ABORIGINAL DUE DILIGENCE ASSESSMENT

Redlands Road Corowa

June 2021

Project Number: 21-230

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ACRONYMS AND ABBREVIATIONS

AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
DPIE	Department of Planning, Industry and Environment
Due Diligence Code	*Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* (DECCW 2010)
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
Ha	Hectare
km	Kilometres
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
M	Metres
NGH	NGH Pty Ltd
NPW Act	National Parks aAnd Wildlife Act 1974 (NSW)
NSW	New South Wales
PAD	Potential Archaeological Deposit
Proposal Area	Area assessed in this report

EXECUTIVE SUMMARY

NGH Pty Ltd (NGH) was commissioned by Black Rhino Group, on behalf of Owens + Murray Land Survey, to undertake an Aboriginal Heritage Due Diligence assessment for the proposed subdivision development of Lots 1 and 2 DP 199174 and Lot 66 DP 1167493 located on Redlands Road, Corowa, New South Wales (the Proposal Area). The Proposal Area consists of two site areas, Site 1, and Site 2. The proposed subdivision of both Site 1 and Site 2 would facilitate the development of 335 residential lots with associated roads and services.

BACKGROUND AND DESKTOP ASSESSMENT

An extensive search of the AHIMS database was undertaken over an area centred on the Proposal Area. There were 76 Aboriginal sites recorded within the search area and nil declared Aboriginal Places. None of the previously recorded AHIMS sites are within or adjacent to the Proposal Area. There is a high proportion (69.7%) of scarred trees recorded in the area especially where there are remnant stands of native trees. It is likely that the high proportion of scarred trees surrounding the Proposal Area is related to their more obtrusive nature and the low number of artefact sites related to the lack of surveys in the area.

While the site types near the Proposal Area are all listed on AHIMS as artefacts the review of the site cards shows that they were recorded as earth mound and hearth sites. It's likely that this error in AHIMS site type is a historical database issue. Therefore, earth mounds and hearths as a site type have a higher proportion of actually occurring in the area then they are currently represented in the AHIMS data and are a common site type recorded in close proximity to the Proposal Area.

The Proposal Area is characterised by mostly flat alluvial plain approximately 1.4 km north-west of the Murray River. The Murray River would have been a focal point in the landscape and occupied by various groups throughout different times of the year and the Proposal Area would have been traversed by groups travelling throughout the region and using the associated back country of the Murray River.

The desktop assessment therefore indicates that there are landscapes present within the Proposal Area that have the potential to contain Aboriginal sites, particularly given that a number of mounds have previously been recorded within proximity to the Proposal Area and it is in relatively close proximity to the Murray River. Additionally, any old growth mature native trees within the Proposal Area have the potential to have been culturally modified.

FIELD ASSESSMENT

A visual inspection of the Proposal Area was undertaken on the 15th of April 2021 by a qualified NGH archaeologist. The entirety of the Proposal Area was examined by foot. The visibility at both Site 1 and Site 2 varied from 90% within exposure areas to less than 5% in areas of dense cover, averaging 15%. The proposal area was noted to be cleared with some existing disturbances including a dam, a large water / sewer pipeline and a residence with related infrastructure. No Aboriginal objects were recorded within the Proposal Area, which was deemed to have low potential for *in situ* subsurface deposits due the low lying nature of the floodplain environment in which it is located and the shallow clay soil profile.

IMPACT ASSESSMENT CONCLUSION

As no Aboriginal objects or areas of archaeological potential were identified within the Proposal Area it is concluded that the proposed subdivision on Redlands Road and Cemetery Road, Corowa, as assessed in

this report, would not require any further Aboriginal heritage investigation and works can proceed with caution.

RECOMMENDATIONS

It is recommended that:

1. Works within the Proposal Area may proceed with caution.
2. Any proposed activity outside of the current assessment area should also be subject to an Aboriginal heritage assessment.
3. If any items suspected of being Aboriginal in origin are discovered during works, all work in the immediate vicinity must stop and Heritage NSW must be notified. The find will need to be assessed and if found to be an Aboriginal object an Aboriginal Heritage Impact Permit (AHIP) may be required.
4. In the unlikely event that human remains are identified during works, all work must cease in the immediate vicinity and the area must be cordoned off. The proponent must contact the local NSW Police who will make an initial assessment as to whether the remains are part of crime scene or possible Aboriginal remains. If the remains are thought to be Aboriginal, Heritage NSW must be notified.

Ovens & Murray Land Survey is reminded that it is an offence under the *NSW National Parks and Wildlife Act 1974* to disturb, damage or destroy and Aboriginal object without a valid Aboriginal Heritage Impact Permit (AHIP).

1 INTRODUCTION

NGH Pty Ltd (NGH) was commissioned by Black Rhino Group, on behalf of Owens + Murray Land Survey, to undertake an Aboriginal Heritage Due Diligence assessment for the proposed subdivision development of Lots 1 and 2 DP 199174 and Lot 66 DP 1167493 located on Redlands Road and Cemetery Road, Corowa, New South Wales (the Proposal Area) (Figure 1-1 and Figure 1-2).

The Proposal Area consists of two areas, Site 1, and Site 2. The proposed subdivision of both Site 1 and Site 2 would facilitate the development of 335 residential lots with associated roads and services. This assessment will evaluate the presence of, or potential for, Aboriginal objects and sites to occur within the Proposal Area that may be affected by the proposed subdivision and subsequent works.

1.1 SUBJECT SITE

The Proposal Area comprises of Lots 1 and 2 DP 199174 and Lot 66 DP 1167493 situated at 169-199 Redlands Road and 42-80 Cemetery Road, Corowa in the Federation Local Government Area (LGA). The Proposal Area consists of two separate areas, Site 1 (northern site) and Site 2 (southern site) as shown in Figure 1-2. The proposed subdivision of both Site 1 and Site 2 would facilitate the development of 335 residential lots with associated roads and services as shown in Figure 1-3 and Figure 1-4.

Site 1 consists of Lots 1 and 2 DP 199174 which is bordered by Redlands Road to the north, undeveloped residential zoned land to the east, Tower Street to the south and Cemetery Road to the west. Site 1 cover an approximate area of 12.32 hectares.

Site 2 consists of Lot 66 DP 1167493 which is bordered by Barber Street to the north, established residential development to the east, land zoned for residential purposes to the south and Cemetery Road to the west. Site 2 has an approximate area of 15.50 hectares.

The Proposal Area is located approximately 1.5 kilometres (km) from the main commercial area of Corowa and is on the western fringe of the existing Corowa urban area. The Corowa Local Environment Plan 2012 (Land Zoning Map – Sheet LZN-006A) currently notes the Proposal Area as Low Density Residential (R2).

1.2 PROJECT PERSONNEL

The Due Diligence assessment was carried out by qualified archaeologist Jill Taylor, Tony Miscamble and Kirsten Bradley of NGH. Tony Miscamble and Kirsten Bradley undertook the background research and mapping of this report. Jill Taylor completed the fieldwork and report writing for this report. NGH Principal archaeologist Matthew Barber reviewed the report for quality assurance purposes and approved the report for distribution.

The Due Diligence process does not formally require consultation with Aboriginal community groups. No Aboriginal groups were contacted for this Due Diligence level assessment. The Proposal Area is within the boundaries of the Albury and District Local Aboriginal Land Council (LALC).

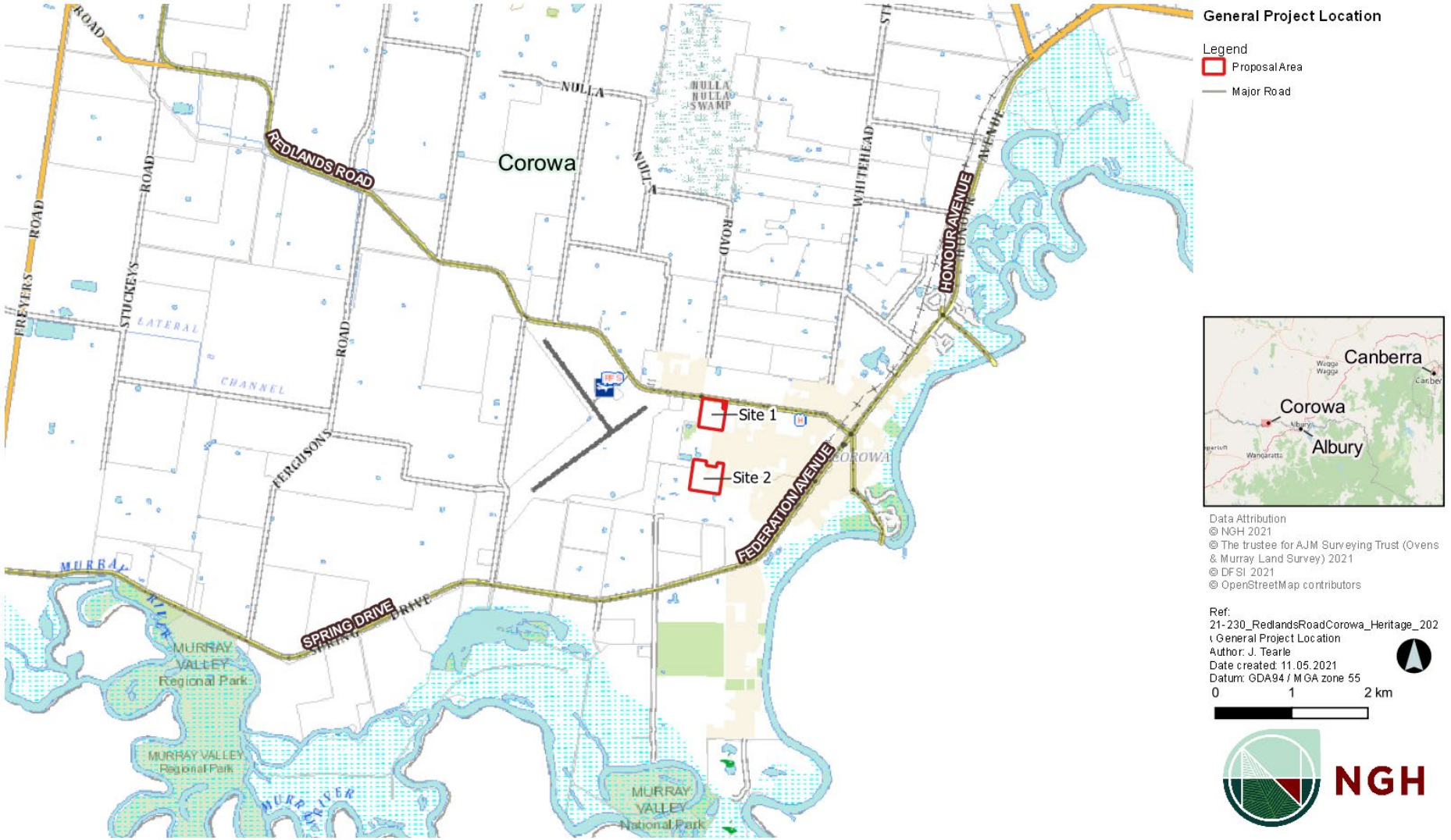

Figure 1-1 General location of the Proposal Area

Figure 1-2 Proposal Area

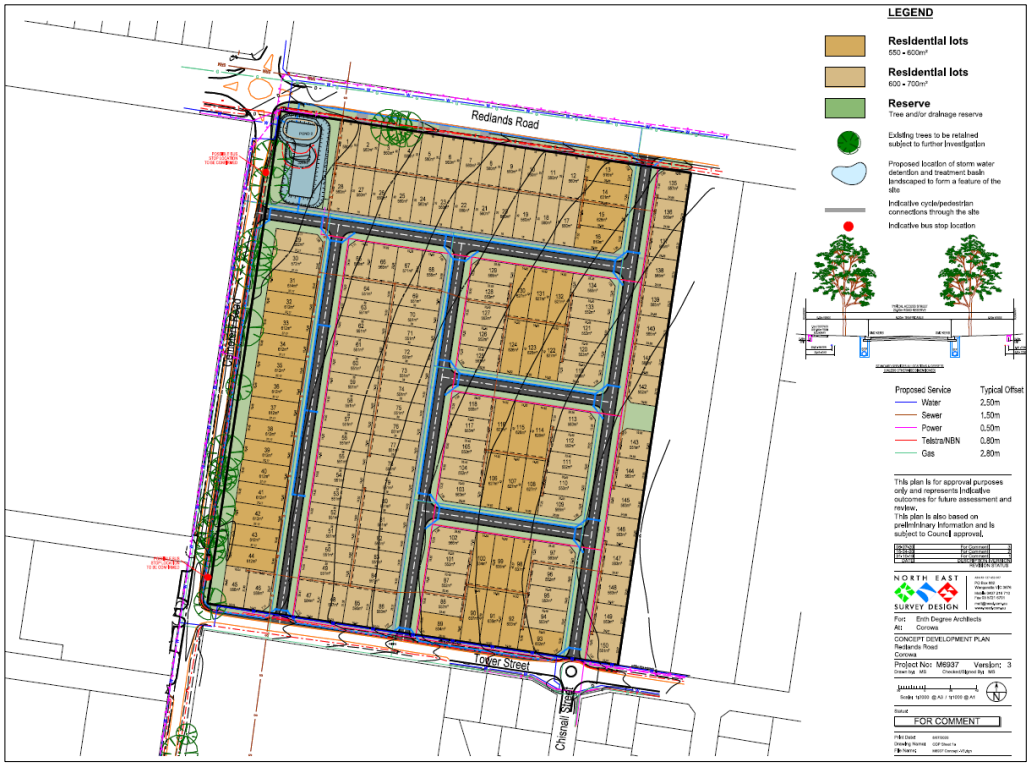

Figure 1-3 Proposed Subdivision of Site 1

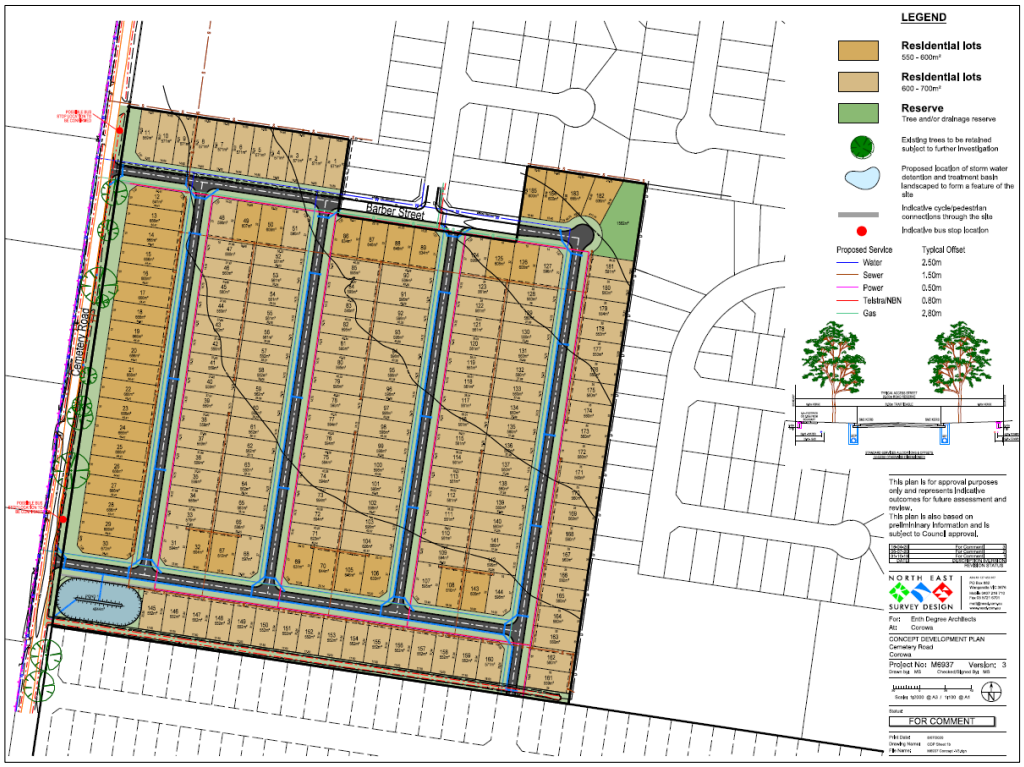

Figure 1-4 Proposed Subdivsion of Site 2.

1.3 APPROACH AND FORMAT OF THIS REPORT

This report has been drafted in keeping with the sequence of steps identified in the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (*DECCW 2010). The Due Diligence Code provides a five-step approach to determine if an activity is likely to cause harm to an Aboriginal object, as defined by the *NSW National Parks and Wildlife Act 1974*. The steps follow a logical sequence of questions, the answer to each question determines the need for the next step in the process. The Due Diligence Code sets out the steps which the Proponent is required to take in order to:

- Identify whether Aboriginal objects are, or are likely to be, present in the Proposal Area;
- Determine whether or not their activities are likely to harm Aboriginal objects (if present) in the Proposal Area; and
- Determine whether an Aboriginal Heritage Impact Permit (AHIP) application is required.

Each section within this report follows the relevant step outlined in the Due Diligence Code as shown in Table 1-1.

Table 1-1 Due Diligence Steps for this report

Due Diligence Steps
Step 1. Will the activity disturb the ground surface?
Step 2a. Search the AHIMS database and use any other sources of information of which you are already aware
Step 2b. Are activities proposed in areas where landscape features indicate the presence of Aboriginal objects?
Step 3. Can you avoid harm to the object or disturbance of the landscape feature?
Step 4. Undertake a desktop assessment and visual inspection. Is it likely that Aboriginal objects will be impacted by the proposed works?
Step 5. Further investigations and impact assessment

2 LEGISLATION

In NSW, Aboriginal heritage is principally protected by two legislative acts:

- The *National Parks and Wildlife Act 1974* (NSW) (NPW Act); and
- The *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act).

2.1 *THE NATIONAL PARKS AND WILDLIFE ACT 1974*

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

- A person must not harm or desecrate an object that the person knows is an Aboriginal object.
- A person must not harm an Aboriginal object.

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

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

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

The strict liability offence of harming Aboriginal objects has a number of defences and include the statutory defence of Due Diligence (Section 2.4) through complying with an adopted industry code of practice, or compliance with the conditions of an AHIP.

2.2 *ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979*

The *Environmental Planning and Assessment Act 1979* (EP&A Act) is legislation for the management of development in NSW. It sets up a planning structure that requires developers (individuals or companies) to consider the environmental impacts of new projects. Under this Act, cultural heritage is considered to be a part of the environment. It provides for the identification, protection and management of heritage items through inclusion of these items into schedules off planning instruments, such as Local Environmental Plans (LEPs) or Regional Environmental Plans (REPs). This Act requires that Aboriginal cultural heritage and the possible impacts to Aboriginal heritage that development may have are formally considered in land-use planning and development approval processes.

2.2.1 Federation Local Environmental Plan 2012

The Proposal Area is located within the Federation LGA. Schedule 5 of the LEP 2012 details the included environmental heritage items covered by the plan. No Aboriginal sites or places are identified within close proximity to the Proposal Area in the Federation LEP.

3 GROUND DISTURBANCE

Step 1. Will the activity disturb the ground surface or any culturally modified trees?

The Proposal Area comprises of Lots 1 and 2 DP 199174 and Lot 66 DP 1167493 situated at 169-199 Redlands Road and 42-80 Cemetery Road, Corowa. The proposed residential subdivision would facilitate the development of 335 residential lots with associated roads and services as shown in Figure 1-3 and Figure 1-4.

The proposed residential subdivision works would require significant ground disturbance and the use of heavy machinery. The proposed development activities would include the following:

- removal of native vegetation;
- demolition of existing buildings;
- construction of residential houses and associated roads and services;
- creation of three public reserves for the purposes of drainage and public open space; and
- associated civil works including earthworks, drainage works and construction of roads.

The confirmation that ground disturbance will occur requires that the next step in the Due Diligence process occurs.

4 REGISTER SEARCH AND LANDSCAPE ASSESSMENT

Step 2a. Search the AHIMS Database and other information sources

A search of relevant heritage registers for Aboriginal sites and places provides an indication of the presence of previously recorded sites. A register search is not conclusive however, as it requires that an area has been inspected and any sites are provided to the relevant body to add to the register. However, as a starting point, the search will indicate whether any sites are known within or adjacent to the investigation area. The AHIMS search provides access to the database of previously recorded Aboriginal heritage sites in NSW.

A search provides basic information about any sites previously identified within a search area. The results of the search are valid for 12 months for the purposes of a Due Diligence level assessment. On the 6th of May 2021 a search of the AHIMS database was undertaken over an area centred on the proposal area from Lat, Long -36.1104, 146.2366 to Lat, Long -35.9075, 146.5584 with a Buffer of 50 meters. The AHIMS Client Service Number was 588792. There were 76 Aboriginal sites recorded within this search area and no declared Aboriginal Places. Table 4-1 below shows the breakdown of site types and Figure 4-1 shows the location of the AHIMS sites in relation to the Proposal Area.

Table 4-1 Breakdown of previously recorded Aboriginal sites in the AHIMS search area.

Site Type	Number
Modified Tree	53
Artefact (1 or more)	16
Earth mound and hearth	4
Artefact and Shell	2
Shell	1
TOTAL	**76**

It is clear from these search results that the dominant site type in the area is modified trees. There is a high proportion (69.7%) of scarred trees recorded in the area especially where there are remnant stands of native trees. Scarred trees provide a tangible link to the past and provide evidence of Aboriginal subsistence activities through the deliberate removal of bark or wood. It is likely that the high proportion of scarred trees surrounding

the Proposal Area is related to lack of surveys in the area and the more obtrusive nature of scarred trees when compared to small artefact scatters and isolated stone artefacts.

None of the previously recorded AHIMS sites are within or directly adjacent to the Proposal Area. The closest site to the Proposal Area is COR-B-12, which is located approximately 450 m to the west of the current assessment area. While the site types near the Proposal Area are all listed on AHIMS as artefacts, a review of the survey report by Spennemann (1994) and the site cards indicate that these sites are recorded as earth mound and hearth sites. It is likely that this error in AHIMS regarding the site type is a historical database issue. Therefore, earth mounds and hearths as a site type have a higher proportion of actually occurring in the area then they are currently represented in the AHIMS data and are one of the most common site types recorded in close proximity to the Proposal Area.

4.4 OTHER HERITAGE SEARCHES

Other heritage register searches were also undertaken to identify any items or places in proximity to the project area and its immediate surrounding landscape. The following resources were used as part of this assessment:

- The NSW State Heritage Inventory (SHI) includes items on the State Heritage Register and items listed by state agencies and local Government, to identify any items currently listed within or adjacent to the Proposal Area.
- The Australian Heritage Database (AHD) includes items on the National and Commonwealth Heritage Lists, to identify any items that are currently listed within or adjacent to the Proposal Area.

A total of seven items/places are registered on the Register of the National Estate (RNE) a non–statutory list within the Corowa area, none of which are in close proximity to the Proposal Area.

There were no Aboriginal Places listed under the *National Parks and Wildlife Act* was identified within the Federation LGA and no items listed under the Heritage Act within the Federation LGA.

A total of 72 items are listed by the Local and State Agencies in the Federation LEP. The closest LEP listed item is over 1.5 km east of the Proposal Area.

No other known previously recorded heritage sites or known possible heritage sites are located within or adjacent to the Proposal Area. This Due Diligence assessment does not address any potential impacts to non-Aboriginal heritage items.

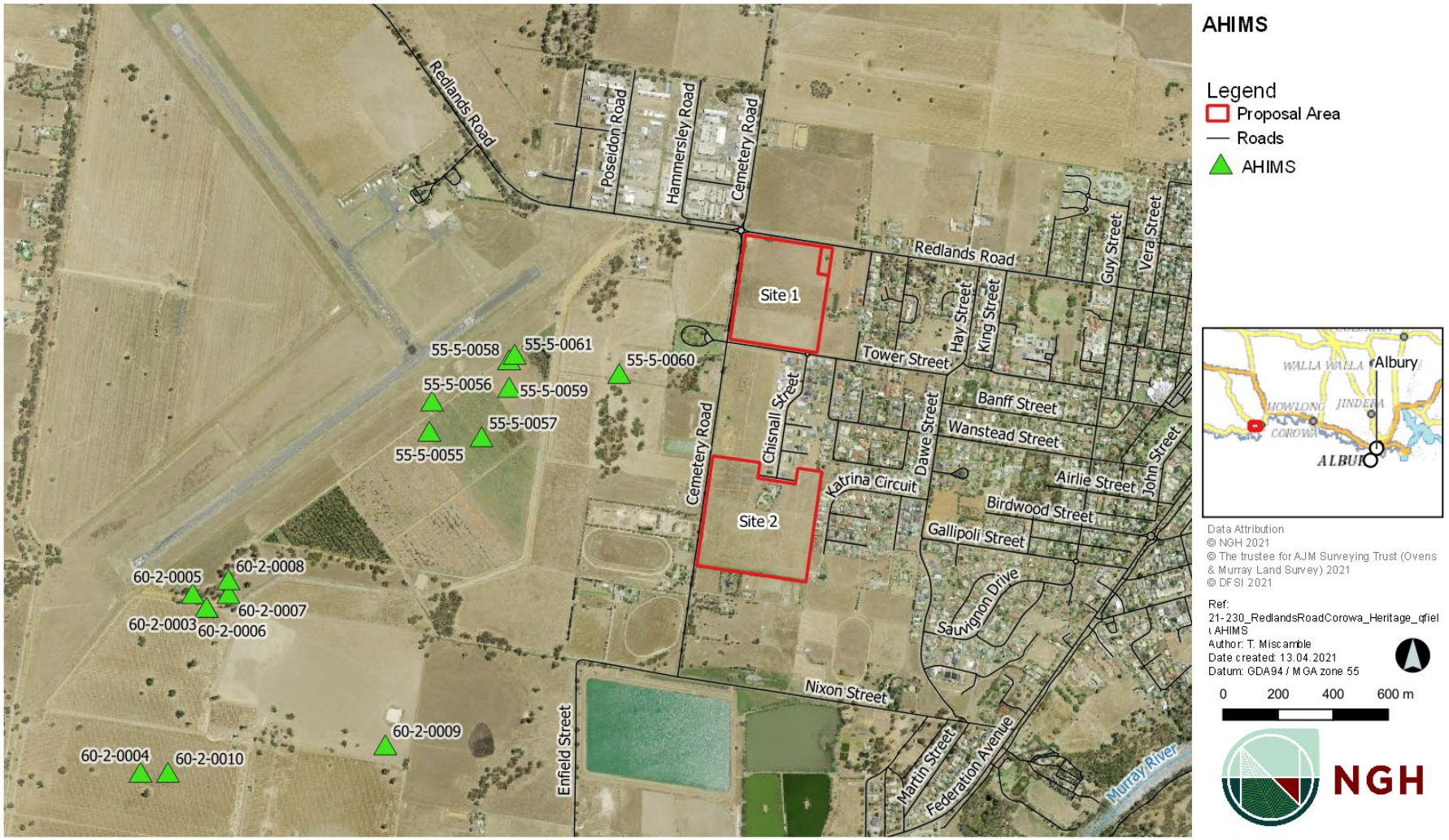

Figure 4-1 AHIMS sites surrounding the Proposal Area

4.5 REGIONAL ARCHAEOLOGICAL CONTEXT

There have been several archaeological surveys conducted in the broader Murray Valley and Murrumbidgee Province with a focus on burials and mounds that contribute to our understanding of the nature of Aboriginal occupation in the region. The major relevant studies are summarised below.

In the 1970's Buchan undertook an extensive survey of the Murray Valley on behalf of National Parks and Wildlife Service over a two year period (Buchan 1974). The survey area was limited to 30 miles north of the river, extending from Albury to Mildura. The survey targeted multiple areas of approximately 300 square miles and included the survey was the Deniliquin area. A total of 198 sites were recorded over the course of Buchan's survey with 52 scarred trees, 33 earth mounds and one surface campsite recorded within the Deniliquin area (Buchan 1974). Buchan noted that ovens, scarred trees, and middens were typically located on the banks of rivers or creeks which suggested the camps were generally located close to a water and food source. Most of the burials were noted to be in sand dunes. Buchan summarised that in general, any areas near a water source were likely to contain sites. Many sites in the area were noted to be under threat from damage or destruction due to intensive cropping and pastoral activities associated with the development of irrigation schemes, roads and dams (Buchan 1974). Most sites were located in proximity to water sources such as creeks, rivers, lakes lagoons, streams and swamps (170) with nine located on dunes and seventeen in open contexts.

In 1980 Simmons identified 75 mounds, 17 scarred trees and a range of other site types including isolated artefacts, hearths, shell middens and burials within the Murray floodplain and along channels. Mounds were the most common site type and generally consisted of abundant clay nodules in association with burnt fragments of shell or bone while the scarred trees were generally all mature River Red Gums. The sites identified by Simmons were all located in close proximity and/or associated with the floodplains, anabranches and lake systems of the Murray Valley and clearly showed the importance of aquatic resources to the local Aboriginal populations in the region.

In 1997 Bonhomme surveyed the Riverine Plain bounded by the Lachlan, Murrumbidgee and Murray Rivers for locations of Aboriginal burials, particularly focussing on burials in sand bodies. Known burial sites in the area were reassessed and several previously unrecorded sites were identified.

In 2001 Pardoe used a total of 918 sites to analyse the nature and distribution of sites in the Murrumbidgee Province. A total of 307 sites and other features were held in the NSW sites register and more than 600 sites/features were added during fieldwork related to the study. It was estimated that mounds, scarred trees, burials and open sites with stone tools are the most frequently recorded site types in the area.

In 2003, the National Parks and Wildlife Service audited the Aboriginal cultural heritage of the Riverina Bioregion with the objective to provide input into the development of a strategic framework for the Riverina Western Regional Assessment (WRA) (Purcell 2003). The report confirmed the correspondence of Aboriginal site types to various landforms in archaeological predictive models. In particular, Purcell found that Aboriginal mound sites in the Riverina are unique to the region and occur at the highest frequency of mound sites in Australia, and that the Riverina has the highest density of Aboriginal burials in Australia. Along with scarred trees, these site types were under significant threat from rural and agricultural development. For example, in irrigation areas where laser levelling has been practised to modify the landscape, all landforms associated with Aboriginal cultural heritage are destroyed.

The conclusion regarding Aboriginal site modelling for the region to date suggests that the most archaeologically sensitive areas occur in association with major water sources, including anabranches and ephemeral and relict lake systems and relatively intact tracts of riverine red gum forest along the floodplains of the major active rivers and creeks, and Black Box fringed depressions. The archaeological sensitivity of

source bordering dunes and lunettes to water sources, prior streams and sand bodies, including scalded environments is also noted.

4.6 LOCAL ARCHAEOLOGICAL CONTEXT

Few local archaeological studies have been conducted within or near the township of Corowa. The known studies which have been undertaken within Corowa are summarised below.

In 1994 as part of an environmental impact assessment of the proposed Corowa Sewerage Augmentation Scheme, Spennemann (1994) conducted a pedestrian survey of two land allotments to the east and north of the airport at Corowa, NSW – an area immediately adjacent and to the west of the current assessment area. The area was a flat alluvial plan above the known flooding level of Cropper's Lagoon. As the survey area was above the floodplains of the Murray and near swamps and wetlands it was anticipated the mounds would be present. During the survey a number of isolated and scattered burnt clay and quartz nodules were noted. In total 15 sites were recorded (COR-B-1 to COR-B-15). The majority of these sites were noted in the report to be oven mounds however they are registered on AHIMS as artefact sites, this is likely a historical database issue. The mounds recorded ranged in size from approximately 4 m x 4 m to 40 m x 60 m. The majority of the mounds contained disturbed scattered surface material with only two small mounds noted to be well preserved. A single potential scarred tree (COR-B-14) which had an accumulation of large quartz boulders at its base was also recorded. The majority of the sites recorded were noted to have been affected by land clearing and modification. A review of the report and photos of the sites indicates that the ‘mounds’ recorded by Spennerman, are not typical of the mound features found elsewhere in the Riverina and Murray river valley and more likely to be ovens or other non cultural features.

In 1999 Kelton carried out an Aboriginal archaeological study for a proposed bridge crossing of the Murray River between Corowa, NSW and Wahgunyah, Victoria. The elevated alluvial terraces located along the survey area either side of the Murray River were considered to be archaeologically sensitive landforms. However, it was noted that disturbances from European land management practices, including the timber clearing, grazing and commercial crop cultivation, urban development, roadworks and maintenance, has been so great that archaeological potential has been significantly reduced and over much of the survey area totally destroyed. Additionally, it was noted that significant erosion had also occurred on both sides of the Murray River. No Aboriginal sites were discovered during the field survey and Kelton noted that had any evidence of Aboriginal occupation been previously located in the study area it would have been subsequently removed by flooding and the erosion and collapse of the riverbank which was observed across the works area on both the NSW and Victoria riverbank locations for the proposed bridge. One area of Potential Archaeological Deposit (PAD) was identified on the Victorian side of the riverbank as it was only partially disturbed, and monitoring was recommended at this location.

In 2001 Oakley conducted a survey for Aboriginal and European archaeological sites on the proposed Whitehead Street Wetland site in Corowa for the Snowy Mountains Engineering Corporation. The study area was located approximately 1 km north from the Corowa Post Office and approximately 800m west of the Murray River, was bounded by Whitehead Street and Bullicourt Road. The area was situated about 10 m above the Murray River on the alluvial plain and comprised a borrow pit located within a swampy depression of grey clay. On the basis of previous archaeological studies within the Region and the Albury Wodonga/Corowa district, Oakley predicted that the study area could contain archaeologically sensitive landform features associated with the Murray River Basin such as source bordering dunes, levees, scalds, and billabongs. Where such landforms had not been subjected to clearing, isolated scarred trees, burials, campsites, middens, mounds, and hearths may persist. The survey found and recorded one probable Aboriginal archaeological site, a scarred tree WSWST (Whitehead Street Wetland Scarred Tree), located on the floodplain adjacent to the swampy depression. However, Oakley assessed the probability of sub-surface archaeology to be nil due to the low-lying and regularly inundated nature of the study area.

4.7 LANDSCAPE ASSESSMENT

Step 2b. Are there undisturbed landscape features likely to contain Aboriginal objects?

The Due *Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* outlines a range of landscape features that have higher potential to contain Aboriginal objects. It is also necessary to consider whether there are landscape features of undisturbed land that may contain Aboriginal objects. These include land that is:

- within 200m of water;
- located within a sand dune system;
- located on a ridge top, ridge line or headland;
- located within 200m below or above a cliff face; or
- within 20m of a cave, rock shelter or cave mouth.

Understanding the landscape context of the Proposal Area may also assist in better understanding the archaeological modelling of the area and assist to identify local resources which may have been utilised by Aboriginal people. This information can then potentially be used in predicting the nature of Aboriginal occupation across the landscapes within and adjacent to the Proposal Area. Factors that are typically used to inform the archaeological potential of landscapes include the presence or absence of resources that would have been utilised by Aboriginal people including water, animal and plant foods, stone and other resources.

The national Interim Biogeographic Regionalisation of Australia (IBRA) system identifies that the Proposal Area is located within the NSW Riverina Murray Fans (DE&E 2016). The dominant IBRA subregion affected by the proposed works is the Murray Fans subregion. This bioregion is dominated by river channels, floodplains, backplains, swamps, lakes and lunettes that are all of Quaternary age. The region comprises three overlapping alluvial fans centred on the eastern half of the Murray Basin. Features of each fan differ slightly because of differences in the discharge of the streams. (DE&E 2016).

4.7.1 Geology

The surface geology of the Proposal Area is the Shepparton Formation, which forms extensive flat alluvial floodplains and features unconsolidated to poorly consolidated mottled variegated clay, silty clay with lenses of polymictic, coarse to fine sand and gravel; partly modified by pedogenesis, includes intercalated red-brown paleosols. To the immediate east of the Proposal Area, an elevation of the Wagga Group lithostratigraphic unit rises and upon this the majority of Corowa's township development has occurred. From an archaeological perspective this area is materially important not only for its elevation above the flood plain, but also for its composition of quartzose siltstone, sandstone, quartz-mica schist, pelite, chert, locally metamorphosed; minor quartzite, graphitic schist and hornfels. Some of these materials may have provided stone resources for Aboriginal people.

4.7.2 Topography and Hydrology

The topography of the Proposal Area is a mostly flat alluvial plain within the Murray Fans of the Riverina region. There are no watercourses or defined drainage lines identified within Site 1 while Site 2 has a small drainage channel that runs along the southern boundary. The Proposal Area is located approximately 1.4 km north-west of the Murray River. The Murray River would have been a focal point in the landscape and occupied by

various groups throughout different times of the year and the Proposal Area would have been traversed by groups travelling throughout the region and using the associated back country of the Murray River.

4.7.3 Soils

There is no soil landscape information available from DPIE's eSpade for the Proposal Area. Instead, the broader soil descriptions are instead taken for the subject site from the Mitchell Landscape descriptions (DECC 2002), which describes the Murray Scalded Plains as:

Quaternary alluvial plains with extensive scalding interpreted as relic floodplains, terraces or part of the Cadell tilt block. Red brown texture-contrast soils with extensive scalds. Prior stream channels of deep coarse sands with sandy levees and grey, brown and red cracking clays in depressions, relief 5 to 15 m.

4.7.4 Vegetation

The information provided herein is intended as a generalised summary of the endemic flora and fauna present within the Proposal Area and local area and is not to be used as a substitute for detailed ecological studies and assessments. However, it may be inferred that prior to human disturbance the Proposal Area would have been heavily vegetated and would have supported a wide variety of resources to any people living there. The vegetation in the region varies based on the soil landscapes and is described below.

The Murray Scalded Plains soil landscape is characterised by a vegetation community consisting of formerly open woodland and grasslands of:

"white cypress pine (Callitris glaucophylla), grey box (Eucalyptus microcarpa), bull oak (Allocasuarina luehmannii), and myall (Acacia pendula) with annual grasses and herbs" (DECC 2002).

Site 1 is noted to be clear of vegetation with the exception of a peppercorn tree in the north east corner of the site and a dead yellow box in the south west corner of the site. Site 2 is noted to be clear of vegetation with the exception of rural paddock grasses and planted landscaping trees in proximity to the existing dwelling. A number of yellow box trees adjoin the boundary of the Proposal Area which are located within the Cemetery Road reserve.

Noting that a modified tree (unidentified species) has been recorded within 2 km of the Proposal Area (Spennemann 1994), any mature native vegetation should be closely inspected for evidence of cultural scarring.

4.7.5 Historic Land Use

The Proposal Area has been mostly cleared, cropped and grazed. The area to the west of the Proposal Area has also been developed to create the Corowa airfield.

4.8 ABORIGINAL SITE PREDICTION

Based on the assessment of information from the environmental context and results of previous archaeological studies in and around the area, several predictive modelling statements can be made. There are included in Table 4-2 below.

Table 4-2. Aboriginal Site Prediction Statements

Site Type	Site Description	Potential
Mounds	Mounds are artificially raised areas rising above generally low-lying or wetland surroundings. Usually low elevations ranging from 10 to 30 m in diameter and from 0.2 to 1.5m in height. On average mounds are less than 0.4m high. Mounds may contain archaeological deposits including heat retainers of stone and/or clay nodules, charcoal and stone artefacts. Mounds are commonly distributed near swamps and minor watercourses, where food resources would have occurred.	High potential to occur within Proposal Area, which meets landscape site description for where mounds commonly occur. Additionally a number of disturbed mounds are recorded to the west of the Proposal Area.
Hearths/Ovens	Hearths/Ovens are identified by burnt clay used for heat retainers. Some are recorded in the district in association with resource locations. However, they could occur either independently or in association with other Aboriginal cultural features such as campsites.	While it is possible for this feature to occur, they would likely be disturbed or previously destroyed by farming activities.
Modified trees	Trees that have undergone cultural modification.	Potential to occur within the Proposal Area in areas where there are remnant mature native trees.
Artefact Scatters and Isolated Finds	Artefact scatter sites can range from high-density concentrations through to isolated finds.	Moderate potential to occur within the Proposal Area
Potential Archaeological Deposits (PADs)	Potential subsurface deposits of archaeological material	Potential to occur within Proposal Area in areas of elevated flat land associated with ephemeral drainage lines or wetlands. Low potential to occur in highly disturbed area. Any areas previous undisturbed may however have some potential for archaeological deposits, albeit in low densities.
Shell Middens	These are the accumulation of shell material disposed of after consumption. Such places are found along the edges of significant waterways, swamps and billabongs.	No such natural undisturbed features occur and therefore this site type is unlikely to exist in the Proposal Area.

The Murray River would have been a focal point in the landscape and occupied by various groups throughout different times of the year and the Proposal Area would have been traversed by groups travelling throughout the region. The desktop assessment therefore indicates that there are landscapes present within the Proposal Area that have the potential to contain Aboriginal sites, particularly given that a number of mounds have previously been recorded within proximity to the Proposal Area and its relatively close proximity to the Murray River. Additionally, any old growth mature native trees within the Proposal Area have the potential to have been culturally modified.

5 IMPACT AVOIDANCE

Step 3. Can any AHIMS listed objects, or landscape features be avoided?

The proposed residential subdivision is located on a flat alluvial plain approximately 1.4 km north-west of the Murray River. While the subdivision Lot boundaries are unlikely to be able to be amended, the exact footprint of the proposed works may be flexible and may consequently be able to be redesigned to avoid sensitive landscape features or sites which may be recorded within the Proposal Area. The results of the visual inspection should therefore inform options around the potential to redesign the proposed works to avoid any heritage sites or areas of potential archaeological deposit that may be identified.

The desktop assessment alone is therefore not sufficient to conclusively appraise the archaeological potential of the landscape or the location of any Aboriginal objects and the next step in the process, a visual inspection, must be conducted to properly appraise the presence and potential for Aboriginal objects to occur within the Proposal Area.

6 DESKTOP ASSESSMENT AND VISUAL INSPECTION

Step 4. Does the desktop assessment confirm that there are likely to be Aboriginal objects present or below the ground surface?

The assessment process is primarily a desktop exercise, using available information such as the AHIMS search results and relevant archaeological reports that have been previously completed in the area. Visual inspection is also required where landscape features are present that may contain sites. The desktop assessment indicated that there are landscapes present within the Proposal Area that have the potential to contain Aboriginal sites, particularly given that a number of mounds have previously been recorded within proximity to the Proposal Area and its relatively close proximity to the Murray River.

A visual inspection of the Proposal Area was undertaken on 15th of April 2021 by qualified NGH archaeologist Jill Taylor.

Site 1 was examined on foot using transects and targeting areas of exposed ground and features identified in aerial photography. The visibility within the Site 1 varied from 90% within the limited exposures to less than 5% in areas of dense grass cover and was generally poor averaging 10%. Site 1 was very slightly undulating with an east to west tending slope. Area 1 was cleared with only one mature peppercorn in the northeast corner which was examined for Aboriginal cultural modification. The peppercorn did not show any scarring that was considered to conform in any way to the standard scarring morphology accepted for Aboriginal modification (Long 2005).

Aerial photography indicated that there were several circular features in the south eastern portion of Site 1. Due to the proximity of the Proposal Area to previously recorded mound sites, these circular features were targeted and closely inspected. The circular features were obvious during the survey due to the presence of Mallow weed (*Malva neglecta*) which occurred almost exclusively within these areas (See Plate 2). While the soil was a slightly darker shade within the circular features, there was no indication that they were of an Aboriginal cultural nature. The circular features were neither a depression or a mound, there was no indication of the presence of charcoal, bone, shell, stone artefacts or dark burnt soil that would be present if they were cultural mounds or ovens and there was no evidence of clay or stone heat retainers which were present in large quantities and large sizes at previously recorded sites in the area. It was concluded that the circular features were a result of animal feeding troughs and the compaction of soil from prolonged use of the area by

cloven hoofed animals. This was further demonstrated with the almost exclusive presence of Mallow weed surrounding a water trough adjacent to the circular features (See Plate 3).

The northwest corner of Area 1 was highly disturbed through the building of an agricultural dam. The raised dam embankment provided the only opportunity for surface inspection within Site 1 due to the dense grass cover elsewhere. The exposed ground showed the subsoil to have a high clay content with the presence of concretions and small, ironized nodules indicative of an periods of inundation consistent with a floodplain environment (Plate 4) and lacked any depth of deposit to support sub-surface or *in situ* cultural deposits.

A water or sewer main pipeline was located 50 m east of the western boundary of Site 1 and ran north to south for the entire length of the property. Due to the very thick ground cover only the access hole was visible (Plate 5), but aerial photographs indicated that the disturbance of the pipeline when built was approximately 5 m wide. The construction of this pipeline would have significant impact on any *in situ* cultural objects if present. Further disturbance occurred in the southwest corner of Site 1 where the remains of a modern brick building had been dumped and piled presumably using large machinery (Plate 6).

Site 2 was characterised as flat, low lying floodplain with poor visibility due to heavy grass cover and consisted of three cleared paddocks and a residence with associated outbuilding, utilities and large gravel driveway. Visibility within Site 2 was generally poor, averaging 25%. No mature native trees were present within Site 2.

The southern paddock was the largest of the three and had the most favourable visibility having recently been grazed (Plate 7). While the ground surface was still mostly covered in dense short grass it did allow for any features or anomalies (such as clay or stone heat retainers from mound sites) to be evident if present. The soil exposed through stock trails and pipelines appeared to contain a high clay content with very little potential for sub surface deposits. The water or sewer main pipeline that was present within Site 1 continued throughout Site 2 running north-south 60 m east of the western boundary and then turning in a 90-degree angle and running west to east 30 m from the southern boundary (Plate 8). The west to east running pipeline had multiple access holes approximately every 80 m. Two circular features were also noted in the southern paddock and closely inspected (Plate 9) it was apparent they were formed as a result of the decomposition of round hay bales, the subsequent injection of nutrients into the soil and trampling of animals accessing the hay. No Aboriginal objects or sites were recorded within the southern portion of the Site 2 and due to the flat low-lying nature of the landscape and shallow clay soils it was deemed low potential for Aboriginal objects or archaeological deposits.

The area surrounding the residence was heavily disturbed with the presence of an approximate 10 m wide graded and gravelled driveway and turn around, the house itself with associated utilities, a number of sheds, general disturbances from household use and the planting of trees and gardens. No Aboriginal objects or sites were recorded within the residential portion of Site 2 and due to the high level of disturbance and the flat low-lying nature of the landscape and it was deemed low potential for Aboriginal objects or archaeological deposits.

The visibility in the two northern paddocks was poor due to thick long grass cover. The western paddock was moderately disturbed with evidence of stockpiling, dumping and general digging. A large dirt turnaround was present in the northern portion and the exposed ground was littered with gravels and broken glass and showed the shallow clay soil composition as expected. The visibility in the eastern paddock was slightly improved with the recent introduction of sheep grazing, but visibility was still limited due to heavy grass cover. Due to the flat low-lying nature of the landscape and shallow clay soils it was deemed low potential for Aboriginal objects or archaeological deposits.

Plate 6-1 View south from centre of Site 1 Visibility was overall quite poor

Plate 6-2 The Presence of Mallow Weed within the circular features in Site 1.

Plate 6-3 The presence of Mallow weed at water trough.

Plate 6-4 Shallow clay soil exposed at dam embankment

Plate 6-5 Sewer main within Site 1. View is to the north west towards the dam.

Plate 6-6 Pile of modern building materials in southwest corner of Site 1.

Plate 6-7 View north from the southern paddock of Site 2

Plate 6-8 View west along the west to east pipeline within Site 2.

Plate 6-9 View south toward two circular features within Site 2.

Plate 6-10 View north from north west paddock of Site 2.

7 FURTHER ASSESSMENT

Step 5. Is further investigation or impact assessment required?

The Due Diligence Code of Practice states that if, after the desktop research and visual inspection is completed, it is evident that harm will occur to Aboriginal objects or heritage places then further and more detailed assessment is required. However, if the research and inspection conclude that there are no, or unlikely to be any, objects impacted by the proposed activity, then the activity can proceed with caution.

Subsequent to the pedestrian survey of Site 1 the following conclusion was made. As the topography of the area is a low-lying floodplain and would not have been conducive to Aboriginal occupation, the shallow clay soils are not conducive to subsurface deposit, the circular features shown in aerial photographs are clearly a result of animals utilising feeders and there is no physical evidence of Aboriginal cultural mounds through

changes of topography and presence of heat retainers, Area 1 was deemed to have low archaeological potential for Aboriginal objects.

No Aboriginal sites or objects were recorded within the Stage 2 Proposal Area. The Proposal Area was assessed to have low potential to contain *in situ* subsurface deposits due the low-lying flat nature of the floodplain that would not have been conducive to occupation by Aboriginal people and the shallow clay soils. It may be concluded therefore, that the proposed works within the Proposal Area are unlikely to impact on Aboriginal heritage objects.

As no Aboriginal objects or areas of archaeological potential were identified within the Proposal Area it is concluded that the proposed subdivision on Redlands Road and Cemetery Road, Corowa, as assessed in this report, would not require any further Aboriginal heritage investigation and works can proceed with caution.

8 RECOMMENDATIONS

The following recommendations are based on a number of considerations including:

- Background research into the area;
- Landscape assessment;
- Field inspection;
- Consideration of the proposed works, and
- Legislative context for the development proposal.

Based on an assessment of the project, the location and previous level of disturbance, the proposed work can proceed with caution with the following recommendations.

1 Works within the Proposal Area may proceed with caution.

2 Any proposed activity outside of the current assessment area should also be subject to an Aboriginal heritage assessment.

3 If any items suspected of being Aboriginal in origin are discovered during works, all work in the immediate vicinity must stop and Heritage NSW must be notified. The find will need to be assessed and if found to be an Aboriginal object an Aboriginal Heritage Impact Permit (AHIP) may be required.

4 In the unlikely event that human remains are identified during works, all work must cease in the immediate vicinity and the area must be cordoned off. The proponent must contact the local NSW Police who will make an initial assessment as to whether the remains are part of crime scene or possible Aboriginal remains. If the remains are thought to be Aboriginal, Heritage NSW must be notified.

Ovens and Murray Land Survey is reminded that it is an offence under the *NSW National Parks and Wildlife Act 1974* to disturb, damage or destroy any Aboriginal object without a valid Aboriginal Heritage Impact Permit (AHIP).

9 REFERENCES

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