1990).

Queanbeyan and District Historical Museum Society Inc (QDHMS). <http://www.queanbeyanmuseum.org.au/page4.php>. Accessed 10 May 2012.