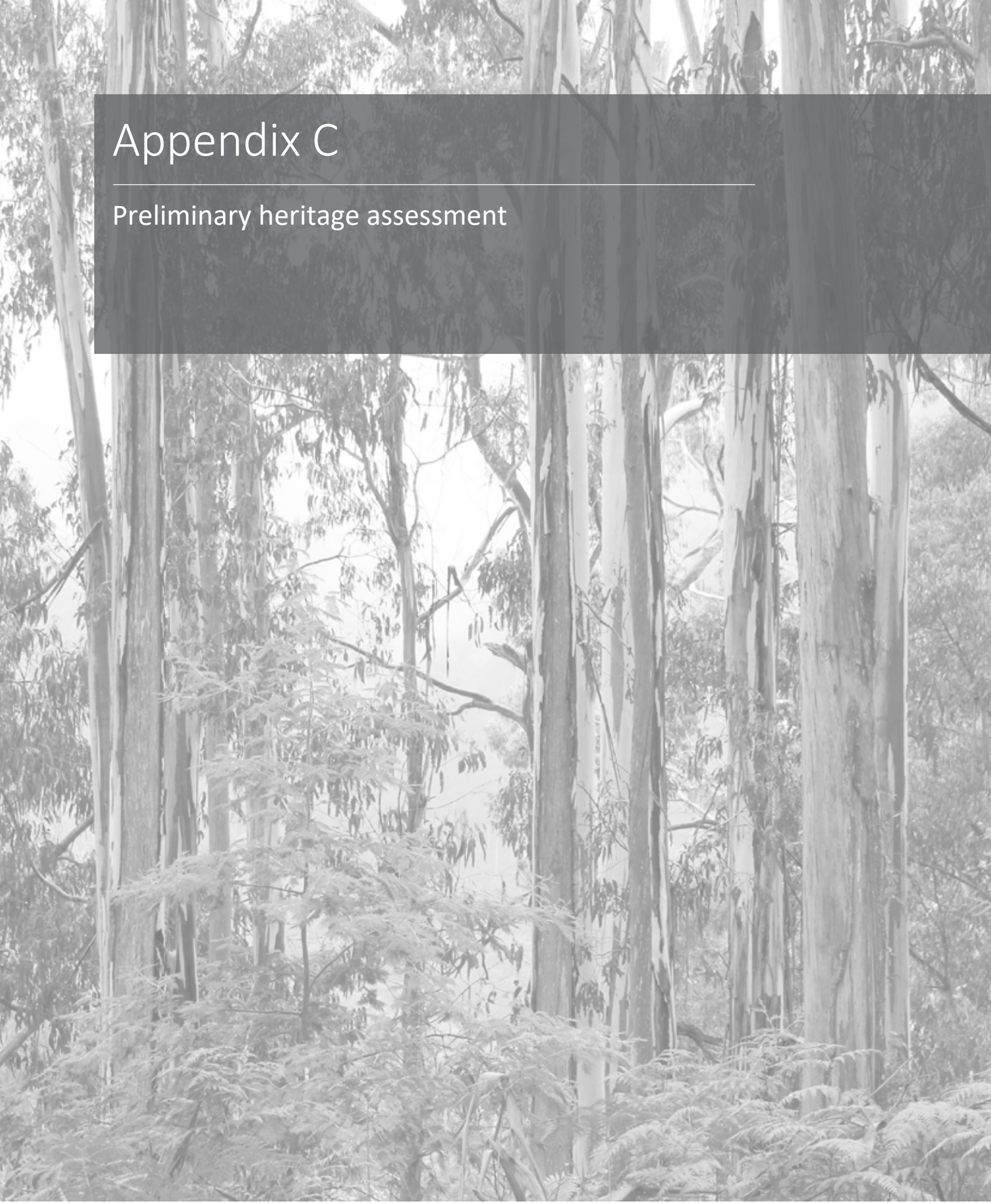

Appendix C

Preliminary heritage assessment

Three Dams Project - Mole River
Aboriginal and Historic Heritage Constraints Assessment Report

Prepared for Water NSW
March 2020

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Three Dams Project - Mole River

Aboriginal and Historic Heritage Constraints Assessment Report

Report Number

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Client

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Date

06 March 2020

Version

v3 Final

Prepared by

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06 March 2020

Approved by

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06 March 2020

This report has been prepared in accordance with the brief provided by the client and has relied upon the information collected at the time and under the conditions specified in the report. All findings, conclusions or recommendations contained in the report are based on the aforementioned circumstances. The report is for the use of the client and no responsibility will be taken for its use by other parties. The client may, at its discretion, use the report to inform regulators and the public.

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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 historic cultural heritage constraints assessment has been prepared by EMM Consulting Pty Limited (EMM Heritage) specifically for the proposed Mole River Dam project (the project). The proposed dam site is located in the upper reaches of Mole River within the Border Rivers-Gwydir catchment, approximately 20 kilometres (km) south-west of Tenterfield in NSW (Figure 1.1). The project includes:

- construction of a rockfill dam and associated embankment to provide 100--300 gigalitres (GL) of storage;
- construction of a spillway, including approach channel and downstream chute and terminal structure;
- upgrade or construction of access roads suitable for construction and ongoing maintenance requirements;
- installation of ancillary infrastructure (including utilities, construction compounds and construction accommodation facilities as required); and
- relocation of services and structures affected by the Full Supply Level (FSL) if required.

1.2 Purpose of constraints assessment

The purpose of this constraints assessment is to:

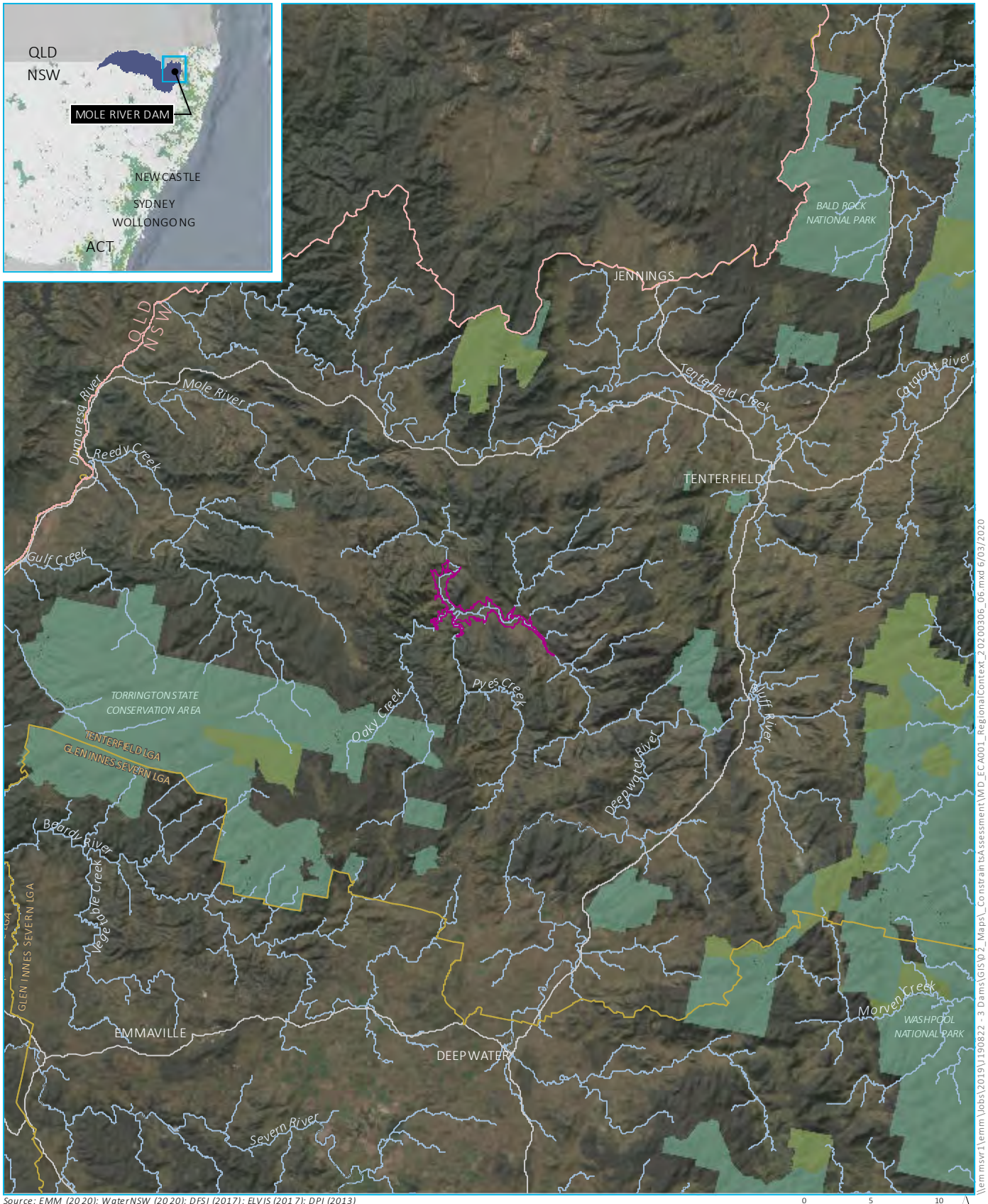
- collate existing Aboriginal and historic heritage information for the project footprint and immediate environs to identify established knowledge and areas where further understanding is needed; and develop predictions about the nature, composition and extent of Aboriginal and historic heritage that 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

Term	Definition / Description
Inundation area	Full supply level (FSL) as shown on Figure 1.1. This has been used to estimate nature and scale of potential impacts to Aboriginal and historic 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 (2017); DPI (2013)

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

0 5 10 km

GDA 1994 NSW Lambert

N

KEY

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

Regional context

Mole River Dam Project
Environmental constraints assessment
Figure 1.1

EMM creating opportunities

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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 Wale's 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 *Native Title Act 1993* (NT Act) provides recognition and protection for native title. The NT Act establishes the managing body, National Native Title Tribunal, 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.

A search of the National Native Title Tribunal register on 21 January 2019 indicates that there are no native title determinations or active claim applications over the project footprint. Furthermore, no ILUAs are encompassed within the project footprint. The land within the project footprint is freehold, and therefore unlikely to be permissible for a claim to be made in relation to the project. However, 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.

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 Mole River Dam 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 Mole River Dam 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 handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains.*

- 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 project footprint currently only features two registered Aboriginal sites (AHIMS #12-1-0013 and #12-1-0014); however, has the potential to contain many more unrecorded Aboriginal objects. While obtaining AHIPs is not required for a CSSI project, other aspects of the NPW Act and its regulations 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 teams 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 and historic sites or places within the study area and immediate environs;
- a search of the Tenterfield Local Environment Plan (LEP) (2013) and the heritage and conservation registers (s170) to identify any Aboriginal and 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 study area and immediate environs. Searches were generally expanded up to 100 Aboriginal sites or 1,000km^2 – 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 and historic 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 on 13 February 2020 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 footprint is broadly characterised as a landform pattern of hills centred around the valley formed by Mole River. Local relief is high and ranges approximately 140 m from 470 m Australian Height Datum (AHD) on valley flats up to 600 m on some of the higher bordering ridges. The project footprint's boundaries are typically defined by steep, rocky hill slopes or crests, whereas the landscape closer to channel of Mole River features more gentle slopes, spurs, foot slopes and valley flats. Outcropping granite may occur on eroded crests and steep slopes.

The project footprint is on the border of two bioregions: the New England Tablelands bioregion (east) and the Nandewar bioregion (west) and therefore may feature a combination of both environmental characteristics. The New England Tablelands bioregion consists of a stepped plateau of hills and plains dissected by an uplifted peneplain that distinguishes the east and west flowing rivers. Carboniferous and Permian age sedimentary rock compose the New England fold belt. Tertiary basalt flows cover most of the bedrock which has been subsequently eroded, exposing sands that contain precious stones and tin ores (Jacobs 2017). The Nandewar Bioregion is formed on Palaeozoic sedimentary rocks on the western edge of the New England Tablelands. The oldest layers are Devonian sedimentary and volcanic rocks, overlaid with Triassic sandstones and shales deposited by river on the edge of the Gunnedah Basin about 250 million years ago when new England was being lifted by intrusions of granite (DPIE 2016).

The project footprint has an underlying geology of Permian Age (299 to 251 MYA) Clive Adamellite formation which is a granitoid coarse-grained igneous rock (Geology Sheet 250K) (Figure 2.1). Discontinuous granite outcropping is observable throughout the region. The granites develop gritty shallow profiles between outcrops and tors on the crests, grading to harsh texture contrast soils with yellow clay subsoils that are prone to gully development on the lower slopes (DPIE 2016). Rich and Rosen (1991) observed black silicified siltstones and mudstones downstream from Mount Campbell (which is adjacent to the study area) which was a favourable material for Aboriginal stone tool manufacture. They also note that Gibraltar Rhyolite suitable for stone tool manufacture occurs in the locality. The bioregion is characterised by clay or loam soils. On sedimentary rocks, shallow stony soils occur on ridges, with texture contrast soils on most slopes (DPIE 2016).

Mole River is formed at the confluence of Bluff and Deepwater and is one of the major river systems within the Border Rivers catchment. The Border Rivers include the catchments of Dumaresq, Severn, McIntyre and Barwon Rivers. The project footprint is dissected with numerous watercourses including Oaky Creek (5th order), Gypsies Creek (5th order), Pyes Creek (5th order), and Eagle Creek (4th order) (Figure 2.2). The reliability of water in the landscape varies based on climatic and seasonal process, but generally there are nine distinct waterholes linked by narrow gravel riffle areas within the upper Mole River area.

Predominant vegetation within the project footprint is native grasslands with shrubby open forest and woodland scattered throughout. Common trees include Silver Leaved Ironbark (*Eucalyptus melanoplhoia)* in shrubby open forests, White and Black Cypress Pine (*Callitris endlicheri*) and *Callitris glaucophylla)* and Tumbledown Red Gum (*Eucalyptus dealbata*).

The existing environment heavily influences the potential types of cultural material that may be present and survive in the project footprint. The geological formations, notably rock outcrops, are essential for rockshelters and associated features (such as art) (Figure 2.2). Exposures of suitably abrasive geology observed in the creek may also be suitable for sites such as grinding grooves. The geology also includes raw materials such as chert that is known to have been used for tool production in the past. Conversely, the shallow soil profiles reduces the potential for buried cultural material. However, 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 narrow valleys (Figure 2.2). As such, evidence of past occupation may be more likely to occur on elevated areas (eg terraces) above these water courses, despite their riverbanks likely heavily used in the past. In contrast, Rich and Rosen (1991) found that most of the Aboriginal sites in the Mole River area have been damaged by land clearance, pastoral use, road construction, leading to soil erosion. Other activities such as mining, have also had an impact: tin was discovered in the 1870s and led to tin mining on the southern edge of the project footprint; and an Arsenic Mine to the north of the project footprint operated between 1924-1935. Additionally, historic vegetation clearance is likely to have removed many examples of Aboriginal scar trees which have been observed to exist on many eucalypt species in the region.

2.2.2 Ethnographic record

At the time of European contact, a number of Aboriginal groups are noted to occupy the Tenterfield region, including the *Ngarabal, Jukambal, Badjalang, Kitabal*, and *Keinjan* (AMBS 2013, p. 14). Ethnographic records indicate that occupation of the Mole River project footprint was most likely associated with closely related groups the *Ngaraba*l people in the west and south and the *Jukambal* people towards the east and north. Tindale (1974, p. 197) documented the *Ngarabal* people as occupying a territory extending west of a line from near Tenterfield to Glen Innes. Elder Keith Byrne, during an anthropological study (Kerr et al 1999) indicated that the northern boundary of *Ngarabal* land was delineated by the Mole River (AMBS 2013, p. 14). The *Jukambal* people are noted to have occupied country extending northeast from Glenn Innes to Tenterfield and near Wallangarra (Tindale 1974, p. 194). Today the Aboriginal community in Tenterfield Shire has two main language groups: the *Kamilaroi* (*Gamilaraay* and *Gamilaroi*) people and the *Bundjalung* (*Bunjalung, Badjalang* and *Bandjalang*) people, and falls within the jurisdiction of the Moombahlene Local Aboriginal Land Council (LALC) (TSC 2020).

It is demonstrated through archaeological data and ethnographic records that Aboriginal people of the region moved between the coastal plains and western plains seasonally in order to exploit natural resources, conduct ceremony, arrange marriages or hold corroborees, as well as to avoid the harsh winters of the New England Tablelands (AMBS 2013, p. 16). However, local resources were also readily exploited, as demonstrated through the predominant utilisation of locally available quartz and volcanic lithic material within archaeological assemblages of the Torrington State Recreational Area (Kerr et al 1999). Animals in the Tenterfield area that were used by Aboriginal people as food resources included kangaroos and wallabies, possums, emu, native ducks and waterfowl, echidnas, goannas, bandicoot, flying foxes, turtles, snakes, fish and yabbies, and grubs (Bundock 1978 [1898], p. 263; Ginibi 1994, p. 123; Moran 2004, pp. 13, 38-46). Tools utilised to hunt or capture game included woven nets of kurrajong fibre or bulrush root, hooks made from shell, as well as spears, boomerangs, and clubs made from local timbers (or waddies) (AMBS 2013, pp. 16, 22; McBryde 1974, p. 13; Bundock 1978 [1898], pp. 263-264; Gardner 1978 [1842-54], p. 239). Unfortunately, objects made from these types of organic material, as well as clothing items such as animal skin cloaks, rarely survive in the archaeological record. Material culture more likely to survive in the archaeological record are tools made from stone, which in the local area included axes, hatchets, hammer stones, grinding stones and dishes, scrapers, blades and other flaked tools.

Locally occurring ochre is also a highly significant resource to Aboriginal people, with red and yellow ochre and white clays used for body decoration during battles, corroborees or ceremonial occasions (AMBS 2013, p. 18, NPWS 2010, p. 5). In the region, ethnographic accounts most often describe ceremonies as taking place at bora grounds, usually consisting of a circular clearing defined by a raised earth circle, or stone arrangements both often associated with scarred or carved trees (AMBS 2013, p. 20; Gardner 1978 [1842-54], p. 243, McBryde 1974, p. 29; Mathews 1894). Ceremonial and/or ritual activities in the New England Tablelands region are typically located on landform features of high elevation (ie crests, knolls, hilltops) and it has been inferred this practice relates to worship of sky deities (AMBS 2013, p. 20; Bowdler and Coleman 1981, pp. 23-5; Davidson 1982, pp. 52-5). In the vicinity of Tenterfield LGA, bora grounds have been reported at Kangaroo Flat, Dingo Nob, Bora Mountain, Chinaman's Creek, Sandy Flat, Ruby Creek, Wheatley's Creek, near Rocky River/Demon Creek and Busby's Flat (AMBS 2013, p. 20). Unfortunately, these types of features are highly susceptible to damage by agricultural and pastoral activities, vegetation growth and weathering (AMBS 2013, p. 20; McBryde 1974, pp. 31,53; Connah et al. 1977, pp. 133-4).

Relating to ceremony, burial sites are not common throughout the Tenterfield region with ethnographic sources noting that Aboriginal people in the region often dealt with dead via exposure or cremation (AMBS 2013, p. 20). This was corroborated by Mr Donnelly of Woodenbong, who confirmed that in the late nineteenth century it was customary in the Tenterfield area to wrap the body in bark, and place it in a tree (AMBS 2013, p. 21; McBryde 1974:148). Where burial sites occur, Aboriginal people would often mark their location with scarred or carved trees incised with animal designs, weapons or geometric patterns, or burial mounds (AMBS 2013, p. 21; Gardner 1978 [1842-54], p. 243).

European occupation of the New England Tablelands began in the 1830s with squatters and pastoralists moving into the region, reaching the Tenterfield area by 1839 (Commonwealth of Australia 1924, p. 172). This resulted in significant disruption and impacts to Aboriginal peoples due to restrictions to access and use of traditional lands and resources. Violent conflict between settlers and Aboriginal people was inevitable as people retaliated against damage caused to hunting grounds, fishing waters, and burial places (AMBS 2013, p. 25; Gardner 1978 [1842-54], p. 239). Bluff Rock, an area of high cultural significance and sensitivity located approximately 15 km east of the project footprint, marks the location of a massacre which occurred in (AMBS 2013, p. 26; Walker 1962, p. 3). Another massacre site is located at Mount Mackenzie located approximately 13km to the north east of the project footprint. In 1883, the Board for the Protection of Aborigines was established to provide recommendations concerning the welfare of Aboriginal people and to manage Aboriginal Reserves in New South Wales. The responsibilities of the Board included organising housing, and issuing blankets, clothing and ration coupons (NSW Government State Records 2010). The government started to distribute blankets in the New England region in in the 1840s, and this practice continued in Tenterfield into the twentieth century (AMBS 2013, p. 28). During this time, the Aboriginal population was concentrated in rural areas, however as large pastoral properties were subdivided, government resettlement schemes encouraged people to move from stations and towns to Aboriginal camps and reserves (Giggs, Greenwood and Lea 1977, p. 202; Hall 1977, pp. 27-28; Moran 2004, p. 7).

2.2.3 Aboriginal heritage context

i Regional overview

Archaeological studies of the New England Tablelands (Tablelands) have been ongoing since the 1960s and comprise academic studies closely associated with the University of New England (UNE) along with cultural resource management (CRM) investigations in response to proposed developments across the region. However, the study area is located at the northern extent of the Tablelands and is at a lower elevation (up to 600 m AHD) than some of the more notably cooler areas in the region (such as Armidale at ~1000 m AHD).

The academic studies in particular have led to the development of regional Aboriginal occupation models that have been established, debated and refined – particularly from the mid-Holocene onwards (5,000 years ago – present). Archaeological and linguistic evidence suggests that the Tablelands were most intensively occupied from around 4,000 years ago (Beck 2006). This is based on the finds of surface or near-surface artefacts (Beck 2006), with very little found at greater depth. The oldest known Aboriginal site (~4,300 years old) is near Bendemeer on the southern edge of the Tablelands (McBryde 1974).

Initial archaeological research by the University of New England (UNE) indicated that Aboriginal occupation of the New England Tablelands was seasonal and transitory due to the cold climate during winter and the associated lack of resources for subsistence (Bowdler, 1981). In the 1970s, McBryde emphasised the harshness of the Tablelands, suggesting that it would have been a major obstacle to year-round occupation, resulting in a sparse distribution of sites in this zone compared with other more temperate climates (Binns & McBryde, 1972). Others argued that instead, the Tablelands were mainly used for ceremonial purposes which was supported by the rich archaeological record of Bora rings, art sites, stone arrangements and carved trees along with Aboriginal knowledge of intangible sites (Flood, 2010). In 1979, rock shelters were excavated by Carol Williams in New England, including the Mt Yarrowyck Art Site. The results indicated that the art site was occupied up to 4,000 years ago and that the area was used primarily as a ceremonial area along with maintenance areas, but not long-term habitation areas (Williams 1980).

These initial hypotheses were challenged as a result of further research at UNE. In a major study, Godwin (1990) argued that the Tablelands were not abandoned in winter at all but occupied all year round by small mobile groups. His evidence based on ethno-history, climate and surface archaeology suggests that the cold winter climate of the Tablelands was not a barrier to year-round settlement (Godwin 1990). Goodwin identified that the Tablelands had varying resources zones of woodland, grassland and wetlands. The notion of year-round occupation sets a frame of reference that the Tablelands were occupied more intensively than once thought and in more utilitarian ways and this may extend to the study area. More recent community archaeology supports this theory through the identification of numerous open camp sites, Aboriginal scarred trees and grinding grooves – sites mainly associated with economic, rather than ceremonial, activities (EMM 2018).

ii Local investigations

Previous studies of the study area are extremely sparse, and primarily constrained to CRM studies as part of various residential or industrial activities. Of most relevance was a former investigation of the Mole River dam location in 1991 by Rich & Rosen. They completed a survey of the current project footprint as part of preliminary constraints assessment for two previously proposed dam options: Lower Mole River and Upper Mole River. The first area was referred to as "Alister" and included a small portion of the current project footprint and land to the south. The second area was referred to as "Wahroonga" and covered New Mole Road that runs parallel with the current project footprint to its south. These survey areas are best represented by the distribution of AHIMS sites adjacent to the project footprint in Figure 2.3.

Rich and Rosen's assessment concluded that the Mole River Valley was a focus for Aboriginal occupation. They assessed that the lower river would have been more of a focus for camping and resource gathering than the upper river (the current project footprint) due to the topography, which is steeper and rougher. The study identified that sites were predominantly identified along the eroding banks of tributary streams and on spurs above the confluences of streams. Close to Mole River, sites were also found on rises and hills above the flood plain. Within the study area, Rich and Rosen identified stone artefact sites 300–700 m from Mole River, associated with the gullies on silicified siltstone geology. By contrast, sites to the south east, outside the study area, are located on granite geology, on hillslopes and spurs much closer to the river.

In 2013, AMBS conducted an Aboriginal heritage study of the Tenterfield local government area including the current study area. Their study included consultation with the local Aboriginal community and contains a detailed thematic history. However, the study did not involve on-site archaeological investigation. It identifies Mole River as an area of Aboriginal heritage sensitivity as the *Ngarabal* people territorial boundary. No other identified areas are within the project footprint, the nearest being the post-European Tenterfield blanket distribution site, some 20 km to the north east.

iii Database search results

The CHL, NHL and LEP databases identified no Aboriginal objects, sites or places in the vicinity of the study area. A search of the AHIMS database identified a total of 66 previously documented Aboriginal sites in an area ~250,000km^2 area centred on the project footprint (Figure 2.3; Appendix A). One artefact scatter, #12-1-0013, consisting of some 70 artefacts across a ~60,000m^2 area (1 per 850m^2); and one open camp site, #12-1-0014, have been identified in the project footprint, with a further five within a few hundred metres. These sites have been recorded as part of an earlier investigation of the Mole River Dam in the 1990s (Section 2.3.3ii). The remainder of the sites are sparsely situated across the search area.

Generally, sites appear to be found in close proximity to water, with numerous references in the data to a plethora of relatively minor watercourses. The previous sites are dominated by stone artefactual sites (n=36/55%) with lesser occurrences of rarer site types such as culturally modified trees (n=9), stone arrangements (n=1), quarries (n=1), massacre sites (n=2) and rockshelters (n=5). However, a number of increasingly rare site types are also documented in relative abundance in the region compared with other parts of NSW, including ceremonial sites (n=5) and burials (n=1). While not definitive, McBryde's (1974) detailed study of the region makes no reference of these types of site within, or near, the study area.

An Aboriginal Place, Woolool Wooloolni (Wellington Rock), a natural stone outcrop of spiritual importance to local Aboriginal people, is located approximately 40 km north east of the study area.

iv Aboriginal heritage predictions

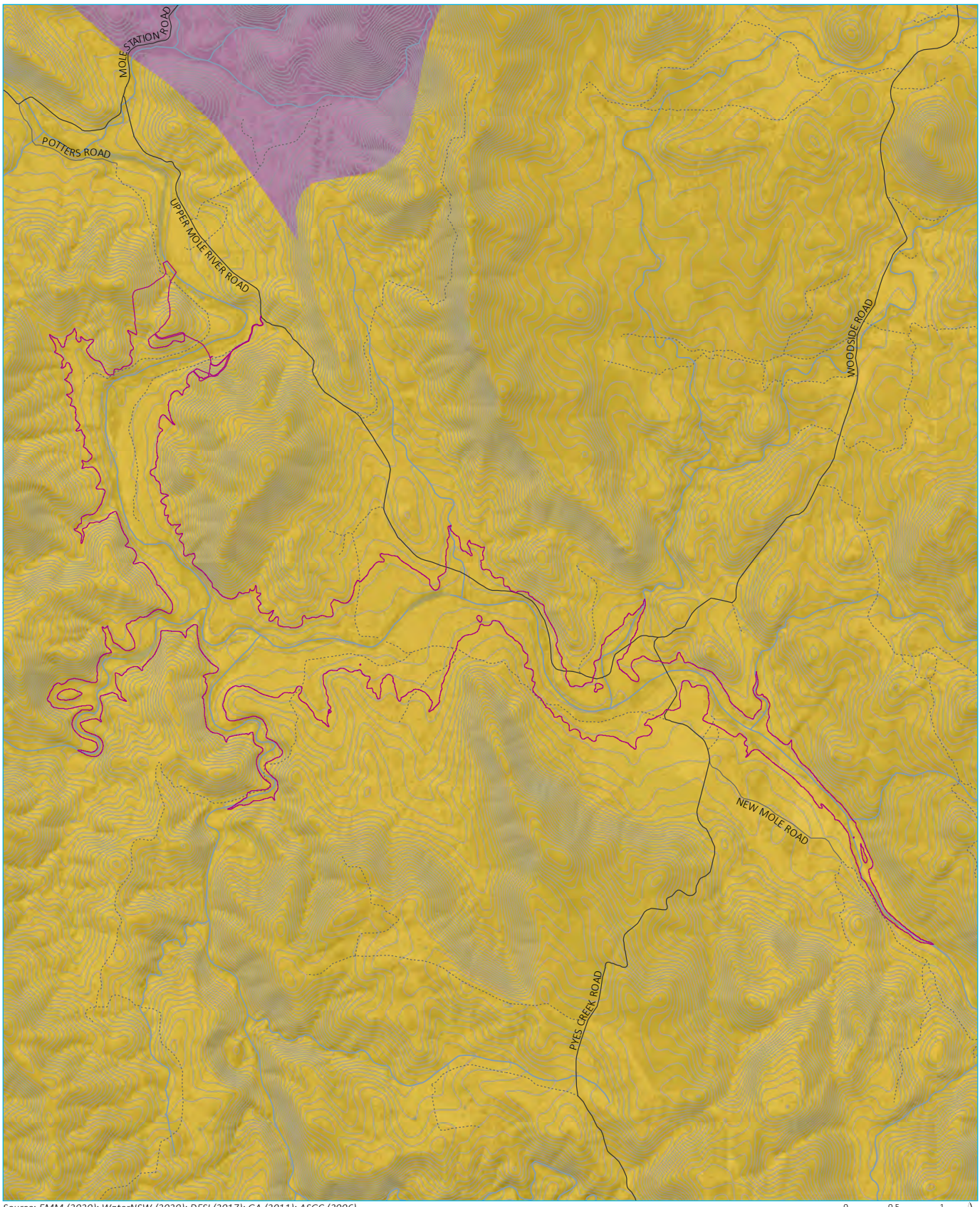
Based on the available information, the following predictions about the distribution and types of cultural material within the project footprint can be hypothesised (refer Figure 2.4):

- Aboriginal objects and/or sites are frequently found on terraces, spurs and/or elevations in close proximity to major and minor creeklines and especially confluences, often on flat or near flat surfaces. In close proximity to stone raw material sources (eg silicified siltstone) has also been documented. While rarer in the regional record, rockshelters have been identified and are found in association with steep escarpments and rock outcroppings such as those documented in the region. No grinding grooves have been documented in the region to date. Given the potential inundation of the region, the higher elevation crests and ridgelines along the study area may also have been attractive to Aboriginal people in the past;

- 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. Higher density artefact scatters are documented in the region, and suggest values of 60-80 should reflect a threshold at which transient use shifts to occupation foci;

- a range of other site types are known in lesser abundance, and arguably of higher significance, including culturally modified trees, stone arrangements, quarries, burials, rockshelters and ceremonial sites. These consist of ~29% of the documentary record, values that are likely above average for such site types more generally across NSW. A number of these sites are not related to resource exploitation and as such may not follow the environmental site predictions outlined above. For example, ceremonial sites in this region are documented as generally occurring at high elevation. Such sites will likely be found through close engagement with the Aboriginal and local community.; and

- aerial photography suggests that disturbance in the region has been limited, although previous studies do suggest some impact has occurred from past farming, pastoral and localised mining activities. As such, the survival of cultural material if present is likely to be high, but may be disparately found between existing disturbance, which in some places could be substantive.



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.

0 0.5 1 km

GDA 1994 NSW Lambert

N

KEY

- Project footprint
- Contour (10 m)
- Main road
- Local road
- Track
- Named watercourse
- Waterbody

Geology 250k

- Carboniferous
- Permian

Geology and topography

Mole River Dam Project
Environmental constraints assessment
Figure 2.1

EMM creating opportunities

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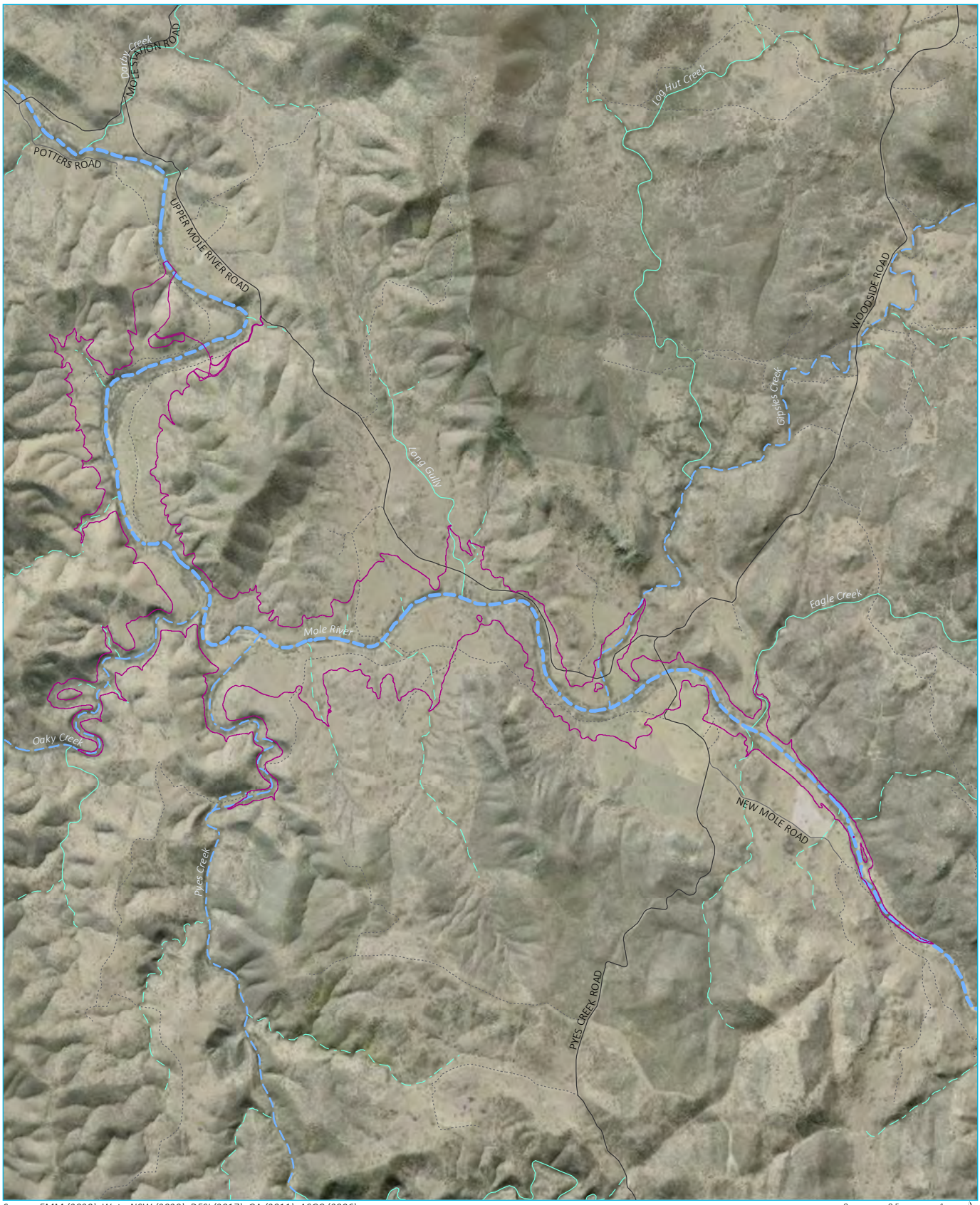

Source: EMM (2020); WaterNSW (2020); DFSI (2017); GA (2011); ASGC (2006)

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

0 0.5 1 km

GDA 1994 NSW Lambert

N

KEY

- Project footprint
- Main road
- Local road
- Track
- Waterbody

Strahler stream order

- 3rd order
- 4th order
- 5th order
- 7th order

Hydrology

Mole River Dam Project
Environmental constraints assessment
Figure 2.2

EMM creating opportunities

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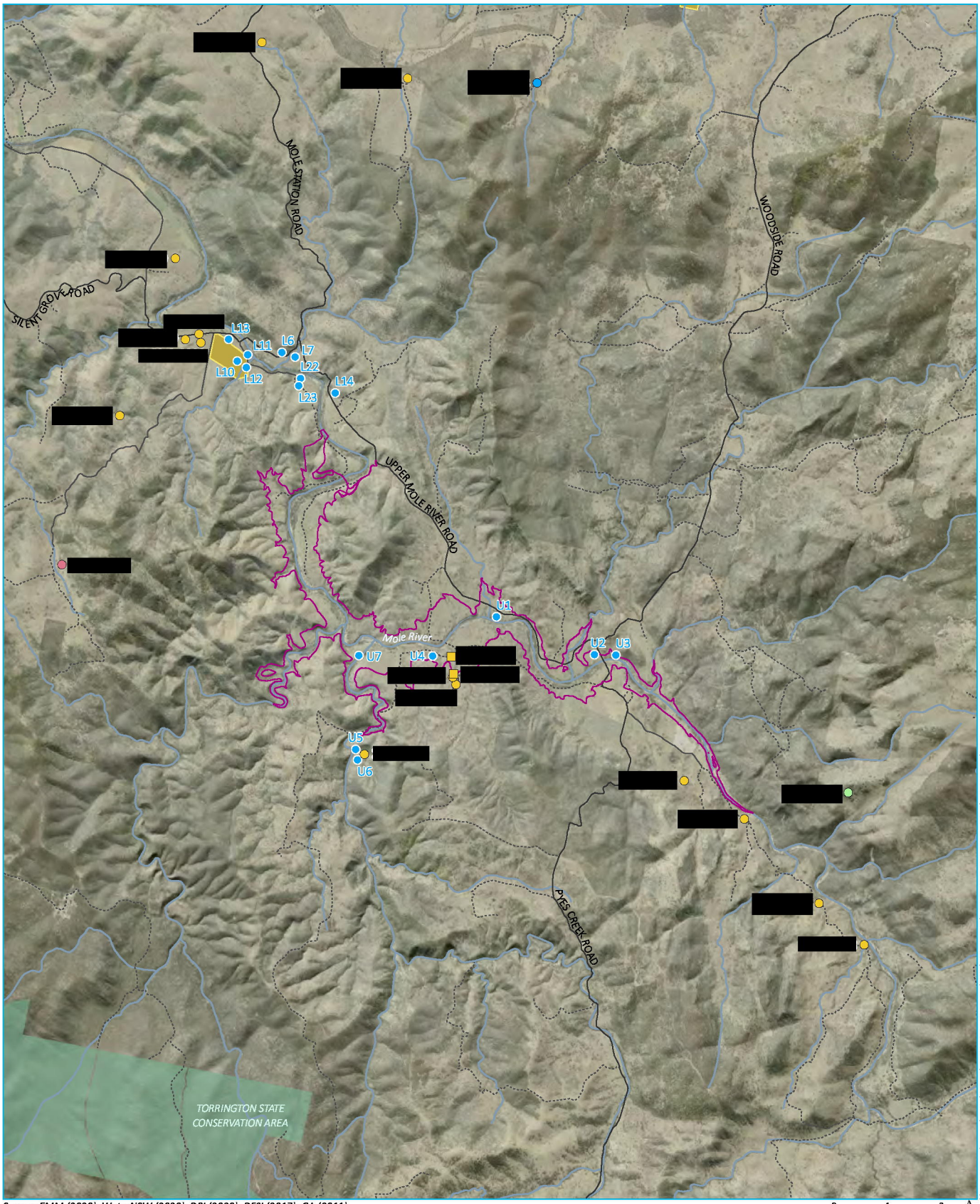

Source: EMM (2020); WaterNSW (2020); DPI (2020); DFSI (2017); GA (2011)

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

0 1 2 km

GDA 1994 NSW Lambert

N

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KEY

- Project footprint
- Historic site (Rich and Rosen, 1991)
- Main road
- Local road
- Track
- Named watercourse
- Waterbody
- NPWS reserve
- Arsenic mine

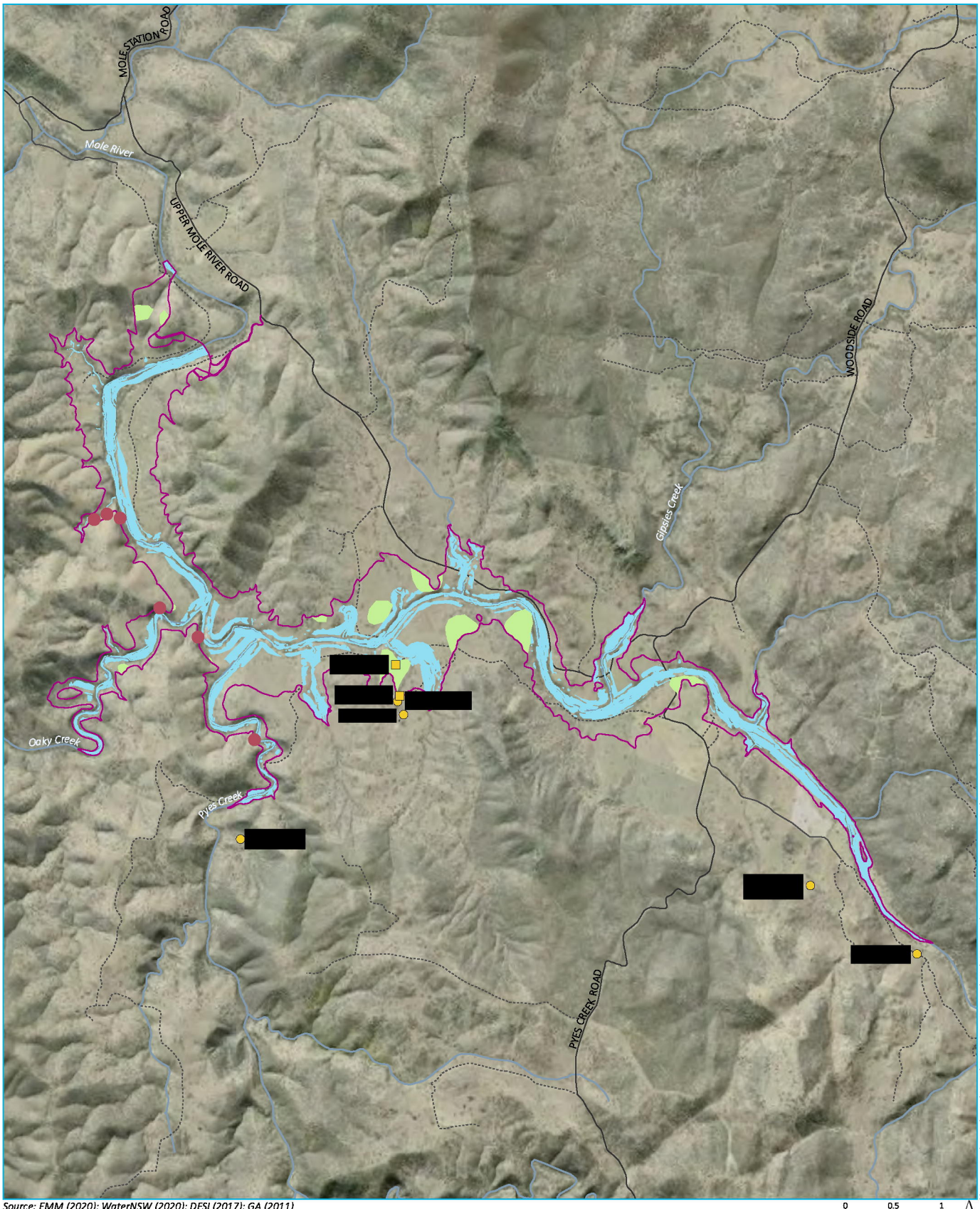
AHIMS site type

- Within project footprint
- Outside project footprint
- Bora/ceremonial
- Potential archaeological deposit
- Rockshelter (with art)
- Undefined artefactual site

AHIMS data and recorded historical sites

Mole River Dam Project
Environmental constraints assessment
Figure 2.3

EMM creating opportunities



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.*

0 0.5 1 km

GDA 1994 NSW Lambert

N

KEY

- Project footprint
- Main road
- Local road
- Track
- Named watercourse

AHIMS site type

- Within project footprint
- Outside project footprint
- Undefined artefactual site

Area of archaeological potential

- Crest landform
- Level to gently inclined landforms within 100 m of primary watercourse
- Very steep to precipitous terrain

Areas of archaeological sensitivity

Mole River Dam Project
Environmental constraints assessment
Figure 2.4

EMM creating opportunities

\\emmsvr1\emm\Jobs\2019\J190822 - 3 Dams\GIS\02_Maps_ConstraintsAssessment_Heritage\MD_HER005_ArchaeologicalSensitivity_20200227_04.mxd 27/02/2020

2.2.4 European history

i Historical summary

In 1827 Botanist Allan Cunningham was tasked by Governor Darling with the exploration of the interior that included the Darling Downs region in southern Queensland and the New England Region in northern NSW. Prior to 1839, 66 runs had been established in the best grazing lands of the region and in 1851 the implementation of the 1846 *Waste Lands Act* allowed squatters to obtain a 14-year lease as well as the ability to purchase freehold title to their headstation block. References to the Mole River station in the mid to late nineteenth century are sparse. The earliest reference to the site is found in the assessment of the Mole River station by Lands Commissioner Macdonald in 1848 with the land licence registered in the name of the Bank of Australasia encompassing an area of 55,000 acres that included 892 sheep. One year later in 1849, the land area had increased to 60,000 acres and 16,000 sheep.

The first documented occupant of Mole River station was Archibald Mosman as indicated in the Register of Stations in the District of New England in 1857. There is no indication of a Mole River station in the official texts, *Tracings of Runs 1866-68* or in the lands department catalogue which has made it difficult to define the exact boundaries of the original station. The station was sold by Cox and Dowling to Fraser and Anderson in 1871 who believed that W.A. Dumaresque was an earlier owner of the station. A survey conducted in 1876 shows that a homestead area had been established with a garden, huts, residence, stable and stockyard. By 1885 and at its peak, Mole River run was allocated as 46,861 acres of leasehold Crown land and 51,414 acres of resumed Crown Land bounded by the geographical features of the Mole valley. In the early 1880s Fraser became sole owner and in 1887 began purchasing more prime land along frontage of the Mole River. By 1889 the license to the station had passed to John McMullen and the Union Bank of Australasia, which had a mortgage over the leasehold, and in then 1893 was acquired by H.W. Tompkins.

After the *Robertson Land Acts* of 1861 and 1884 *Crown Land Act*, The Mole Valley experienced an influx of free selectors who began purchasing land in the 1880s, the earliest, as claimed by Fraser, was McAlister on Honeysuckle Flat (renamed Reedy Creek) and Captain Stackhouse at the Two Mile. Until the turn of the century the 100,000 acres that made up the Mole River station was gradually partitioned into smaller lots, many of which were too small to be a viable means of generating pastoral profit. By the 1920s, most of the unviable properties had been bought out or amalgamed into more substantial and well capitalised stations and the Mole River station was acquired by the Caldwell's. The Mole River arsenic mine was established in 1924 and operational until 1938 (Rich & Rosen 1991, p.9–15).

ii Database search results

Table 2.1 Mole River dam project - Tenterfield

Listing	Site	Significance
NHL	Vicinity of: Gondwana Rainforests of Australia, ID 105704 UNESCO world heritage property ID 368 -Washpool National Park. Approximately 52 km east/south east of project area	National
CHL	-	
SHR	SHR01056, Sunnyside rail bridge over Tenterfield Creek, Tenterfield	State

Table 2.1 Mole River dam project - Tenterfield

Listing	Site	Significance
	SHR01315, Tenterfield post office and quarters , Tenterfield	State
	SHR01267, Tenterfield Railway Station Group, Tenterfield	State
	SHR 01506, Tenterfield School of Arts, Tenterfield	State
S170 Register	SHI4801213, Tenterfield Railway Precinct, Railway Ave, Tenterfield	State
Tenterfield LEP (within 5 km)	I010, Arsenic Mine, Potters Road, Mole River, (Lot 1, DP 187765) Approximately 4.5 km north west of project area	Local

iii Historical heritage predictions

Selector's and squatter's huts, a tin mining site, agricultural equipment, and *Alister* homestead have been identified within the inundation zone of the proposed Mole River dam. These sites and items are from all phases of the historical occupation history of *Mole Station* and the *Mole River Holding* and represent the evolution of land use in the Mole Valley from c.1847 to the present day. Although Rich & Rosen (1991) suggest the seven sites are of local significance, they have not been recognised through listing on the Tenterfield LEP, or the non-statutory *Tenterfield Shire Heritage Register* (Tenterfield Shire Heritage Study Liaison Committee 2004).

Rich and Rosen's (1991) historical archaeological survey of the inundation zone (and surrounds) was far from encompassing. Two of the seven properties that will be subject to some level of submersion were surveyed. As all seven properties once formed part of *Mole Station* and the *Mole River Holding* it is likely further sites similar to those found by Rich & Rosen (1991) will be present across the remaining in five properties.

A hut, house, schools, post office, woolshed and mining site have been identified within a 5 km radius of the proposed dam site. These sites/ items also represent all phases of occupation and land use on *Mole Station* and the *Mole River Holding*. Although Rich & Rosen (1991) suggest the nine sites are of local significance, the Arsenic Mine is the only item listed on the Tenterfield LEP (2013 I010).

The Mole River Arsenic mine opened in 1924 to extract and process arsenopyrite to produce arsenic pentoxide, which was used produce an herbicide for Prickly Pear (Ashley & Lottermoser 1999, p.861). The mine employed 26 miners, most of whom resided in the miner's camp attached to the main works (Rich & Rosen 1991, p.18). The mine closed in 1935 but processing still occurred on the site until 1940 (Rich & Rosen 1991, p.18). Ashley and Lottermoser's (1999) survey of the Mole River Arsenic Mine noted substantial infrastructure remained on the site. The mine was subject to rehabilitation around 2008 (Appleton 2008). The mine is significant as it is the only arsenic-focused mine and one of only two mines in New South Wales that were equipped to produce arsenic pentoxide (Rich & Rosen 1991, p.18-19). Its "sister" mine Ottery Mine, Emmaville is listed on the State heritage Register (00392).

Rich & Rosen's investigation identified historical structures in the inundation zone and within 5 km of the development footprint. The sites are presented in Table 2.2 and Table 2.3 and are shown on Figure 2.3.

Table 2.2 Rich & Rosen (1991, p.32) identified historical objects/sites within the inundation zone of the current proposed dam

Rich & Rosen 1991 ID	Site Type	Location	Historical Phase	Condition
U1	Selector's (slab) hut	Alister	selection (c.1870-1920)	fair
U2	House, shed and yard sites	Alister	amalgamation (c. 1920s-1930s)	ruins and site
U3	Selector's hut	Alister	selection (c.1870-1920)	archaeological site
U4	Shepard's hut	Alister	squatting (c.1838-1870)	archaeological site
U5	Tin mine and bundles	Pyes Creek	Tin mining (c.1872-1920s)	fair
U6	Miner's hut	Pyes Creek	Tin mining (c.1872-1920s)	archaeological site
U7	Corn sheller	Braeside	amalgamation (c. 1920s-1930s)	fair

Table 2.3 Rich & Rosen (1991, p.31-32) identified historical objects/sites within 5km of current proposed dam

Rich & Rosen 1991 ID	Site Type	Location	Historical Phase	Condition
L6	School site	Mole Station	amalgamation (c. 1920s-1930s)	archaeological site
L7	Selector's hut and post office	Mole Station	selection (c.1870-1920)	poor
L10	Mine and processing works	Mole Station	arsenic mine (1924-1940)	ruins in fair to poor condition
L11	Miner's camp	Mole Station	arsenic mine (1924-1940)	archaeological site
L12	Manager's office	Mole Station	arsenic mine (1924-1940)	archaeological site
L13	Selector's hut and school	Mole Station	selection and amalgamation (c.1870-1930s)	fair to poor
L14	Dingo fence	Wynella	amalgamation (c. 1920s-1930s)	fair to good
L22	House/ cottage	Braeside	amalgamation (c. 1920s-1930s)	good
L23	Woolshed	Braeside	amalgamation (c. 1920s-1930s)	good

Considering the history of the project area and sites identified the following features may also be present across the project area:

- primary homesteads, potentially multiple phases;
- cottage or cottages to house managers or overseers;
- stockmen's huts, particularly around watercourses;
- shearing sheds, stables and stock yard;
- 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.

3 Site inspection

EMM Heritage undertook a site inspection of the project footprint on 13 February 2020 as part of the assessment. The site inspection was limited to the publicly accessible unsealed roads that run within and outside the project footprint. Because of this limitation, the aims of the site inspection were to:

- visit the available sample of project footprint landscape and similar nearby landscapes within the project area to test predictions of archaeological sensitivity to support future investigations;
- validate previously documented Aboriginal and historic sites to identify their condition, integrity and spatial accuracy, if accessible;
- 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 landscape 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. A selection of photographs are presented in Plate 3.1 to Plate 3.9.

The project footprint is characterised by a steep sided valley centred upon Mole River. Notably, most valley floor landform elements (river flood plains, rises and spurs and foot slopes) of the project footprint are on the northern side of Mole River (Plate 3.2). Whereas, with some exceptions, the southern side of Mole River within the project footprint abuts steep rocky scarp and scree slopes (Plate 3.3). The river corridor and adjacent floodplain represents complex fluvial geomorphology, and at the time of the site inspection, minor flooding revealed the dynamic nature of water and soil movement within, and adjacent to, the stream channel of Mole River (Plate 3.4).

The project footprint was characterised by thickly grassed paddocks interspersed with predominately native regrowth trees focussed on riparian corridors and steep scree slopes. Occasional mature or dead native trees were observed from a distance. Accordingly, ground surface visibility conditions for archaeological material was very low and the unsealed tracks were either built-up or graded and provided little insight into natural soil profiles. Occasional riverbank, and sheetwash exposures revealed raw material (including fine grained smokey quartz and varying grades of silcrete) that may have been suitable for Aboriginal stone tool manufacture in the past.

Outcropping of granitic geology was observed frequently across the project footprint and wider project area. Prominent crests and spurs were characterised by outcropping granite ranging from most commonly small angular boulders to occasional tors with monolithic appearance (Plate 3.6 and Plate 3.7). This characteristic is likely to have affected the suitability of Aboriginal camping on such features adjacent to streams and is likely to have often been a deterrent due to the difficult and rocky terrain it represents. Cliff lines and large cliff-side boulders were observed on steep to precipitous slopes, but no obvious overhangs suitable to have been Aboriginal rock shelters were noted. Notwithstanding, closer inspection of cliff lines and boulder formations may verify past Aboriginal occupation.

Disturbance across the project footprint was minimal, being limited to historic devegetation leading to increased erosional and alluvial reworking, the construction of roads, farming infrastructure (eg dams and buildings) and/or homesteads.

No Aboriginal objects were identified during the site inspection. One previously recorded AHIMS site located outside the project footprint (downstream of the proposed spillway) (AHIMS #12-1-0031) was inspected but none of the documented artefacts were observed. Overall, it is considered unlikely that the results of the site inspection

reflect the absence of Aboriginal objects, as the survey was only completed for a limited portion of the project footprint. Further, given the thick grass and low ground surface visibility across the project footprint, it is unlikely that substantive archaeological material will be visible in future systematic surveys. It is considered most likely that cultural material will be buried and best characterised through archaeological excavation. Lastly, landscape observations indicate that Aboriginal sites such as rock shelters, grinding grooves and Aboriginal scar trees have limited potential to occur within the project footprint.

In terms of historic heritage, most of the observed historical material has been previously documented, and is within the project area, but outside the project footprint. Historic structures and complexes were noted north-west of the project footprint and included Mole River Station school site (L6), Selector's hut and post office (L7), the arsenic mine and processing works (L10), arsenic miners camp (L11) and Selector's hut and school (L13). The only visible previously documented historical structure within the project footprint was the remains of a bark slab hut (site U1) (Plate 3.8). The Selector's Hut (U3), Hume Bros Farm Site (U2) and Corn Sheller (U3) within the project footprint was not accessible for verification. Additionally, two timber shed frame structures were identified within the project area (refer Appendix B) but further information about their significance and age is currently unknown (eg Plate 3.9). The site inspection results indicate that the focus of historical settlement related to Mole River Station and Mole River Holding was north-west of the project footprint; whereas historical items within the project footprint reflect more isolated settlement relating to shepherding and farming.

Plate 3.1 View south-west towards northern extent of project footprint showing a characteristic view of the valley

Plate 3.2 View south-east over valley floor towards Mole River with rises and spurs in the distance. Northern side of Mole River

Plate 3.3 View west of steep hill slopes that abut some areas of the southern side of Mole River

Plate 3.4 Stream Channel of Mole River and adjacent banks during low flooding. View North-west.

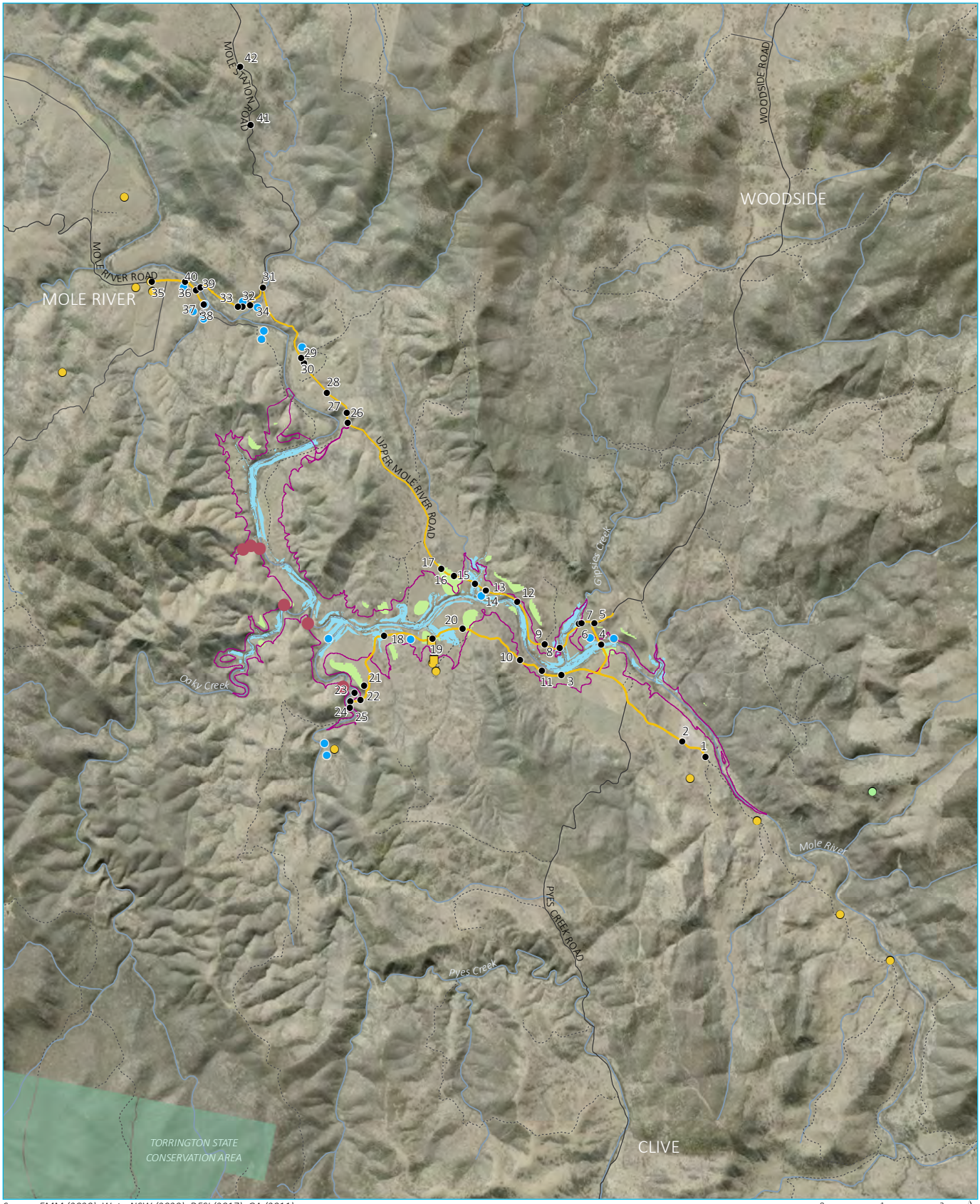
Plate 3.5 View north from outside project footprint looking towards upper section of flood plain and low rises next to Mole River.

Plate 3.6 Example of outcropping granitic crest next to a tributary of Mole River. View north-east

Plate 3.7 View of steep hills and rocky hill crests to abutting the northern side of Mole River, middle section, view north-east

Plate 3.8 View of location of bark slab hut taken from roadside within the project footprint. Only timber supports and tin cladding was visible. Northern side of Mole River, middle section. View South.

Plate 3.9 Example of timber shed and stock yards within project footprint. View North.



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.

0 1 2 km

GDA 1994 NSW Lambert

N

\\emmsvr1\emm\Jobs\2019\J190822 - 3 Dams\GIS\02_Maps_ConstraintsAssessment_Heritage\MD_HER006_SiteInspections_20200227_02.mxd 27/02/2020

KEY

- Project footprint
- Photograph location
- Historic site
- GPS track
- Main road
- Local road
- Track
- Named watercourse
- NPWS reserve

AHIMS site type

- Within existing full supply level
- Within study area
- Outside study area
- Undefined artefactual site

Area of archaeological potential

- Crest landform
- Level to gently inclined landforms within 100 m of primary watercourse
- Very steep to precipitous terrain

Site inspection results

Mole River Dam Project
Constraints assessment
Figure 3.1

EMM creating opportunities

4 Constraints assessment

The project has the potential to impact Aboriginal heritage during construction as a result of clearing and earthworks and other construction activities as well as during operation as a result of inundation. cThe proposed dam would result in inundation of an area of predicted archaeological sensitivity and which may contain Aboriginal objects and sites both in surface and sub-surface contexts on elevated landforms adjacent to the river.

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	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. 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.
Impact and cumulative impact to Aboriginal objects	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. Desktop information and a brief site inspection identified several 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.
Aboriginal consultation	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. 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.
Project footprint access issues	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.

Table 4.1 Key heritage constraints and opportunities

Item	Discussion
Impact to highly significant/sensitive Aboriginal objects and sites	While no sites of high significance been identified in the project footprint, the desktop assessment indicates a wide range of site types within the general region. Several of these would likely be considered of high significance, such as culturally modified trees, stone arrangements, quarries, massacre sites and may also be present in parts of the project area. 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. 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 extensive archaeological excavations and/or relocation of cultural features.
Impact to early historic properties, cultural landscapes and potential relics	While no specific sites or places were identified, the project footprint has the potential for a range of early European relics, structures and landscapes that (if present) may prove to be highly significant. 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.

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 and historical heritage within, and in close 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 case of Mole River, one stone artefact scatter (AHIMS 12-1-0013) and one open camp site (AHIMS 12-1-0014) have been recorded within the project footprint , but a further six occur within 500 m. Although this is a relatively small number of sites, it is only a reflection of a small archaeological survey completed in 1991 as part of a proposed dam of different location and dimensions (Rich and Rosen 1991). The AHIMS search results for the wider area 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 other ceremonial areas. 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.

Despites 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 indicates that ground surface visibility across the project footprint will generally be low and sub-surface investigation is likely to be an integral method to characterise the archaeology of the project area.

The historical heritage of Mole River extends to the 1840s when *Mole River Station* was established in the area. Sheep and cattle stations were large and required small outposts such as shepherds' huts, stockyards, stables and animal sheds, etc and evidence of this is present in the project footprint. At this preliminary level of investigation, the potential for relics and other significant features and values in the project footprint is therefore considered likely, and further investigation of these values is needed. It is unlikely that historical items related to the Mole River Arsenic Mine would extend into the project footprint as it is almost 2 km south-east.

Section 4 summarises the heritage constraints and the critical toned for a greater understanding of the cultural material within the project footprint, through further investigation and engagement with the Aboriginal community. Notwithstanding the preliminary investigation results, more robust investigations is 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 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;
    - 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

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

Appendix B

Site inspection photographs

Mole River 1.jpg

Mole River 2 (1).jpg

Mole River 2 (2).jpg

Mole River 2 (3).jpg

Mole River 3 (1).jpg

Mole River 3 (2).jpg

Mole River 4 (1).jpg

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Mole River 6.jpg

Mole River 7 (1).jpg

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Mole River 8.jpg

Mole River 9 (1).jpg

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Mole River 10.jpg

Mole River 11.jpg

Mole River 12 (1).jpg

Mole River 12 (2).jpg

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Mole River 13.jpg

Mole River 14 (1).jpg

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