

# Appendix C

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## Preliminary heritage assessment





# Aboriginal and Historic Heritage Constraints Assessment Report

WYANGALA DAM WALL RAISING

Prepared for WaterNSW  
February 2020





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# Three Dams Project - Wyangala Dam

## Aboriginal and Historic Heritage Constraints Assessment Report

### Report Number

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J190822 RP 1

### Client

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Water NSW

### Date

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12 March 2020

### Version

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v3 Final

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# 1 Introduction

## 1.1 Project overview

The passing of the NSW *Water Supply (Critical Needs) Act 2019* on 14 November 2019 has declared '3 Dams' to be critical State significant infrastructure (CSSI) under the provisions of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The '3 Dams' are Wyangala, Dungowan and Mole River dams. These CSSI projects require approval from the NSW Minister for Planning and Public Spaces, and applications for the projects are required to be accompanied by an environmental impact statement (EIS) that has been prepared in accordance with environmental assessment requirements issued by the Secretary of the NSW Department of Planning, Industry and Environment (DPIE); referred to as SEARs.

It is possible that the 3 Dams will also require approval by the Commonwealth Minister for the Environment under the provisions of the Commonwealth *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act). If so, it is likely that the Commonwealth would accredit the assessment process of the EP&A Act, meaning that the EIS prepared under the EP&A Act would be used to form the basis of the assessment under the EPBC Act.

The need to deliver the dams is critical to the State's drought recovery process and needs to be completed to the highest standard in relation to the assessment and delivery. Each dam is to be constructed rapidly to create security for the various town water supplies and associated industries reliant on the delivery of water for viability.

This Aboriginal and historical heritage constraints assessment has been prepared by EMM Consulting Pty Limited (EMM) specifically for the proposed Wyangala Dam Raising project (the project). Wyangala Dam is located entirely within the Lachlan River catchment approximately 30 km south-east of Cowra in NSW (Figure 1.1). The project includes:

- raising of the embankment dam and full supply level (FSL) by up to 10 metres (m);
- raising the height of the intake towers by up to 10 m;
- taking down and reinstalling the two access bridges at the raised dam crest level;
- widening of the spillway towards the south by about 110 m to provide sufficient flood discharge capacity to cater for the peak probably maximum flood (PMF) discharge;
- constructing a 6 m tall 150 m long embankment across a saddle at approximately 600 m northeast of the existing embankment; and
- relocating services and structures affected by the raised FSL.

## 1.2 Purpose of constraints assessment

The purpose of this constraints assessment is to:

- collate existing Aboriginal and historic heritage information for the project footprint and immediate environs to identify established knowledge and areas where further understanding is needed; and develop predictions about the nature, composition and extent of Aboriginal and historic heritage that may be within the project footprint;
- supplement desktop research with limited site inspection to test archaeological predictions, verify areas of archaeological potential, and guide future investigations;

- identify and discuss opportunities and constraints in relation to Aboriginal cultural and historic heritage, including risks to project approvals, timeframes and design; and
- provide recommendations for future assessment and approval pathways in relation to Aboriginal and historic cultural heritage.

### 1.3 Definitions

For the purpose of this constraints assessment, project definitions and descriptions are presented in Table 1.1.

**Table 1.1 Project definitions**

<b>Term</b>	<b>Definition / Description</b>
Inundation area	Area between new and existing full supply level (FSL) as shown on Figure 1.1. This has been used to estimate nature and scale of potential impacts to Aboriginal sites and natural landscapes from inundation.
Project footprint	Inundation area plus operational and construction footprints. This term has been used to describe the full scope of potential impacts from the project.
Project area	A nominal area surrounding the project footprint. For scale we will adopt 10 km buffer
Study area	The study area includes the final surface level of the proposed dam, plus a 50 metre (m) buffer.



Source: EMM (2020); WaterNSW (2020); DFSI (2017); ELVIS (2014/2015); DPI (2013)

\*Inundation area should be considered approximate only. It is based on current limited available spatial data and is subject to future verification.

**KEY**

- Project footprint
- Local government area
- Major road
- NPWS reserve
- Named watercourse
- State forest
- Named waterbody
- Lachlan River catchment (inset)

**Regional context**

Wyangala Dam Wall Raising Project  
Environmental constraints assessment  
Figure 1.1



\\emmsvr1\emms\loba\2019\190822 - 3 Dams\GIS\02\_Maps\_ConstraintsAssesment\WD\_ECA001\_RegionalContext\_20200226\_06.mxd 26/02/2020

## 1.4 Legislative context

### 1.4.1 Commonwealth Aboriginal and Torres Strait Islander Heritage Protection Act 1984

The *Aboriginal and Torres Strait Islander Heritage Protection Act (ATSIHP Act) 1984* preserves and protect areas (especially sacred or intangible sites) and places of particular significance to Aboriginal people from damage or destruction. Steps necessary for the protection of a threatened place are outlined in a gazetted Ministerial Declaration (ATSIHP Act sections 9 and 10); and which can result in a cessation of any development activity.

In addition, the ATSIHP Act also protects objects by Declaration, notably Aboriginal skeletal remains (Section 12). This can be applied at a Commonwealth level where a state is unwilling or unable to provide such protection.

While currently, the project footprint is not subject to any applications for protection, such an action can be undertaken by any Aboriginal person where it is felt cultural heritage is at threat from destruction. Recent examples of such actions include declared Butterfly Cave (West Wallsend) and Bellwood Sacred site (Nambucca Heads), conserved as a result of potential impacts from proposed residential and infrastructure developments. Perhaps more pertinently are the recent archaeological finds at the stabling yard at Randwick, NSW, identified as part of the Transport for New South Wales Sydney light rail construction, which ultimately resulted in a failed application, but which caused additional investigations, reporting and delays to the project.

### 1.4.2 Commonwealth Native Title Act 1993

The Commonwealth *Native Title Act 1993* (NT Act) provides recognition and protection for native title. The NT Act establishes the managing body, National Native Title Tribunal (NNTT), who administers native title claims to rights and interests over lands and waters by Aboriginal people. It also administers the future act processes that allow proponents to identify and manage potential native title issues for a given activity on a site where a claim has yet to be made or finalised.

In addition, the NT Act provides for Indigenous Land Use Agreements (ILUA), which is an agreement between a native title group and others about the use and management of land and waters. ILUAs were introduced as a result of amendments to the NT Act in 1998. They allow people to negotiate flexible and bipartisan agreements to suit their particular circumstances often circumventing lengthy timeframes associated with the native title process. An ILUA can be negotiated over areas where native title has, or has not yet, been determined. They can be part of a broader determination or settled separately.

No active or finalised claims or ILUAs are present within the project area. On the very eastern margins of the project area are two future act notices (NS NS2017/0006 and NS2000/0076) that are usually lodged under section 24 of the NT Act by a non-claimant to provide protection of activities from future claims. Parts of the study area are encompassed within Crown land, and as such can be subject to a claim in certain situations, and which may pose a risk to the development.

### 1.4.3 Commonwealth Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities, heritage places and water resources which are defined as matters of national environmental significance (MNES) under the EPBC Act. These are:

- world heritage properties;
- places listed on the National Heritage Register;
- Ramsar wetlands of international significance;

- threatened flora and fauna species and ecological communities;
- migratory species;
- Commonwealth marine areas;
- the Great Barrier Reef Marine Park;
- nuclear actions (including uranium mining); and
- water resources, in relation to coal seam gas or large coal mining development.

Under the EPBC Act, a person proposing to take an action that may or will have a significant impact on MNES is to refer the action to the Commonwealth Department of the Environment and Heritage (DoEE) for determination as to whether or not it is a controlled action. The *Significant Impact Guidelines 1.1: Matters of National Environmental Significance* (DoEE 2013), outline a 'self-assessment' process including detailed criteria to assist persons in deciding whether or not a referral may be required, and if the proposed action may have a significant impact on MNES. If deemed a controlled action the project is assessed under the EPBC Act and a decision made by the Commonwealth Minister for the Environment as to whether or not to grant approval.

At this stage, it is assumed referral under the EPBC Act will be undertaken, due to the potential presence of threatened ecological communities and species. In relation to Aboriginal cultural heritage, the project footprint has no sites or places listed on the CHL or NHL.

#### 1.4.4 NSW Environmental Planning and Assessment Act 1979 (NSW)

The EP&A Act and *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) form the statutory framework for environmental assessment and planning approval in NSW. Implementation of the EP&A Act is the responsibility of the Minister for Planning and Public Spaces, statutory authorities and local councils.

The Wyangala Dam Wall Raising Project has been declared CSSI in accordance with the provisions of Schedule 3 of the *Water Supply (Critical Needs) Act 2019*. As a result, the project may be carried out without obtaining development consent under Part 4 of the EP&A Act. However, the Project is subject to Division 5.2 of the EP&A Act, which requires the preparation of an environmental impact statement (EIS) and the approval of the NSW Minister for Planning.

Secretary's Environmental Assessment Requirements (SEARs) will be issued by DPIE for the project following submission of the scoping report. The SEARs identify matters which must be addressed in the EIS and essentially form its terms of reference.

Under section 5.22(2) of the EP&A Act, environmental planning instruments (EPIs), including SEPPs, do not apply to CSSI. In addition, under sections 5.23 and 5.24 of the EP&A Act, certain approvals under separate NSW legislation are not be required for CSSI projects (section 5.23) or would be required to be issued consistent with the planning approval, if granted, (section 5.24).

#### 1.4.5 National Parks and Wildlife Act 1974 (NSW)

The NSW *National Parks and Wildlife Act 1974* (NPW Act) provides protection for Aboriginal objects and places across NSW:

- An Aboriginal object is defined as: *any deposit, object or material evidence (not being a handcraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains.*
- An Aboriginal place is defined as: *any place declared to be an Aboriginal place under section 84.* This is a very specific piece of legislation that provides process and management of Aboriginal sites of cultural, but not necessarily scientific, values. They are commonly, but not always associated with intangible values.
- Any place declared to be an Aboriginal place by the NSW Minister for the Environment, under Section 84 of the NPW Act.

It is an offence to disturb Aboriginal objects or places without an Aboriginal Heritage Impact Permit (AHIP), which is outlined in section 90 of the NPW Act. However, pursuant to section 5.23 of the EP&A Act, AHIPs under section 90 of the NPW Act are not required for CSSI projects. Notwithstanding this, management of Aboriginal heritage is addressed through processes dictated in the process for applying for AHIPs.

The study area contains numerous identified and potential Aboriginal objects. While obtaining AHIPs under this Act is not required for a CSSI project, other aspects of the Act may remain relevant; and guidelines stemming from the NPW Act currently form best practice for cultural heritage

#### 1.4.6 NSW Aboriginal Land Rights Act 1983

The NSW *Aboriginal Land Rights Act 1983* (ALR Act) provides process and protocols for the transfer of vacant Crown land ownership to a Local Aboriginal Land Council (LALC), where the land is not for an essential public purpose or for residential land. These lands are then owned, managed and maintained by the LALC.

Parts of the project footprint include Crown land, and as such can be subject to a claim in certain situations, which may pose a risk to the development. Those areas of the project footprint that are within freehold land would not be permissible for a claim under this Act.

#### 1.4.7 NSW Heritage Act 1977

The *Heritage Act 1977* (Heritage Act) is the primary Act that protects non-Aboriginal (historical) heritage in NSW. Protection applies to built heritage, landscapes and relics; while 'relic' is a defined term under the Heritage Act, there is nothing that expressly protects 'built heritage' and 'landscapes' unless they are listed by the Heritage Council or identified by experts. The Heritage Council is made under Part 2 of the Act to recommend the listings, on the State Heritage Register (SHR), of nominated places to the Minister and to make decisions about the care and protection of heritage places that are listed on the SHR. The Act is administered by the delegates of the Heritage Council.

Items on the SHR are protected from demolition and detrimental change that would reduce their significance to the state of NSW. The Heritage Act defines:

- *relic* as: *any deposit, artefact, object or material evidence that:*
  - a) *relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement; and*
  - b) *Is of State or local heritage significance.*
- *4A Heritage significance*
  1. In the Heritage Act (Part 1; section 4A):
    - **State heritage significance**, means significance to the State in terms of the historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value of a place, building, work, relic, moveable object or precinct.
    - **Local heritage significance**, means significance to an area in relation to the historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value of a place, building, work, relic, moveable object or precinct.
  2. An item can be both of State heritage significance and local heritage significance. An item that is of local heritage significance may or may not be of State heritage significance.
  3. The Heritage Council must notify the Minister of the proposed criteria for the making of decisions as to whether an item is of State heritage significance and of any proposed change to the significance criteria. If the Minister approves the significance criteria or any proposed change, the Minister is to cause notice of the criteria or any change to be published in the Gazette.
  4. The Heritage Council must use only criteria published in the Gazette under this section for the making of decisions as to whether an item is of State heritage significance.

It is an offence to:

disturb or excavate any land knowing or having reasonable cause to suspect that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed unless the disturbance or excavation is carried out in accordance with an excavation permit (Division 9, Section 139 of the Heritage Act).

In addition, it is an offence to demolish, despoil, excavate, carry out development, alter a building, work, relic or moveable object or damage or destroy vegetation within the curtilage of a heritage item on the SHR or that has interim heritage orders.

However, pursuant to section 5.23 of the EP&A Act, permits under section 60 and 140 of the Heritage Act are not required for CSSI projects. Notwithstanding, the investigation and management of items of historical significance and relics (including those identified in contemporary studies) is dictated by guidelines published by the NSW Heritage Council. Therefore, while obtaining permits to excavate or destroy relics or make changes to items on the SHR (none of which appear in the Project footprint), other aspects of the Act remain relevant including s146, which requires notification to the Heritage Council of newly discovered relics.

## 2 Background research

### 2.1 Data and methods

The preliminary assessment involved the following data and methods:

- A search of Native Title Vision to determine issues under the *Native Title Act 1993*;
- A search of the Department of Environment and Energy's national and commonwealth heritage lists to identify any Aboriginal sites or places within the project area and immediate environs;
- A search of the Cowra Local Environment Plan (LEP) (2012), Boorowa LEP (2012), Bathurst LEP (2014), and Upper Lachlan LEP (2010) and the heritage and conservation registers (s170) to identify any Aboriginal and/or historic heritage listed in Schedule 5 of this document;
- A search of the Aboriginal Heritage Information Management System (AHIMS) database to identify previously documented Aboriginal objects within the project area and immediate environs. Searches were generally expanded up to 100 Aboriginal sites or 1,000km<sup>2</sup> – the permissible limits of any search – to provide regional context of any findings;
- A review of existing environmental and archaeological reports documented within the AHIMS database, and/or other repositories and accessible within the time constraints of the study;
- The development of Aboriginal heritage predictions based on the information compiled from the data above to identify gaps and focus future field investigations; and
- A site inspection of the project footprint to validate the findings of data above and identify any further areas of archaeological potential.

### 2.2 Results

#### 2.2.1 Existing environment

The project area is located within the NSW South West Slopes Bioregion (NSS) within the Upper Slopes Granites subregion and is characterised by foothills and isolated pockets of steeper ranges. The study area falls predominantly within a terrain of narrow ridges, steep slopes and gullies transitioning to undulating plains further south along the Lachlan River (Figure 2.1). This environment encompasses several different soil landscapes, including Copperhannia and related Trunkey in the eastern portion of the study area, and the Wyangala landscape and related Pine Mountain and Garland soil landscapes in the west and south (King 1998). The Copperhannia and Trunkey soil landscapes are generally situated on Adaminaby group geology, which consists of quartz sandstone, shale, slate, chert and greywacke from the Ordovician period. The landforms range from rolling to steep hills with long slope lengths (500-1400 m) and local relief ranging from 100-200 m. The dominant soils within this landscape are shallow sands and loams with a thin A1 horizon on upper slopes. The Wyangala, Pine Mountain and Garland soil landscapes occur in association as landscapes that have formed on granite or similar geology from the Silurian period. The landforms range from rolling hills to steeper hills with granite outcrops, which are particularly extensive near the Wyangala Dam. Slope lengths range from 400-600 m with gradients between 10-25% though some can reach up to 40% within the Pine Mountain soil landscape. Local relief ranges from 40-170 m. The dominant soils are siliceous and/or loamy sands.

Hydrologically, the study area is entirely within the Lachlan River catchment (Figure 2.2). This is a substantial (8<sup>th</sup> order) inland river that formed the focus of early European investigations, and was likely extensively used by Aboriginal people in the past. The Dam is situated on its confluence with the Abercrombie River, another significant river system of the region. The establishment of the Wyangala Dam between 1928-1935, and modified in the 1960s dammed the Lachlan and inundated an area of some 54 km<sup>2</sup>. With the exception of the dam activities, remaining development in the region has been fairly limited, and constrained to farming, pastoralism and/or low density residential activities.

The existing environment heavily influences the potential types of cultural material that may be present and survive in the study area. The geological formations, including incised valleys and rock outcrops, are essential for rockshelters and associated features (such as art) (Figure 2.2). The shallow soil profiles and numerous slopes (prone to natural and anthropogenic erosion) make the potential for substantive buried cultural stone artefact deposits less likely. While the presence of major water courses would have been a key resource for past occupation, they can be subject to significant flooding and scouring especially in the narrow valleys of the study area (Figure 2.2). As such, evidence of past occupation may be more likely to occur on elevated areas (perhaps ridgelines) above these water courses, despite their riverbanks likely heavily used in the past. However, against these areas of past visitation and occupation must be contrasted the inundation of the study area by the existing Wyangala Dam. Direct impacts in the immediate vicinity of the dam are likely to have been substantial, but the impacts from inundation are less clear with lowering of other dams frequently revealing cultural material intact. Regardless, the inundation does mean that much of the original river's edge and immediate environs are now underwater.

### 2.2.2 Ethnographic record

Wyangala Dam falls within the traditional country of the *Wiradjuri* peoples, the largest group in NSW, which extends west from the Great Dividing Range to Hay in the west, Nyngan in the north and south as far down as Albury (Tindale 1940; Tindale 1974; Attenbrow 2010).<sup>1</sup> As with many of the Aboriginal populations in semi-arid to arid environments, they appear to have practised a form of 'regional nomadism' (Tobler et al. 2017), whereby resources were only visited and/or occupied for a brief time, but which were repeatedly visited as conditions allowed. Recent genomic research suggests that these behaviours and connections with country extended back to ~42,000 years ago, and shortly after Australia was initially peopled (Pardoe 2013; Tobler et al. 2017). For much of this time, populations remained low, before undertaking significant increase and socio-economic change in the last 5-10,000 years (Williams et al. 2015b).

Observations of the local Aboriginal people to Cowra and surrounds was made initially by George Evans in 1815, then by John Oxley in 1817 during an exploration of the Lachlan River, and then subsequently in 1836 by Sir Thomas Mitchell who traversed the region on his way to explore the Murray River. Of these, Oxley provides perhaps the most extensive accounts of interactions in this general vicinity. He noted that groups of people were commonly small (<10), that areas were seasonally used with numerous abandoned sites observed, and sites were commonly found along the creek lines and riverbanks indicating exploitation of freshwater mussel (Oxley 1820). He further made reference to habitation structures, often on still water such as 'ponds' and swamps; and outlines in detail the construction of a large burial consisting of a central earthen mound surrounded by lines of over-turned soil (that he suggests was for seating) and carved trees.

<sup>1</sup> It is important to note that information about the socio-cultural structure of Aboriginal society prior to European contact largely comes from ethno-historical accounts made by colonial settlers. Most ethnographical accounts of Aboriginal life during contact were written in the context of a period of immense change through death and disease, displacement, and a loss of culture, country and knowledge. As a result, this information is often limited and can be contentious.

Subsequent interactions, largely the result of Europeans seeking agricultural and pastoral lands, led to numerous conflicts with the Wiradjuri for much of the early and mid -19<sup>th</sup> Century (Cane 1995). This perhaps culminated in the Bathurst War in 1824, which results in numerous casualties on both sides of the conflict (Connor 2002). More recent historical information suggests that despite this period of upheaval, the Wiradjuri still maintained strong kinship ties with their neighbours, reinforced through trade, economy, movements and participating in ceremonies throughout this period (Kabaila 2005).

### 2.2.3 Aboriginal heritage context

#### i Regional overview

The first peopling of Australia occurred ~50,000 years ago, and likely consisted of reasonably large groups of technologically advanced hunter-gatherers (Bradshaw et al. 2019; O’Connell et al. 2018). The peopling of the continent was rapid, with sites such as Devil’s Lair (WA), Warratyti (SA), and Lake Mungo (NSW) all occupied within a few thousand years of arrival (Bowler et al. 2003; Hamm et al. 2016; Turney et al. 2001). Genomic research has shown that following these initial explorations of the continent, regional populations or nomadic sedentism, was established by ~40,000 years ago (Tobler et al., 2017). These small populations were highly mobile, but remained within a broad spatial geographic area, dictated in general by the nature of resources and water availability. In the case of some of the arid parts of the continent, mobility encompassed thousands of square kilometres (Gould 1970), while major riverine corridors such as the Murray River had near permanent settlements (Pardoe 1995).

In NSW, the earliest evidence of Aboriginal people are human remains recovered from the lunette in Lake Mungo, and dating to ~42ka (Bowler et al. 2003; O’Connell et al., 2018). The presence of red ochre covering the remains representing a society with significant cultural and symbolic complexity (Langley et al 2011). Near the coastal edge, the earliest populations were found at Cranebrook Terrace, near Penrith (western Sydney). Here a handful of rudimentary stone tools were found in an alluvial unit, some 8m below the current surface, and which were dated to ~40-45,000 years ago (Williams et al. 2017). However, it is not until ~35,000 years ago, that regional populations appear to have become established in the Sydney Basin, and which appeared to consist of small bands of people focussed mainly along major river systems, likely including the Lachlan and Abercrombie Rivers. Such major river systems formed key ecological refuges that hunter-gatherer groups used to survive major climatic events such as the Last Glacial Maximum (21±3ka) – a cool and arid climatic period. Well-established archaeological models suggest populations experienced a major reduction in size (by as much as 60%), and settlement contraction and abandonment across much of the continent during this time (Veth, 1993; Williams et al., 2013), although recent research suggests that the story may be more complex than this (eg Tobler et al., 2017).

The terminal Pleistocene and early Holocene (~18-8ka) was characterized by significant environmental change, notably the rapid inundation of much of the coastal shelf, resulting in the reduction of the continent by ~21% (~2 million km<sup>2</sup>) (Williams et al. 2018), in tandem with improving climatic conditions – the Holocene climatic optimum (Williams et al. 2015a, 2015b). More broadly, these conditions resulted in increasing population growth, expansion of ranging territories, increasing sedentism (longer patch residence time) and the beginnings of low-level food production (eg aquaculture), and ultimately the initiation of social and cultural groupings observed in the late Holocene (Williams et al., 2015b). More broadly, we see a much broader range of archaeological site types occurring, such as the Roonka Flat burial ground on the banks of the Murray River within which some 147 individuals were interred through the Holocene (Pate et al., 1998), and the increasing use of marine resources. Many of the previous refuges were subject to abandonment or a re-structuring of land use (Dortch, 1979; Fitzsimmons et al., 2019). These activities suggest the ability to undertake large-scale movements to mitigate environmental distress was becoming increasingly difficult, and was addressed through diversification of hunter-gathering behaviours and, at least in part, technological advances and investment (Williams et al. 2015b).

The late Holocene saw significant population increase, with hunter-gatherers reaching their zenith of ~1.2million at 0.5ka, a tenfold increase on Pleistocene levels (Williams, 2013). Data suggests that the highest populations during this time were in the southeast of Australia. Williams et al. (2015b) suggest that this increase was likely a result of intensification of earlier technological advancements, including hafting-technology, plant and seed processing, and localized landscape management (using fire), allowing climatic downturns to be successfully weathered. These included strong arid El Nino Southern Oscillation (ENSO) conditions between 4-2ka, and increasingly turbulent climatic conditions during the Medieval Climatic Anomaly (1.3-1ka) (generally wetter) and Little Ice Age (0.3-0.5ka) (generally drier) (Williams et al., 2010, 2015b). A result of these denser populations was decreasing freedom of movement and the formation of strong classificatory kinship systems, complex cultural and symbolic landscapes based on geographic totemism (the 'Dreaming'), distinctive graphic art systems, land rights in the form of ritual property, and formalized exchange networks (Williams et al., 2015b). These conditions resulted in a significant increase in the archaeological visibility of past Aboriginal populations, with sites occurring in a much wider range of locations; and generally indicative of a more intensive use of the landscape.

## ii Local investigations

Previous studies of the region are relatively sparse, and primarily constrained to cultural resource management studies as part of various residential or infrastructure related activity around the dam or Cowra itself. Of note was the works of Jim Kelton (University of Canberra) in the mid-1990s, who undertook both excavations and survey of areas around the Lachlan River and Wyangala. These included the excavations of the Bigga Aboriginal rock art site on the Lachlan River east of the study area, and the identification of numerous other similar sites in the vicinity; and documentation of numerous stone artefacts along the edges of the dam itself (English and Gay 1995; Kelton 1991). Along with work in the 1970s by Johnson (1977) at Abercrombie Caves Tourist Reserve – where a rockshelter containing over 10,000 artefacts was excavated – Kelton's work highlights the importance of granite tors and outcroppings for containing past occupation activities in this area. As a result of Kelton's work along the dam, a detailed survey was undertaken of the dam edge, and many of the AHIMS sites discussed above are the result of these works. Specifically, English and Gay (1995) identified a large number of stone artefact sites, generally of low density and often in poor condition as a result of inundation.

A range of other studies have been undertaken for subdivision in Cowra, linear infrastructure, road construction and fire trails in the region, and identify a similar picture of low density stone artefact scatters and culturally modified trees frequently on elevated landforms and terraces of many of the creek lines (Central West Archaeological and Heritage Services 2000, 2001; Navin Officer Heritage Consultants 2011; OzArk Environment and Heritage 2013). Two of these resulted in excavations that suggest artefact densities of >300 in proximity are likely to reflect specific foci of activity, with lower numbers more likely to be part of a transient or ephemeral use of the region).

## iii Database search results

The Commonwealth Heritage List (CHL), National Heritage List (NHL) and Local Environment Plan (LEP) databases identified no Aboriginal objects, sites or places in the vicinity of the study area. Multiple searches of the AHIMS database identified 329 previously documented Aboriginal sites in an approximate 3,300 km<sup>2</sup> area centred on the dam (Figure 2.3; Appendix B). The sites are situated across the search area, with the majority located on the northern fringe of the Wyangala Dam itself, and lesser aggregations at Copperhannia Nature Reserve and surrounds, and near Reids Flat. Generally, sites appear to be found close to water (acknowledging that many on the banks of the dam may have been some distance from water historically) and/or on crest and ridgeline features. The previous sites are dominated by stone artefactual sites (n=262/79%) followed by culturally modified trees (n=37/11%), with lesser occurrences of rarer site types such as rockshelters, burials, hearths, grinding grooves, stone arrangement and quarries. A single restricted site was documented – commonly a burial – but EMM has verified with DPC that it remains outside the study area.

Of the 329 identified sites, 74 are situated below the current FSL, 68 of which are various stone artefact cultural materials. Of note, is the identification of a potential burial (#44-5-0080 and #44-6-0080 – the same site) that sits to the north of Wyangala Dam. It remains unclear at this stage as to why these sites have not been identified as destroyed by existing inundation, and this formed part of the field investigation phase of the project constraints assessment.

The proposed inundation along the Lachlan River may result in a further burial, #51-2-0006 being affected by the project. While nearer Wyangala Dam, a further 28 sites would be within the inundation zone of the proposed FSL, with an additional 21 in proximity to the modified lake edge. These include a number of stone artefactual sites, (n=39), culturally modified trees (n=7), an ochre quarry, a stone arrangement, a rockshelter with a deposit, and the previously mentioned burial.

#### iv Aboriginal heritage predictions

Based on the available information, the following predictions about the distribution and types of cultural material within the study area can be hypothesised (Figure 2.4):

- Aboriginal objects and/or sites are frequently found on terraces and/or elevations close to major creek lines, often on flat or near flat surfaces. The AHIMS data further suggests that ridgelines, crest and spurs overlooking Wyangala Dam are also landforms that were used in the past. Rockshelters have been identified and investigated in a number of granite tors and outcrops also common in the region.
- The most common site type is likely to be surface and/or subsurface stone artefactual material reflective of past visitation and/or occupation. Available data suggests that such sites frequently contain few Aboriginal objects (<20) and are reflective of an ephemeral use of the region. Areas of occupation appear likely to contain >300 artefacts, with evidence of >1,100 found in one locale in Keverstone National Park.
- A range of other site types are known in lesser abundance, and arguably of higher significance, including culturally modified trees, burials, quarries, stone arrangements, and rockshelters. These consist of <10% of the documentary record.
- It is expected that a number of sites will be found around Wyangala Dam within the existing FSL, the condition and integrity of such sites are likely to be poor through movement by water, but the extent of such impact has yet to be robustly investigated. Based on previous studies, these cultural materials are likely to be almost exclusively stone artefactual material, with some potential for culturally modified trees.
- The flooding of the Lachlan River by Lake Wyangala has likely resulted in the inundation of many of the landforms and locales likely to be of archaeological interest in this area based on the predictions above. The proposed inundation area in most instances encompasses mid and upper slopes of the former river, and which have less likelihood of containing significant sites. As such, greater potential for such sites is likely to be found on the upper reaches and edges of the inundation zone where it extends along the Lachlan River near Reid's Flat and Abercrombie River.

Areas of archaeological potential (as shown on Figure 2.4) have been defined by targeted landforms (ridge lines, spurs, crests, flat ground <5 degrees slope, and steep ground >45 degrees slope [rock shelter/outcrop potential]), a 100 m buffer around waterways, and a 20 m buffer around previously recorded Aboriginal sites (AHIMS).

## 2.2.4 European history

The Wyangala Dam was named after the Wyangala pastoral station on which the dam and its floodwaters enveloped. The station was established by the Newham family around 1850 (*Wagga Wagga Express*, 28 March 1931, p.4). The extent of the Wyangala station has not yet been established for this report, however, the members of the family were still residing on the property during the construction of the dam beginning in 1928 (*Wagga Wagga Express*, 28 March 1931, p.4).

Minimal historical archaeological investigations have been conducted in the region around Cowra. Higgenbotham (1984) surveyed the area around Junction Reefs, 33 km north of Blayney and determined that the remains of the towns mining activities were well preserved and argued an increased historical significance of the finds as a result. English (1995) investigated the presence of bones at the World War II Prisoner of War Camp located in Cowra, however the bones were determined to be faunal remains and as such were not associated with the material remains from the camp-period.

### i Database search results

An extensive search of national, state and local heritage registers was conducted on 8 January 2020. Two heritage listed sites are within a 5 km radius of the Wyangala Dam, the first being the Mount McDonald Cemetery (Cowra LEP 2012, item I69), which is located approximately 2 km north-west of the dam. The cemetery was in use from 1888-1915 and contains 17 graves.

The dam itself is listed a number M15 on the State Water Section 170 Register 15 Major Rural Dams local listing and was constructed between 1928 and 1935 as the second largest irrigation dam in New South Wales (WaterNSW n.d.), and was reconstructed in 1961 to 1971 to increase its holding capacity as well as improve the safety and reliability from the original structure.

The data drawn from the heritage registers reflects the primary constructed historical narratives of an area, which have been drawn from the New South Wales historical themes. Within the Cowra, Blayney, Upper Lachlan local government areas (LGAs) the heritage focus is on the assets within the larger towns. Built, industrial, and mining heritage is a focus of the listings and a number of rural homesteads are also listed. The Wyangala Dam is named after the property it was built on; the *Wyangala Station* (WaterNSW n.d.).

Further research is required to understand the history of these sites and their connection to the landscape.

### ii Historical heritage predictions

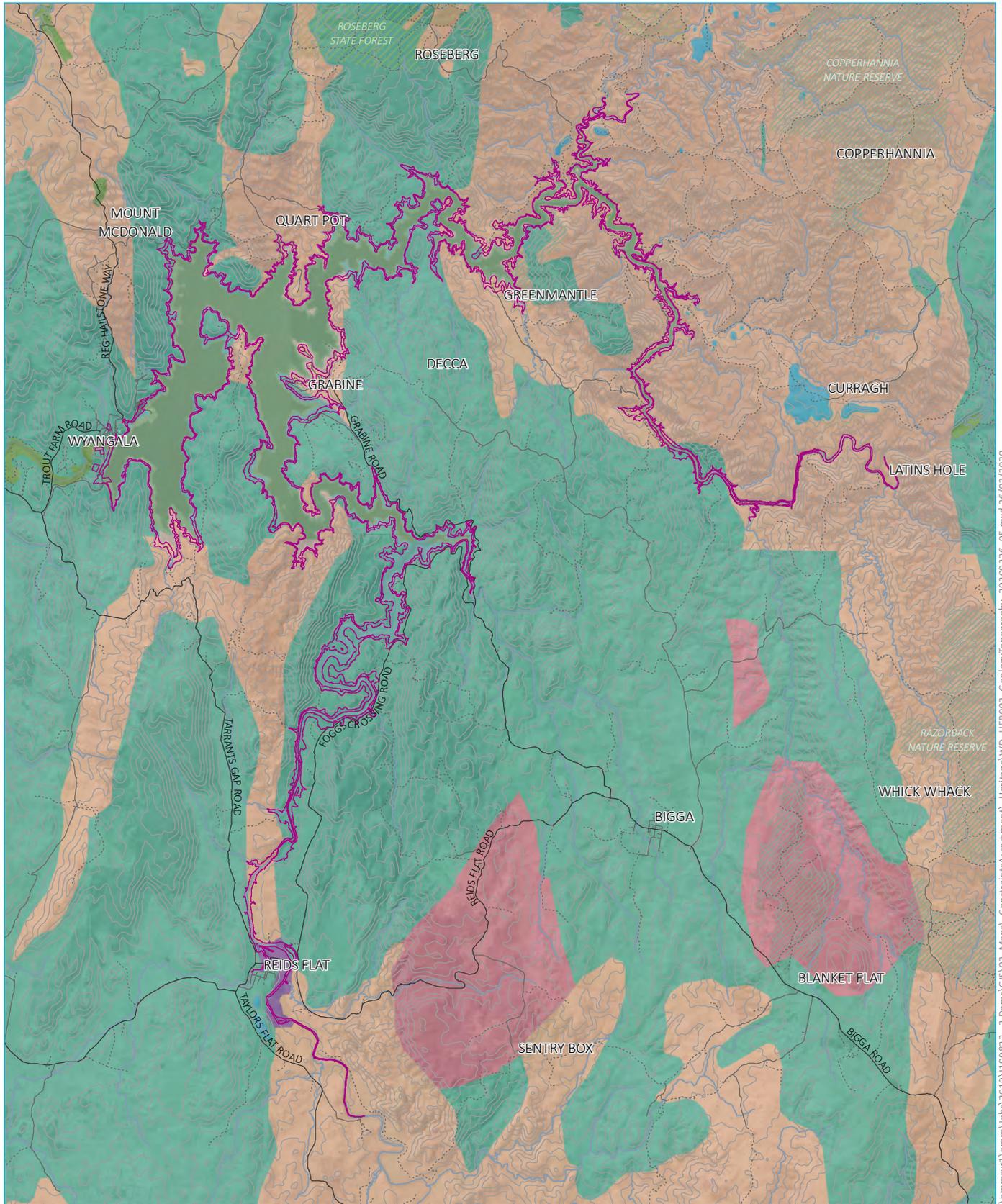
No listed heritage items were identified in the inundation zone though the dam itself and the Mount McDonald Cemetery are located within a 5 km radius. There are likely to be aspects of the previous dam as well as remains of infrastructure associated with construction of the original dam still visible in proximity to the current wall dam walls and beneath the current water level.

A number of properties lots will be impacted by the proposed works through inundation and construction. These properties are spread over various LGAs and parishes and as a result require further research to determine if there are any historically significant sites located around the dam.

It is likely the land around Wyangala was historically used for pastoralism. Considering the history of the project area and sites identified during the database searches, the following features may also be present across the project area:

- Primary homesteads, potentially multiple phases;
- Cottage or cottages to house managers or overseers;

- Shearing sheds, stables and stock yards;
- Stockmen's huts, particularly around watercourses;
- Workshops and sheds;
- Stores;
- Stone walls and curated stone features;
- Cesspits;
- Wells or access to drinking water for each dwelling or group of dwellings;
- Gardens;
- Middens or rubbish pits;
- Cow, sheep etc skeletal remains;
- Trails; and
- Ploughed cultivation paddocks.



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

\*Inundation area should be considered approximate only. It is based on current limited available spatial data and is subject to future verification.



**KEY**

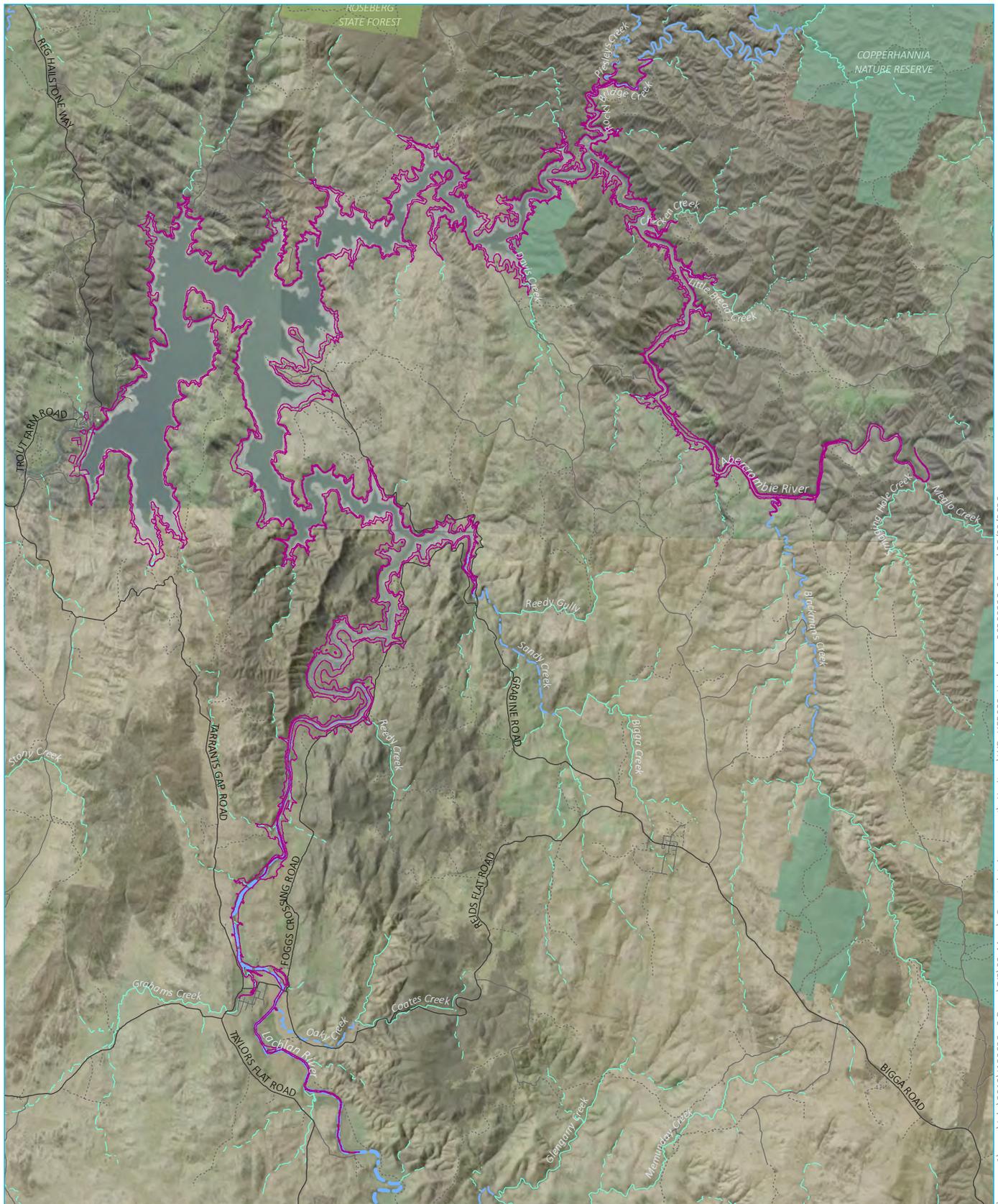
- |                   |              |                     |
|-------------------|--------------|---------------------|
| Project footprint | Waterbody    | <b>Geology 250k</b> |
| Main road         | NPWS reserve | Cainozoic           |
| Local road        | State forest | Devonian            |
| Track             |              | Ordovician          |
| Contour (50 m)    |              | Quaternary          |
| Named watercourse |              | Silurian            |
|                   |              | Tertiary            |

**Geology and topography**

Wyangala Dam Wall Raising Project  
Environmental constraints assessment  
Figure 2.1



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

\*Inundation area should be considered approximate only. It is based on current limited available spatial data and is subject to future verification.



**KEY**

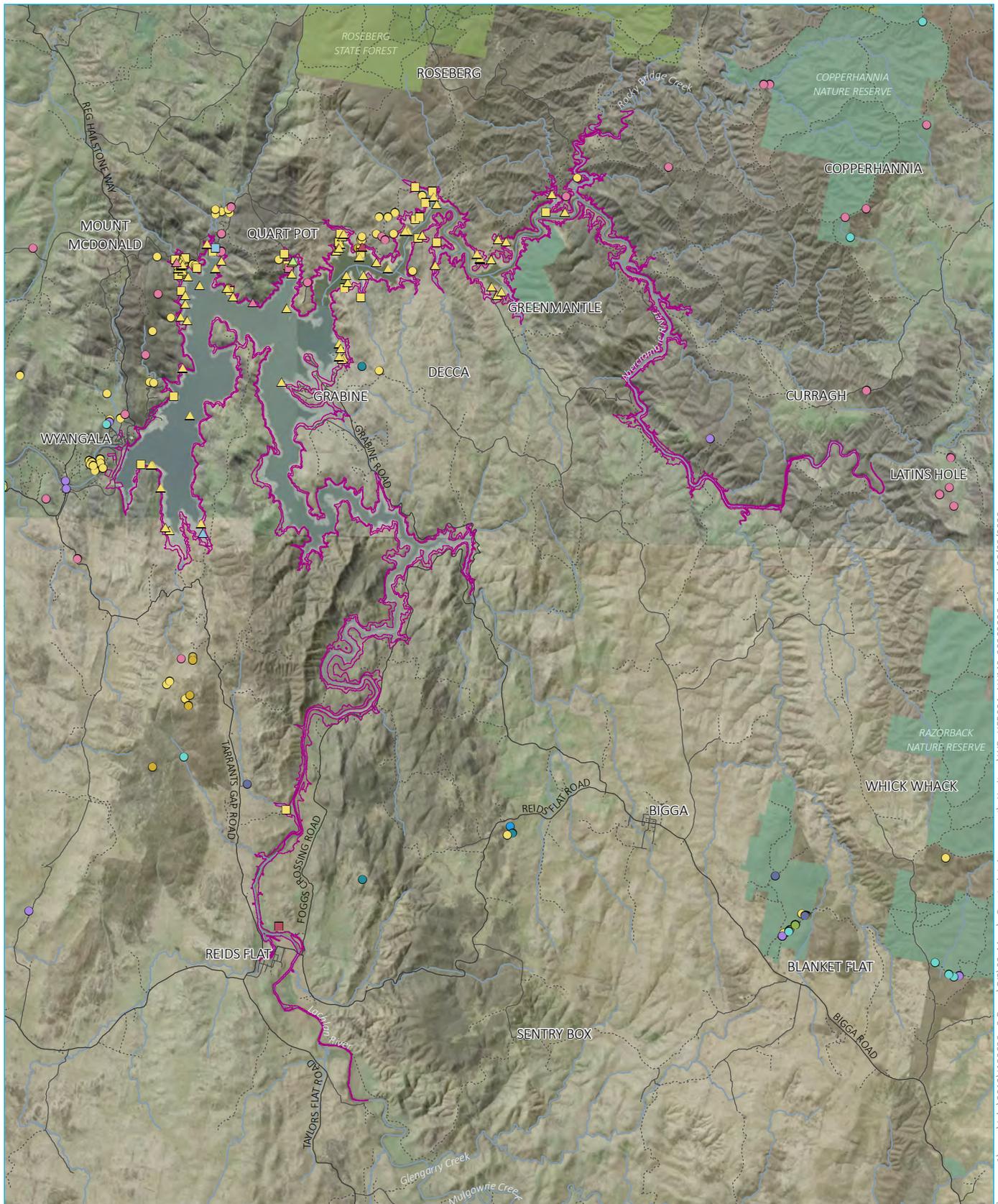
- |                   |                       |              |
|-------------------|-----------------------|--------------|
| Project footprint | Strahler stream order | Waterbody    |
| Main road         | 3rd order             | NPWS reserve |
| Local road        | 4th order             | State forest |
| Track             | 5th order             |              |
|                   | 6th order             |              |
|                   | 7th order             |              |

**Hydrology**

Wyangala Dam Wall Raising Project  
Environmental constraints assessment  
Figure 2.2



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Source: EMM (2020); WaterNSW (2020); DPI (2020); DFSI (2017); GA (2011)

\*Inundation area should be considered approximate only. It is based on current limited available spatial data and is subject to future verification.



**KEY**

- |                   |  |
|-------------------|--|
| Project footprint | <b>AHIMS site type</b>                                       |
| Main road         | Within existing full supply level                            |
| Local road        | Within study area  |
| Track             | Outside study area   |
| Named watercourse | Burial/s   |
| Waterbody         | Culturally modified tree                                     |
| NPWS reserve      | Grinding groove  |
| State forest      | Isolated Aboriginal object                                   |
|                   | Isolated Aboriginal object; potential archaeological deposit |

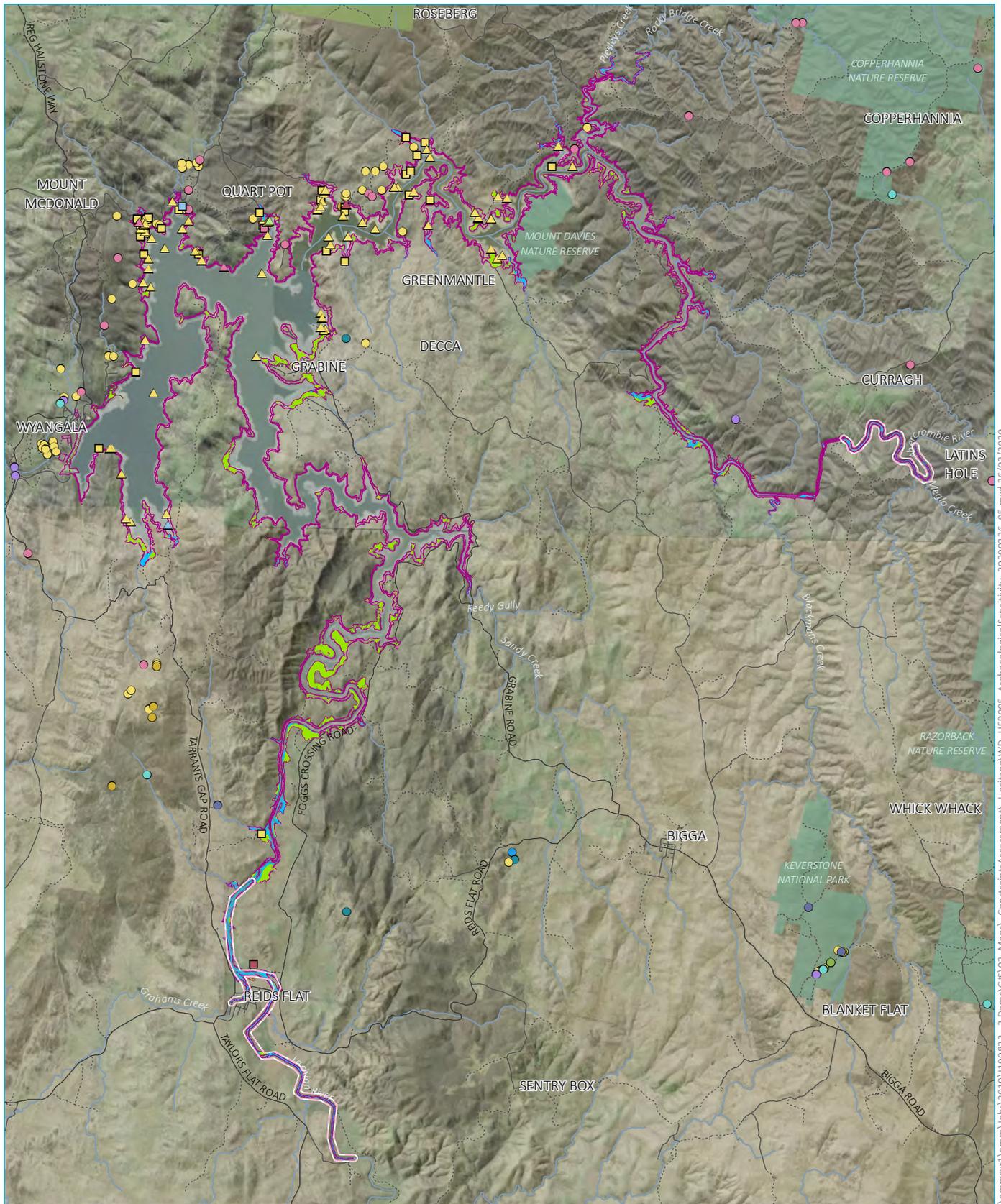
- |  |
|--|
| Moderate artefact scatter (20-50)                              |
| Quarry   |
| Rockshelter (with art)   |
| Rockshelter (with deposit)                                     |
| Small artefact scatter (<10)                                   |
| Small artefact scatter (<10); hearth                           |
| Small artefact scatter (<10); potential archaeological deposit |
| Stone arrangement  |
| Undefined artefactual site                                     |

**AHIMS site data**

Wyangala Dam Wall Raising Project  
Environmental constraints assessment  
Figure 2.3



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

\*Inundation area should be considered approximate only. It is based on current limited available spatial data and is subject to future verification.

**KEY**

- |   |  |  |  |
|---|--|--|--|
| Project footprint                               | Area of archaeological potential (between FSL and study area boundary) | Burial/s   | Rockshelter (with art)   |
| Main road                                       | Level to gently inclined terrain                                       | Culturally modified tree                                     | Rockshelter (with deposit)                                     |
| Local road                                      | Level to gently inclined landforms within 100 m of primary watercourse | Grinding groove  | Small artefact scatter (<10)                                   |
| Track   | Very steep to precipitous terrain                                      | Isolated Aboriginal object                                   | Small artefact scatter (<10); hearth                           |
| Named watercourse                               | AHIMS site type  | Isolated Aboriginal object; potential archaeological deposit | Small artefact scatter (<10); potential archaeological deposit |
| Upper reaches of Lachlan and Abercrombie Rivers | Within existing full supply level                                      | Moderate artefact scatter (20-50)                            | Stone arrangement  |
| Waterbody                                       | Within study area  | Quarry   | Undefined artefactual site                                     |
| State forest                                    | Outside study area   |  |  |
| NPWS reserve                                    |  |  |  |

**Areas of archaeological sensitivity**

Wyangala Dam Wall Raising Project  
Environmental constraints assessment  
Figure 2.4



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## 3 Site inspection

EMM undertook a site inspection of the project footprint as part of preparation of this report. Due to short timeframes and access issues, the aims of the site inspection were to:

- visit a representative sample of project footprint landscape to test predictions of archaeological sensitivity and support future investigations;
- validate previously documented Aboriginal sites to identify their condition, integrity and spatial accuracy;
- identify key areas that are likely to present constraints to project design or development; and
- gain a better understanding of existing disturbance and past activity that may not be present in the desktop information.

The areas inspected are shown by GPS tracks on Figure 3.1. Each data point presented in this figure aligns with a photographic record that is presented in Appendix B.

The project footprint is characterised by undulating slopes and hills centred on the Lachlan and Abercrombie Rivers, which was exposed in some areas due to drought (Plate 1 to Plate 3). Slopes and undulation were generally of a shallow to moderate grade but increasing in steepness to the east in the vicinity of the Abercrombie River. Along the now exposed parts of the Lachlan River, the landscape was dominated by sandy rises, low crests and floodplain, although it is not clear if some of these may have formed as part of the inundation (Plate 1 to Plate 3). Soil profiles are typically sandy, with some areas having the potential for stratified cultural material to be present, generally observed within the inundation zone and in proximity to some creek edges. Visibility was generally good, notably below the current FSL, where recent drought has exposed large areas of unvegetated landscape.

Disturbance in this area appears to primarily relate to the existing dam and associated activities. Exposures of areas below the current FSL due to drought show logging of trees, likely as part of the dam establishment, and as well as several quays and pilings from old docks – all suggestive of activities along the dam’s edge (Plate 2 and Plate 3). The loss of vegetation from these areas followed by their exposure has further resulted in soil profile effects, such as mass movement and formation of rills (Plate 4). In areas of newly proposed inundation, impacts have been relatively minor, with only a small number of holiday parks resulting in localised impact. There was evidence of substantial native bushland, which includes remnant trees of a significant age. Although, there are several parts that have been subject to de-vegetation, agriculture and pastoral activities that may have resulted in lesser impacts.

One of the key identified risks was the number of previously documented Aboriginal objects and sites within the existing inundation that remained valid in DPIE’s database. Investigation of a number of these sites within the existing inundation zone (Section 2.2.2) suggests that the flooding and submergence has resulted in substantive impacts to these sites (Plate 4). Specifically, while several areas of previously investigated site’s locations were traversed, none could be positively identified. Acknowledging the potential inaccuracy of the site locations, one of the largest sites identified (#44-5-0091), consisting of 133 artefacts over ~330m<sup>2</sup>, was revisited, but similarly could not be relocated and has been assumed as destroyed. A culturally modified tree (#44-4-0091) was also re-inspected but has similarly been removed.

The brief site inspection identified some 13 previously unidentified Aboriginal sites (Figure 3.1). These were all found in areas predicted to contain cultural material (Figure 2.4) and suggest the robustness of the proposed model. Of these, the majority were stone artefacts of varying densities ranging between 2 – 40 (~1 per 5-30m<sup>2</sup>) found primarily on lower slopes adjacent water courses – several within the existing inundation zone – or on bench landforms over-looking the existing dam. However, it was observed that hill tops and crests over-looking the dam would have required significant distances to traverse to access the Lachlan and Abercrombie Rivers historically, and as such may not have been as attractive to past visitation. Artefacts were primarily of a black chert (Plate 5), with some silcrete, quartz and volcanic raw materials, and compositionally appeared of late Holocene age (5,000-0 years ago). In addition to open sites, a single overhang containing stone artefacts was found in the southeastern portion of the project footprint. This suggests that there is some potential for rockshelter sites to be present in parts of the project footprint where steep relief is present (Plate 6).

Two burial locations are also identified within the project footprint. A visual inspection was undertaken of #44-5-0080 (also listed as #44-6-0080), which was identified as a possible burial (Plate 7). No indicators of a burial were observed, and it is considered that this may relate to oral information obtained from the Aboriginal community indicating the general locale, but not necessarily the co-ordinate within the AHIMS database. The Eurimburra burial (#51-6-0006) was on private property and was inaccessible at the time of the site inspection.



**Plate 1** Gerties Campsite area, view north-west from the crest of a hill



**Plate 2** Crest of a small rise at Grabine Holiday Park, currently used as a vehicle track for launching boats. View west over the partially exposed Lachlan River



**Plate 3** View of the Abercrombie River, now partially exposed due to drought. The extent of the current inundation level is evident by the change in vegetation



Plate 4

Examples of the erosion and soil profile modification resulting from previous inundation; and which suggests flooding would result in significant impacts to any cultural material (if present)



Plate 5

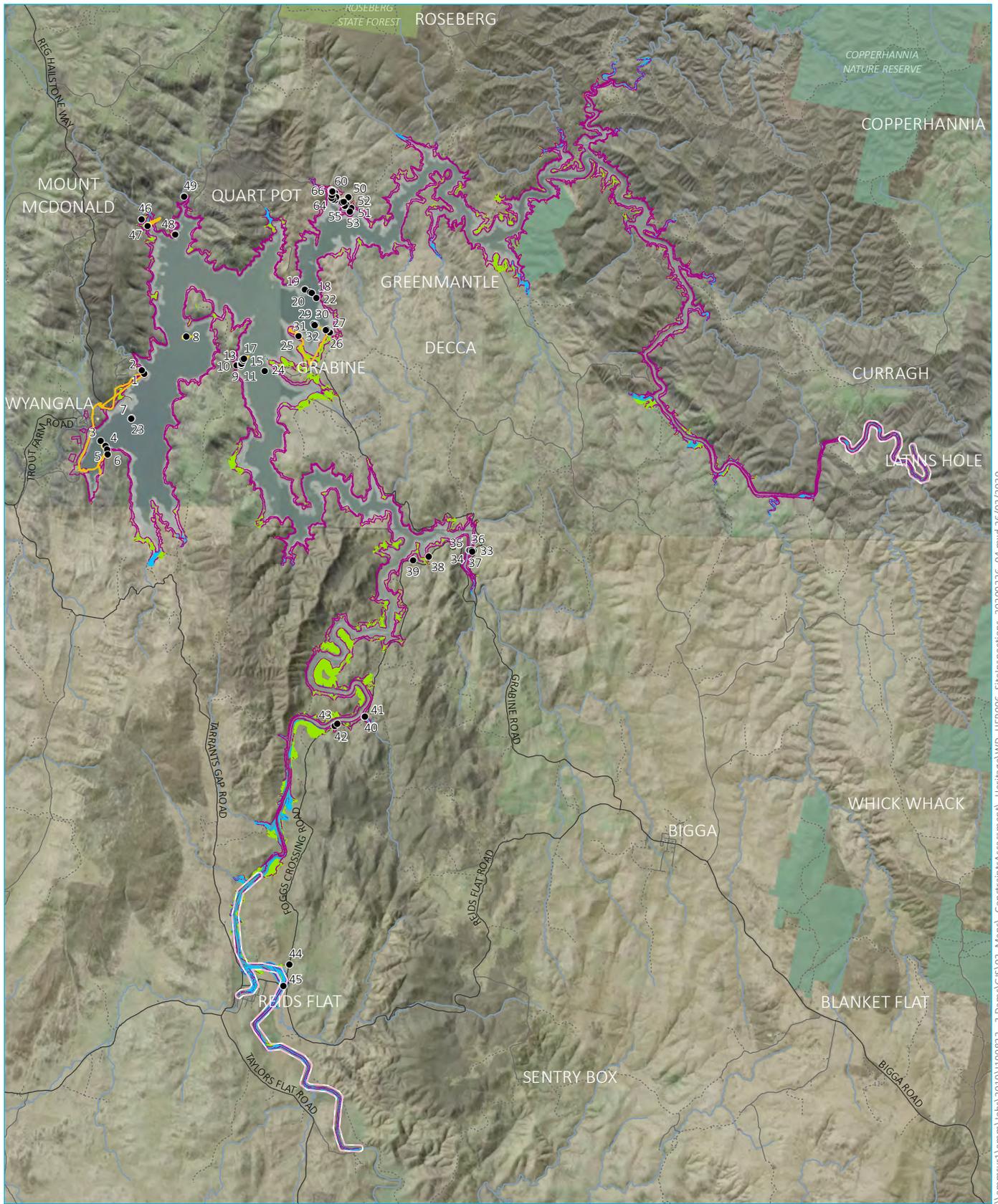
Examples of Aboriginal objects (stone artefacts composed of black chert) found as part of the site inspection



**Plate 6** A small overhang within which Aboriginal objects were recovered in the southeast portion of the project footprint

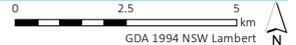


**Plate 7** The general location of a possible burial ground previously documented in the AHIMS database



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

\*Inundation area should be considered approximate only. It is based on current limited available spatial data and is subject to future verification.



**KEY**

- Project footprint
- Photograph location
- GPS track
- Main road
- Local road
- Track
- Named watercourse
- Waterbody
- NPWS reserve
- State forest
- Upper reaches of Lachlan and Abercrombie Rivers
- Area of archaeological potential (between FSL and study area boundary)
- Level to gently inclined terrain
- Level to gently inclined landforms within 100 m of primary watercourse
- Very steep to precipitous terrain

**Site inspection results**

Wyangala Dam Wall Raising Project  
Constraints assessment  
Figure 3.1



## 4 Constraints assessment

The project has the potential to impact Aboriginal heritage during construction as a result of clearing and earthworks as well as during operation as a result of inundation. The proposed inundation along the Lachlan River may result in a burial, #51-2-0006, being affected by the project. While nearer Wyangala Dam, a further 28 sites would be within the inundation zone of the proposed FSL, with an additional 21 in proximity to the modified lake edge. These include a number of stone artefactual sites, culturally modified trees, an ochre quarry, a stone arrangement, a rock shelter with a deposit, and the previously mentioned burial.

Using the information outlined above EMM has identified and summarised constraints and opportunities for the project requiring consideration in future design and assessment (Table 4.1).

**Table 4.1 Key heritage constraints and opportunities**

Item	Discussion
Cultural landscape and intangible values	<p>An integral part of Aboriginal cultural heritage assessment is understanding the broader values of the environment, including cultural and symbolic associations (Dreaming), connectivity and relationships between Aboriginal places, land rights and ritual property. Such information can only be robustly obtained from the Aboriginal community, and is becoming increasingly important in assessing the socio-cultural impacts of a project.</p> <p>Currently, our understanding of this issue for the project footprint is poor, but the presence of substantial archaeological remains suggests such values would be present and may form constraints. Working with the Aboriginal communities to understand these values and manage them is essential for the project.</p>
Impact and cumulative impact to Aboriginal objects	<p>The project footprint would result in inundation of a significant area known to contain Aboriginal objects and sites. It is considered based on observations that the inundation would be considered an impact (rather than a form of conservation, such as 'burial in situ'), and as such would result in considerable impact to cultural material where present. This has both an impact each site present, as well as a cumulative impact to the cultural heritage of the region – which itself is poorly understood.</p> <p>Desktop information and a brief site inspection identified over 100 Aboriginal objects and/or sites within the project footprint. It is likely that the number is considerably greater than this. The majority of these sites appear to be varying densities of stone artefacts, which are commonly managed through a conservation ex situ approach (ie their investigation and recovery). The management of future investigation, management and mitigation of these sites will be an important consideration for timely project delivery.</p>
Aboriginal consultation	<p>Working with the Aboriginal communities to understand cultural values and manage them is essential for the project. Aboriginal cultural heritage assessments require specific consultation to address current DPIE consultation guidelines with the Aboriginal community.</p> <p>The use of established guidelines for Aboriginal heritage will be discussed with DPIE and the Aboriginal community prior to implementation and as part of an early engagement strategy proposed by WaterNSW.</p>
Project footprint access issues	<p>Portions of the project footprint are on private and/or freehold land and were not accessible at the time of this report. It is essential for Aboriginal heritage investigations to have access to the entire project footprint to allow a comprehensive understanding of the cultural resource.</p>

**Table 4.1 Key heritage constraints and opportunities**

Item	Discussion
Impact to highly significant/sensitive Aboriginal objects and sites	<p>Currently, there are two sites considered of high archaeological significance within the project footprint, both identified as Aboriginal burials. One is situated north of the existing dam (#45-5-0080) and the other at Reid’s Flat (#51-6-0006). Other sites such as rockshelters, burials, hearths, grinding grooves, stone arrangement and quarries may also be present in parts of the project area.</p> <p>Such sites are of high archaeological value, and important to the Aboriginal community. They require careful and sensitive management, often with a preference for minimal intervention or action where feasible.</p> <p>Sites of high significance and cultural value would require careful and sensitive management with the Aboriginal community. It is typically preferred that such sites are left in situ, and have minimal intervention where feasible. As such, a greater understanding of the location and composition of these sites, as well as the project impacts upon them is essential. Where impact to such sites cannot be avoided, they are likely to require mitigation measures including relocation of human remains, extensive archaeological excavations and/or relocation of cultural features.</p>
Impact to the upper reaches of Lachlan and Abercrombie Rivers	<p>The archaeological models suggest that areas in close proximity to major watercourses have the potential for significant cultural material. While much of the existing dam has inundated these areas of interest, the upper reaches of the Lachlan and Abercrombie Rivers remain unaffected. Further, ethnographic and historical information suggest that these watercourses were substantially used by Aboriginal people in the past. As such, the potential for numerous and/or significant sites is considered likely in these parts of the project footprint.</p> <p>The upper reaches of the Lachlan and Abercrombie Rivers could not be investigated as part of this report. These areas are considered to have high potential for substantial and/or significant cultural materials.</p> <p>These areas require detailed investigation and depending on the findings would result in management requirements akin to those outlined above for significant/sensitive Aboriginal objects and sites. Given the proximity of these areas on the edges of the inundation footprint, they may provide both an opportunity or a constraint to ensure the conservation of such sites where encountered. Where impacts are required, mitigation measures including relocation of human remains, extensive archaeological excavations and/or relocation of cultural features may be required.</p>
Impact to historic properties and potential relics	<p>While no specific sites or places were identified, the project footprint has the potential for a range of European relics, structures and landscapes that (if present) may prove to be significant.</p> <p>The identification and characterisation of these relics and sites is essential as part of future assessment and to ensure the design can avoid or minimise potential impacts.</p>

# 5 Conclusion and recommendations

## 5.1 Conclusion

This report has used existing environmental and archaeological data, supplemented by a brief site inspection to identify potential Aboriginal heritage within, and in proximity, to the project footprint. Potential constraints to the project based on these observations have been identified, along with recommendations on future stages to further explore and resolve them.

In the visual inspection identified several stone artefact sites, two of which are likely to be part of pre-recorded sites, however this is a small number of sites compared to those identified within the AHIMS results, which present a far more indicative representation of the local archaeological character that may extend into the study area. Of note, these include more complex sites such as rock shelters, grinding grooves, burials, stone arrangements and quarries. These site types are commonly considered of significance and will likely require more detailed understanding and management through the project. Further, several of these may not align with the broader archaeological picture, since as religious/spiritual sites they are not necessarily tied to economic and resource exploitation, which forms the majority of the sites that predictions are made upon.

Despite some potential for rarer site types, this study indicates that the project would affect primarily stone artefact sites associated with transient or longer-term open camp activities. As the project footprint is centred on a primary watercourse in the region, it is likely to have accommodated Aboriginal occupation and provided abundant food and material resources. Depending on the nature of soils present on particular landforms, stone artefacts may be present in both surface and sub-surface contexts on elevated landforms adjacent to watercourses. Preliminary archaeological investigation has found that artefacts are still present within sub-surface contexts and that inundation has had impacts on these sites.

Importantly, the site inspection strongly suggested that areas within current inundation have been subject to heavy erosion and soil profile loss. As such, a significant number of the previously recorded sites within this zone, and which remain valid on the DPIE AHIMS database are likely to have been destroyed previously. It does, however, further suggest that inundation of a site cannot be considered a conservation outcome – akin to burial in situ in other environments – for the management of future sites that may be affected.

Section 4 summarises the heritage constraints and the need for a greater understanding of the cultural material and values within the project footprint, through further investigation and engagement with the Aboriginal community. Notwithstanding the preliminary investigation results, more robust investigations are essential as part of subsequent phases to ensure the extent of impact is known, and appropriately managed through the project.

## 5.2 Future assessment

The constraints assessment has identified that known and currently unidentified Aboriginal cultural and historic heritage values are likely to be impacted by the project. As such, it is recommended that:

- as part of the EIS, an Aboriginal cultural heritage assessment (ACHA) is undertaken to investigate, characterise, and assess the significance of cultural material and values within the project footprint, and to provide guidance on its management and mitigation prior to, during and following construction. Key aspects of the relevant guidelines for an ACHA, namely *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011), *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010) and *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010) would be adopted. Given the delivery requirements of the project, the ACHA would implement key elements and intent of the assessment process. This expedited ACHA should be developed in discussion with the consent authority and Aboriginal stakeholders, and which should include, but not be limited to:
  - the development and adoption of an Aboriginal consultation engagement strategy, which outlines personnel, communication methods and timing of consultation and Aboriginal participation for the remainder of the project; and that may adopt initial notification elements of *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010), however, some of the timeframe requirements will need to be reduced;
  - systematic archaeological field survey of the project footprint by heritage professionals and Aboriginal community representatives to identify places or items of Aboriginal cultural heritage significance;
  - a targeted archaeological test excavation program of key areas of sensitivity to further validate and map cultural material within the project footprint. An archaeological research design for the test excavations should be developed as part of the initial ACHA stages and that may adopt elements of *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010), but should consider alternative methods (eg the use of mechanical investigations, landform testing approaches, etc) to maximise investigation permissible in the timeframes. The analysis and reporting of these works should also be identified in the archaeological research design, and should include suitable collection and processing of stone artefacts, and chronological, soil, and environmental samples; and
  - development of an ACHA report, including desktop review of data, compilation of data from above tasks, significance assessment, and detailed map of cultural materials and values. The report should also include measures to avoid and mitigate potential impacts for cultural materials within the project footprint, but which may also focus on off-site Aboriginal heritage conservation, research and/or mitigation given the limited avoidance abilities of the project.
- at the completion of the ACHA, a heritage professional should develop an Aboriginal cultural heritage management plan (ACHMP) in consultation with the Aboriginal stakeholders and consent authority to provide the post-approval framework for managing Aboriginal heritage associated with the project footprint. The ACHMP should include the following issues:
  - the integration of the Aboriginal consultation engagement strategy to ensure processes, timing, and communication methods for maintaining Aboriginal community consultation and participation through the remainder of the project;

- descriptions and methods of any additional investigative and/or mitigative archaeological actions that may be required prior to works commencing or during the project. These should include, but not limited to, archival recording, archaeological excavation and/or cultural monitoring for any areas where the surface impacts of the project intersect the identified Aboriginal objects and/or sites, and/or the areas of archaeological sensitivity;
  - description and methods of actions to minimise any indirect surface impacts to identified Aboriginal objects and/or sites and areas of archaeological sensitivity within close proximity of the project footprint. This should include, but not be limited to, cultural inductions for all personnel and subcontractors outlining their location and significance, fencing and clear marking of heritage sites, appropriate screening for sensitive and gender-specific areas, and any additional requirements identified by the Aboriginal community. A suitable regime of monitoring these activities should also be outlined, including locations, methods, personnel and timing;
  - description and methods for undertaking further Aboriginal heritage assessment, investigation and mitigation of any areas of the project footprint that have changed following completion of the ACHA and/or during the final design and construction phases of the project;
  - description and methods of post-excavation analysis and reporting of the archaeological investigations and activities implemented as part of the ACHMP. For excavations, these should include suitable collection and processing of stone artefacts, and chronological, soil, and environmental samples;
  - procedures for managing the unexpected discovery of Aboriginal objects, sites and/or human remains during the project;
  - procedures for the curation and long-term management of cultural materials recovered as part of the works outlined in the AHMP and any preceding stages associated with the project; and
  - processes for reviewing, monitoring, and updating the ACHMP as the project progresses.
- historical heritage values including those connected to structures, relics and cultural landscapes will require investigation as part of the EIS in the form of a heritage assessment and statement of heritage impact (SoHI). The SoHI will investigate significance and assess impacts arising from the project to develop measures to manage change and provide guidance for unanticipated finds. The investigation and reporting should be undertaken in accordance with:
    - *The Australian International Council on Monuments and Sites, Charter for Places of Cultural Significance* (also known as the *Burra Charter*, Australia ICOMOS 2013); The *Burra Charter* defines the concept of cultural significance as ‘aesthetic, historic, scientific, social or spiritual value for past, present or future generations’ (Australia ICOMOS 2013, Article 1.2). It identifies that conservation of an item of cultural significance should be guided by the item’s level of significance.
    - and the New South Wales (NSW) Heritage Manual (Heritage Office 1996 with regular additions) comprising:
      - *Statements of Heritage Impact Guidelines* (Heritage Office 2006);
      - *Investigating Heritage Significance* (Heritage Office 2004);
      - *Assessing Heritage Significance* (Heritage Office 2001); and

- *Assessing Significance for Historical Archaeological Sites and 'Relics'* (Heritage Branch Department of Planning 2009).
- the SoHI should include but not be limited to:
  - historical analysis using primary and secondary sources including early plans, maps, musters and land title information as well as historical aerial imagery and documents. Heritage studies and histories should also be consulted as these often are targeted to the area of investigation;
  - systematic archaeological field survey of the project footprint by heritage professionals to identify historical structures and potential archaeological sites. The archaeological survey will be guided by the historical research;
  - archaeological test excavation may be required and is conditional on the types of sites that are recorded in the field and indicated by historical sources; and
  - preparation of a SoHI with the results of the field survey(s) and the archaeological excavation if relevant.
- at the completion of the SoHI, the management measures should be developed further and included in a historical heritage management plan (HHMP). Consultation with the WaterNSW, the NSW Heritage Council, DPIE and Tamworth Regional Council will be required to ensure that all stakeholders have the opportunity to contribute to the management of the region's heritage. The HMP should address the following:
  - Relevant contacts and responsibilities;
  - Statutory framework;
  - Post-approval/pre-construction activities such as archival recordings, archaeological salvage excavation, archaeological monitoring and interpretation;
  - Methods for additional survey, archaeological test excavation;
  - Procedures for managing unexpected or unanticipated finds including skeletal remains and grave sites;
  - Identification of an appropriate level of research for additional sites if they occur;
  - Procedures for the curation and long-term management of cultural materials or information recovered as part of the works outlined in the HHMP and any preceding stages associated with the project;
  - Historical heritage summary induction; and
  - Processes for reviewing, monitoring, and updating the HHMP as the project progresses.

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Appendix A

# AHIMS site data

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Extensive search results from AHIMS is withheld and provided to DPIE on request.

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Appendix B

# Site inspection photographs

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