7.7 Aboriginal cultural heritage

This chapter provides an assessment of Aboriginal cultural heritage, which was nominated in the DGRs as a key environmental issue for the project. It represents a summary of the *Aboriginal Cultural Heritage Technical Paper* (Navin Officer Heritage Consultants (NOHC), 2012), which was prepared for the project with consideration of the DGRs.

The technical paper is provided at **Appendix J**. The relevant extract from the DGRs is presented below.

Director-General's requirements	Where addressed
Aboriginal Heritage *- including but not limited to:*	
• *An assessment of the project on Aboriginal cultural heritage consistent with the draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation (DEC, July 2005), specifically considering artefacts, potential archaeological deposits and landscape cultural values. The EA must demonstrate effective consultation with indigenous stakeholders during the assessment and on developing mitigation options (including the final recommended measures). The EA must describe the actions that will be taken to avoid, mitigate or offset impacts.*	Section 7.7.1 – Section 7.7.4 Technical Paper J: Aboriginal Cultural Heritage Assessment

7.7.1 Approach to assessment

The Aboriginal cultural heritage assessment included:

- Consultation with Aboriginal stakeholders and the local Aboriginal community.
- A review of relevant literature and databases.
- Field survey.
- Archaeological test excavation.
- Provision of mitigation measures based on the results of the investigation and the anticipated impacts of the project.

Aboriginal consultation

The DGRs for the project require RMS to undertake an assessment consistent with the 'draft *Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (NSW Department of Environment and Conservation (DEC) July 2005)'. The draft Guidelines refer to the '*Interim Community Consultation Requirements for Applicants* (NSW Department of Environment and Climate Change (DECC) 2004)' for guidance on undertaking Aboriginal community consultation.

In mid- 2010, the '*Aboriginal cultural heritage consultation requirements for proponents* (2010) published by the Office of Environment and Heritage (OEH superseded the *Interim Community Consultation Requirements for Applicants* (DECC, 2004). Following consultation with NSW Department of Planning and Infrastructure (DP&I) and OEH, RMS agreed to undertake consultation and assessment in accordance with the new requirements to ensure a comprehensive and up-to-date approach. This involved the re-advertisement for Aboriginal stakeholders (in addition to persons already part of the Aboriginal focus group (AFG)) and satisfying the consultation periods with registered stakeholders at various stages in the assessment as specified in the guideline.

Consequently, for this project, RMS has undertaken Aboriginal community consultation and investigation consistent with the '*Aboriginal cultural heritage consultation requirements for proponents*' (NSW Department of Environment, Climate Change and Water (DECCW), 2010).

Consultation with the Aboriginal community has occurred as part of the project and as part of the wider Princes Highway upgrade between Gerringong and Bomaderry. An AFG was originally formed as part of investigations for the Princes Highway upgrade between Gerringong and Bomaderry in February 2007. The AFG consisted of all Aboriginal parties who registered an interest in being consulted regarding the project.

Aboriginal consultation activities that have been conducted to date include 13 AFG meetings, a bus trip and field inspection (carried out in June 2009 to visit and review areas where investigative works were proposed) and participation of AFG representatives in test excavations. AFG meetings will continue throughout the project.

Aboriginal stakeholder consultation was undertaken having regard to the methodology for the assessment proposed by NOHC. A copy of the proposed methodology was posted to all registered Aboriginal stakeholders by RMS on 8 July 2011 with an invitation to provide a written response by 5 August 2011. An AFG meeting was also held by RMS on 14 July 2011 to discuss the proposed methodology. The minutes of this meeting noted that the AFG was in agreement with the extent, frequency and location of the test excavation methodology. By the end of the consultation period, no written responses from stakeholders had been received by either RMS or Navin Officer Heritage Consultants.

Following the completion of test excavations, a draft copy of the Aboriginal cultural heritage assessment technical paper was provided to all registered Aboriginal stakeholders on 20 October 2011, with an invitation to comment by 21 November 2011. One submission was received, which was considered in the finalisation of the technical paper. An AFG meeting was convened on 10 November 2011 to discuss the draft report and its findings. At the conclusion of this meeting, several resolutions were made. The resolutions relevant to the management and mitigation of impacts are discussed later within this section. A full record of the resolutions can be found in the *Aboriginal Cultural Heritage Technical Paper* at **Appendix J**.

Subsequent to the Aboriginal stakeholder review of the draft Aboriginal cultural heritage assessment technical paper, a number of design refinements were made to the project. Further consultation with the stakeholders was not undertaken as the changes that resulted in a modified project footprint had been surveyed and reported in the draft report, occur within an area most of which was included in the draft report, or fall within areas previously disturbed by road construction activities.

Literature and database review

A range of archaeological and historical data was reviewed for the project area and its surrounds. This literature and data review was used to determine if known Aboriginal sites were located within the area under investigation, to facilitate site prediction on the basis of known regional and local site patterns, and to place the area within an archaeological and heritage management context. The review included heritage registers and schedules, local histories and maps, and archaeological reports.

Aboriginal literature sources included the Aboriginal Heritage Information Management System (AHIMS) maintained by OEH, associated files and catalogue of archaeological reports; and, theses held in the library of the School of Archaeology and Anthropology at the Australian National University.

Searches were undertaken of the following heritage registers and schedules:

- AHIMS (OEH).
- World Heritage List (World Heritage Committee, UNESCO).
- The National Heritage List (Australian Heritage Council).
- The Commonwealth Heritage List (Australian Heritage Council).
- Section 170 Heritage and Conservation Register(s) compiled by RMS (*Heritage Act 1977*).
- Heritage Schedule(s) from the Shoalhaven and Kiama Local Environmental Plans (LEPs).

Field survey

The project area subject to survey and assessment consisted of the project alignment and the additional area of investigation, identified by RMS in August 2011, for the refinement of the project north of Berry (refer to **Section 3.3**).

Field survey was conducted over a period of two months (February to April 2009) in multiple survey events across the project according to property access availability and local weather conditions. Field survey of the project north of Berry was conducted in August 2011 (as part of the archaeological test excavation program). Field survey was also conducted in March 2012 at the eastern end of the project as part of a separate assessment for the neighbouring Gerringong Upgrade. The results of that assessment, where relevant, have been considered in this assessment.

Survey involved inspection both on foot and via vehicle, depending on property access and ground visibility. The field assessment involved the detection of surface archaeological material, and an assessment of the potential for archaeological material to be located below the ground surface.

Archaeological test excavation

Archaeologically sensitive landforms identified within the project area have been termed potential archaeologically sensitive areas (PASA).

The identification of PASA to inform the archaeological test excavation program was based on:

- The predictive model – developed in the route options assessment stage of the project, and refined based on the results of the Gerringong upgrade test excavation program. This concluded that zones of archaeological sensitivity would be associated with riparian corridors, the elevated margins of wetlands and the valley floor, and the crests of major ridges and spurs.
- Ethno-historical information.
- A review of landscape characteristics relative to known archaeological site patterning and landscape disturbance.
- Locations suggested by local Aboriginal community representatives.

Twenty-three PASAs were identified as occurring within the project. Of these PASAs, test excavations were undertaken at 21 of the PASAs between 8 and 30 August 2011. Two PASAs were excluded from the test program because these sites were not expected to be impacted by the project or the impact would be to a highly disturbed section of the PASA.

Two hundred and ninety eight archaeological test pits were excavated in the 21 PASAs in the project. Wherever possible, test pits for subsurface testing at these sites were situated within the anticipated construction footprint of the project. For the purposes of this assessment, the construction footprint is defined as the area subject to direct impact.

Test pits were excavated using mechanical excavation, unless evidence was present to indicate that excavation was required by hand. Excavation by hand was only required at one location where access to the area with an excavator was not feasible. The methodology used for the excavation of test pits is provided in **Section 2.3** of the *Aboriginal Cultural Heritage Technical Paper* at **Appendix J**.

Of the 21 PASAs subject to test excavation, 19 PASAs were found to contain archaeological deposits (stone artefacts) relating to Aboriginal occupation.

7.7.2 Existing environment

Aboriginal tribal boundaries

Aboriginal groups within the lower Shoalhaven area have tended to be described as having a single cultural character. This means that the Shoalhaven tribes are generally treated collectively and are thought to speak one dialect.

Many modern researchers use the term Dharawal or Tharawal to refer to the tribal group within the Illawarra. Amongst contemporary local Aboriginal people the term Wodi Wodi is preferred. The Aborigines of the Nowra region refer to themselves as Wandiwandian people (pers. comm. Sonny Simms 2007).

Generally speaking, the term 'tribe' is employed to describe a large group of people who, for the most part, speak a common language and occupy a broad tract of land. Inside of these tribes are 'clans' which consist of loosely-related families who own the land. There are also smaller groups referred to as bands that perform the daily tasks of group maintenance.

Boundaries between local bands and clans were flexible and permeable, allowing groups to move about (Poiner 1976). The Aboriginal people of the Shoalhaven banded together for specific activities, were together for a time, and then split apart. Later they formed new groups which most likely had at their core a number of closely-related families.

It is likely that Aboriginal groups were able to maintain their structure throughout the early period of European settlement. In response to European settlement, Aboriginal groups may have sought refuge, established camps either at a distance or close to European properties, been partially integrated into maritime or pastoral activities, or remained on the fringes of European communities.

As the land-use patterns of the new colonists intensified, there would have been a demand on natural resources, and the food sources of the Aboriginal people would have diminished radically. In the 1840s and 1850s, the introduction of dairy farming (Bell 1960) further reduced the availability of game in the Shoalhaven District. The issuing of rations by the government encouraged a clustering of people into camps, which would have caused some breaking down of the previous social structures.

By the 1880s, it appears as if most of these structures were weakening and Aboriginal people were being pressed into reserves or missions. Although the missions provided places for ration distribution they also may have been inappropriately sited or offered constraints and other forms of control.

Local Aboriginal Land Councils

The project and the surrounding area falls within three Local Aboriginal Land Council (LALC) boundaries. These are Illawarra LALC, the Jerringa LALC and the Nowra LALC. The boundaries of the LALCs are shown on **Figure 1-2**.

Historical overview

The first reference to interaction between the Shoalhaven tribes and Europeans came from the recollections of survivors of the wreck of the 'Sydney Cove' who walked up the south coast from Gippsland to north of the Illawarra before being picked up. As the party came towards the Shoalhaven they met with 'unfriendly natives, at whose hands it is thought some of the exhausted ones lost their lives' (Cambage 1916).

The first Europeans to venture into the coastal escarpment of the Illawarra range were almost certainly cedar getters, both legal and illegal. An undocumented and probably violent story of culture contact and exploitation followed the cedar cutters.

Early in 1822, Alexander Berry spent several days exploring the Shoalhaven River, up as far as Burrier. Six months later Berry returned with the aim of establishing a permanent settlement. This marked the start of permanent European settlement in the Shoalhaven River valley.

Berry chose an area of elevated ground at the foot of a hill variously referred to as Coolungatta, Cullengatty, Coloomgatty or Cooloomgatta (Antill 1982:10, Bayley 1975:24, 27, Mitchell 1834 NSW Map) for the site of his settlement. Berry's selection of this location was apparently treated with apprehension by the local Wodi Wodi. Berry notes that in June of that year, during construction of a hut and a canal near the Shoalhaven Heads, a native called Wagin (a local chief), confronted the workers and claimed the ground where they had been working (in Jervis 1942:235). This action falls into context when it is acknowledged that the Coolangatta Mountain was a place of ancestral significance to local Aboriginal people.

Berry's settlement grew steadily with the immediate introduction of herds of cattle and the establishment of plant crops at Numbaa. Berry initially considered the local Aborigines to be ferocious and his timber workers tried to drive them away. Several weeks after Berry's arrival a party of twenty Aborigines camped near his settlement. The probable band groupings observed by Berry suggested that most of the Aboriginal population was centred on the more fertile coastal plains.

There are a number of historical accounts of hostility in the early to mid nineteenth century between tribal groupings of the northern and southern Illawarra Dharawal speakers. These consist of clashes between the 'Illawarra' tribes and apparent northward offensives of the Bong Bong, Broughton Creek, Kiama and Shoalhaven tribes. This has been interpreted as a consequence of changes in social order, resource distribution and political alliances brought about by the European settlement and occupation of tribal lands (DEC 2005:16).

In the 1830s, there are reports of Aboriginal employment in the Berry estate industries and the provision of space for vegetable gardens tilled by Aboriginal employees.

Through the 1840s and 1850s Aboriginal communities were increasingly impacted by the spread and consolidation of European settlement. In response, Aboriginal people either settled on the pastoral stations, in 'fringe camps' adjacent to European settlements, or were forced into adjacent rough and mountainous country. Egloff (1981) concludes that by the 1840s the Shoalhaven Aborigines had been reduced to remnant groups either wandering large tracts of the coast, or subsisting at the edge of the now permanent European settlements.

Reports from the 1850s onwards suggest a trend in Aboriginal occupation and subsistence such that camps and most food gathering and hunting became concentrated along the coast. This pattern was shaped by European settlement which pushed Aboriginal people onto country unsuitable for agriculture, notably the coast and the adjacent wetlands (DEC 2005:25). Permanent Aboriginal camps became established on Broughton Creek (Berry), Crooked River (also referred to as Black Head or Gerongong), around Jervis Bay (notably Bilong on Currambene Creek), and in a gully on the northern side of the Coolungatta Mountain on the Berry Estate (Egloff 1981).

Other encampments known from the latter half of the nineteenth century include the banks of Broughton Creek at Broughton Village (Donlon 1991a:12), and the banks of Broughton Mill Creek adjacent to Berry (Barbara Timberry in DEC 2005:39-41).

Reclamation of the Shoalhaven wetlands began on a major scale from 1873. By 1909 a total of 600 kilometres of drains had been constructed. The draining of the wetlands effectively alienated the last terrestrial wild food areas open to the remaining local Aborigines.

Aboriginal groups responded to the dispossession of their lands in a variety of ways including fostering camps close to pastoral properties, as well as at places of refuge away from settlement. Some people moved into areas of settlement and communities grew on the edges of rural towns. In response to moves into areas of settlement, the New South Wales government established a system of Aboriginal reserves in the 1880's.

In 1899 a government Aboriginal reserve of 43 acres was established near the northern end of Seven Mile Beach. The reserve was revoked in January 1953 (AR 29911, McGuigan nd:39). Although the exact nature of Aboriginal occupation on this reserve is not well documented, its location and duration supports the documentary evidence for a historical focus of Aboriginal occupation in the Crooked River (Black Head/Gerringong) area.

In a census conducted by the Commonwealth in 1901, the Aboriginal population of the Illawarra was distributed across seven camps with 33 people at Port Kembla, 13 at Minnamurra River, eight at Dapto, 18 at Bombo, 20 at Gerringong, three at Jamberoo and three at Kiama, giving a total of just 98 people (DEC 2005:24).

From 1940 to 1969 the Aborigines Protection Board vigorously pursued a policy of assimilation. Reserves were reduced in size or were revoked (Long 1970). Houses and facilities were allowed to deteriorate in an attempt to force Aboriginal people to move off the reserves.

Today, Aboriginal people live throughout the Illawarra and South Coast as residents of the larger towns and cities – Bega, Nowra, and Wollongong, as well as maintaining communities on former reserves, and are found throughout the region in family groups.

Literature and database searches

Seventy four Aboriginal sites had been recorded in an area 26 by 19 kilometres, around and including the project, prior to the commencement of the cultural heritage studies for the Princes Highway upgrades between Gerringong and Bomaderry. Sites comprised 32 artefact scatters, 19 shell middens, seven isolated finds, seven rock shelters with art and/or deposit and/or rock engravings, one natural mythological site, one bora/ceremonial site, one midden/artefact scatter, one potential archaeological deposit (PAD), four axe grinding groove sites, and one Aboriginal Place at Foxground.

No Aboriginal sites had been recorded within the project area prior to the commencement of studies for the Princes Highway upgrades between Gerringong and Bomaderry. However, information collected from a local community questionnaire for a previous highway upgrade options analysis (Donlon 1991:12-13) revealed the following anecdotal information:

- Aboriginal artefacts have been observed and collected along the banks of Broughton Creek in the vicinity of 'Brookside', Broughton Village.
- A stone arrangement and bora ring is reportedly located in a 'fairly open area associated with Lilli Pilli trees on Toolijooa Hill'. The location of this reported site is not known.

Identified sites and assessment of significance

Based on the findings of the literature and database review, field surveys, test excavations and consultation with the Aboriginal stakeholders, 42 Aboriginal heritage recordings were identified within the project area. The locations of the recordings are shown in **Appendix C** of the *Aboriginal Cultural Heritage Technical Paper* at **Appendix J**. These include:

- Archaeological recordings:
  - Surface artefacts, identified by previous investigations in the area (G2B A3).
  - An isolated surface scatter associated with a PAD (G2B A38).
  - The 23 sites determined to contain subsurface artefacts based on the test excavation of PASAs conducted for this project.
- Places or landscapes of reported historical and cultural Aboriginal significance:
  - Three ethno-historical recordings and one cultural landscape, being the 'Brookside' Aboriginal encampment, Dicky Wood's Meadow battleground, the historical Aboriginal encampments at Berry and Toolijooa Ridge Aboriginal cultural landscape (TRACL).
  - Twelve fig trees (cultural landscape feature).

Subsequent to the finalisation of the test excavations, changes to the project were made at the Austral Park Road interchange. The topography at this location is considered to be a sensitive landform and has been identified as a G2B PAD1 for the purposes of this assessment.

Archaeological recordings

The 23 sites identified within the project area have been labelled G2B A15, G2B A 16, G2B A 17, G2B A 18, G2B A 19, G2B A 20, G2B A 21, G2B A 22, G2B A 23, G2B A 24, G2B A 25, G2B A 26, G2B A 27, G2B A 28, G2B A 29, G2B A 30, G2B A 31, G2B A 32, G2B A 33, G2B A 34, G2B A 35, G2B A 36 and G2B A 37. The main conclusions regarding trends in site location (refer **Appendix C** at **Appendix** J) were as follows:

- A greater number and/or richness of artefacts tend to coincide with major spurlines and low gradient basal slopes above, and set back from, the valley floor.
- The valley floors and in particular the alluvial flats, are generally characterised by intermittent and low incidences of artefacts.
- Micro-topographic features such as locally elevated terraces and creek banks, within the broader valley floor context, tend to contain a higher incidence of artefacts.
- The ridgeline crests and saddles tend to be characterised by intermittent and low incidences of artefacts, with higher incidences occurring in association with features such as low gradient knoll crests and break of slope interfaces.

Of the 23 sites, 11 sites were assessed as having low archaeological significance within a local context. This was based on the low diversity of artefacts and the relatively low and discontinuous number of artefacts found at these locations. These are sites G2B A15, G2B A17, G2B A19, G2B A20, G2B A21, G2B A23, G2B A25, G2B A27, G2B A34, G2B A35 and G2B A37.

Nine sites were assessed as having moderate archaeological significance within a local context. This was based on the sites having a greater number of artefacts present or a greater richness of artefacts. These are sites G2B A16, G2B A18, G2B A22, G2B A24, G2B A26, G2B A28, G2B A32, G2B A33 and G2B A36.

Three sites were assessed as having moderate to high archaeological significance within a local context based on their association with the Brookside encampment and Dicky Wood's Meadow battleground. These are sites labelled G2B A29, G2B A30 and G2B A31.

Discussion with Aboriginal stakeholders during fieldwork and AFG meetings indicate that all archaeological recordings within the project area are of Aboriginal cultural significance, however to date no detailed responses have been received with regard to individual sites.

Three archaeological recordings (apart from PASAs) were not subject to archaeological testing being G2B A3, G2B A38 and G2B PAD1.

Site G2B A3 is considered to be of low archaeological significance within a local context based on the diversity, low artefact incidence and the substantially disturbed nature of the area.

Based on the confirmed site content of G2B A38, the site has low archaeological significance within a local context. A significance assessment for the associated PAD cannot be completed without survey data. However, based on the predictive model, the potential of this PAD is considered to be moderate or high.

Similar to G2B A38, a significance assessment for G2B PAD1 cannot be completed. Based on test excavation results for the project and the predictive model, the potential for G2B PAD1to contain archaeological material is high. As such, the potential archaeological significance for G2B PAD1 may be low to high within a local context.

Places or landscapes of reported historical and cultural Aboriginal significance

Places and landscapes which have, or may potentially have, historical or cultural significance to the local Aboriginal community within the project area include:

- The historical encampments at Broughton Village,' Brookside' Aboriginal Encampment (G2B A14).
- The 'Little Mountain' or Dicky Wood's Meadow battle ground (G2B A13).
- Historical Aboriginal encampments at Berry, being the Boongaree Aboriginal encampment and the Berry Pickers encampments (collectively referred to as G2B A39).
- The Toolijooa Ridge Aboriginal cultural landscape (TRACL).
- 12 large and old/mature growth fig trees on Broughton Creek.

Other generalised landscape features considered to have cultural significance and values by Aboriginal stakeholders in the project area and its surrounds, include:

- Large and old/mature growth fig trees.
- Remnant and regenerating native vegetation.
- Plants and animals with significance in past and contemporary Aboriginal cultural practice.
- Landforms which remain unchanged by European land use or strongly manifest the pre-European landscape (examples include prominent ridgelines, escarpments, hills, former swamp basins and river and creek corridors).
- Natural ecological systems associated with features such as creeks and rivers, forests and swamps.

Places or landscapes of Aboriginal cultural heritage significance may be found to include related archaeological remains. However, the importance of these places is not dependent on the presence of such remains. The cultural significance of the Aboriginal landscapes and places in the project area are described below.

The 'Brookside' Aboriginal encampment

There is a local oral tradition that Aboriginal people were known to have camped along the banks of Broughton Creek in the vicinity of 'Brookside' at Broughton Village until at least the turn of the century.

This recording consists of a place only and to date no archaeological evidence has been found. This place has Aboriginal cultural significance due to its association with the actions and destinies of local community ancestors and their families in the late nineteenth century. This site relates in particular to the interaction between Aboriginal and European people, and camping adjacent to homesteads.

The general location of the Brookside Aboriginal encampment in relation to the project is shown in **Figure 7-41**.

The Dicky Wood's Meadow battleground

An Aboriginal battlefield is located in the project area, in the vicinity of Broughton Village. The Dicky Wood's Meadow battleground is based on an account provided by a local Aboriginal person. The place has high significance for Aboriginal people as it relates to traditional lore and practice, and is associated with the potential for burials. Despite the absence of specific archaeological evidence for a battle ground, such evidence may still be present. The test excavations conducted to date have been limited in scope and extent relative to the potential battle ground area. The current archaeological evidence remains compatible with the reported battle ground function and does not limit its Aboriginal cultural value.

The general location of the Dicky Wood's Meadow battleground in relation to the project is shown in **Figure 7-41**.

Historical Aboriginal encampments at Berry

This recording comprises an area within which two phases of Aboriginal camping activity is known, or thought likely, to have occurred. It is surmised that nineteenth century camping may have occurred in this area, upstream of the Boongaree encampment, possibly as a response to the European 'Broughton Creek' village built on the adjacent spurline. Numerous oral accounts record that in the twentieth century, up to at least the 1960s, Aboriginal people regularly camped on the creek flats during seasonal employment as crop pickers.

The location of the Boongaree encampment, which was centred on the former meadow lands at the intersection of Broughton and Broughton Mill Creeks (outside of the project area), has high Aboriginal cultural significance within a regional context. This is due to multiple factors including:

- Its cultural, spiritual and historical importance as an Aboriginal encampment recorded at the time of European contact, and the home of important local identities Toodwick (known to Europeans as Broughton) and his brother Broger.
- Its cultural associations with the ancestors of contemporary Aboriginal people who identify with the lower Shoalhaven River district.
- The potential for burials to occur within the area.
- It's potential to contain archaeological evidence of potentially continuous Aboriginal occupation from prior to European contact, into the mid and later nineteenth century.
- Its potential to contain archaeological evidence of the interaction between the European and Aboriginal communities and economies throughout the period of occupation.

It is not known if nineteenth century Aboriginal camping occurred, upstream of Boongaree, within the area of the project and of recording G2B A39. It is surmised that this was likely, given the presence of the 'Broughton Creek' European village on the adjacent spurline, and the discovery of a gorget bearing the legend 'Neddy Noora Shoal Haven 1834' in the bed of Broughton Mill Creek opposite the *Mananga* homestead in 1925 (refer **Section 4.4.3**). If archaeological evidence of this phase of camping was demonstrated within this area, then it could potentially have high archaeological significance, and the place have high Aboriginal cultural significance, both within a regional context.

The later twentieth century phase of Aboriginal camping on the creek flats, now associated with the Berry Bowling Club, is historically well established. These camps remain part of living memory for many local Aboriginal people and relate to both their own experiences and to the lives of community and family members now deceased. As such, the location and any physical traces of the camps have strong cultural significance to Aboriginal people. They are evidence of a past way of life, and constitute a place associated with their ancestors. The location and any physical traces also have historical and social significance to the local community in general, as evidence of the role of Aboriginal people in the Berry township and economy. Physical traces, if identifiable, could potentially have archaeological value.

The general location of the Historical encampments at Berry in relation to the project is shown in **Figure 7-41**.

Toolijooa Ridge Aboriginal cultural landscape

The TRACL has Aboriginal cultural significance due to its stated role as a traditional access route and pathway between the Illawarra Range and the coastal fringe. Archaeological test excavations conducted for this project and previous investigations confirm that discontinuous subsurface artefact distributions occur along the ridge crest and some of its prominent spurs. There are also unconfirmed reports of ceremonial grounds on the ridgeline.

A further significant aspect of the ridgeline is its dominant visual role in the landscape, and its presumed importance as a wildlife corridor. These values relate to a sense of belonging and custodianship to the land and the health of its plants and animals.

The general location of the TRACL in relation to the project is shown in **Figure 7-41**.

Large and old growth fig trees

Large and old growth fig trees within the Illawarra region are considered to be of high Aboriginal cultural value. All trees which are large and mature, or which can be classed as old-growth are of stated cultural significance to at least some of the Aboriginal stakeholders in the Southern Illawarra. However, the reasoning and justification behind these values varies. Some of the stated reasons for the cultural values of the trees include:

- The well developed buttresses of the mature fig trees were used by Aboriginal people as shelter and weather breaks and were often used as camp sites.
- Fig trees were a good source of food, including figs in season and the animals that lived on them, such as possums and fruit bats.
- The trees are associated with the spirit of Yaroma. The Yaroma is a creature resembling a man but of greater size and strength, with longer teeth and hair all over its body. The Yaroma is described as a strong and dangerous creature that may be concealed within a fig tree and which may ambush unsuspecting passersby.
- Mature fig trees are associated with birthing and women's lore. In some examples, notches were made along limbs of trees to signify births into a tribe or family group.

Around twelve fig trees were identified in the area surrounding the project. It is probable that high cultural significance would be unanimously accepted amongst the project Aboriginal stakeholders for the pre-European high canopy forest remnant fig tree (MFT22) identified on the banks of Bundewallah Creek. This would be based, not only on the traditional lore associated with large and mature fig trees, but also for the education, representative and rarity value of this tree. Its size, height and form are reminiscent of a forest structure now vanished from the Coastal Plain, and as a consequence, a traditional lifestyle which also disappeared with that forest.

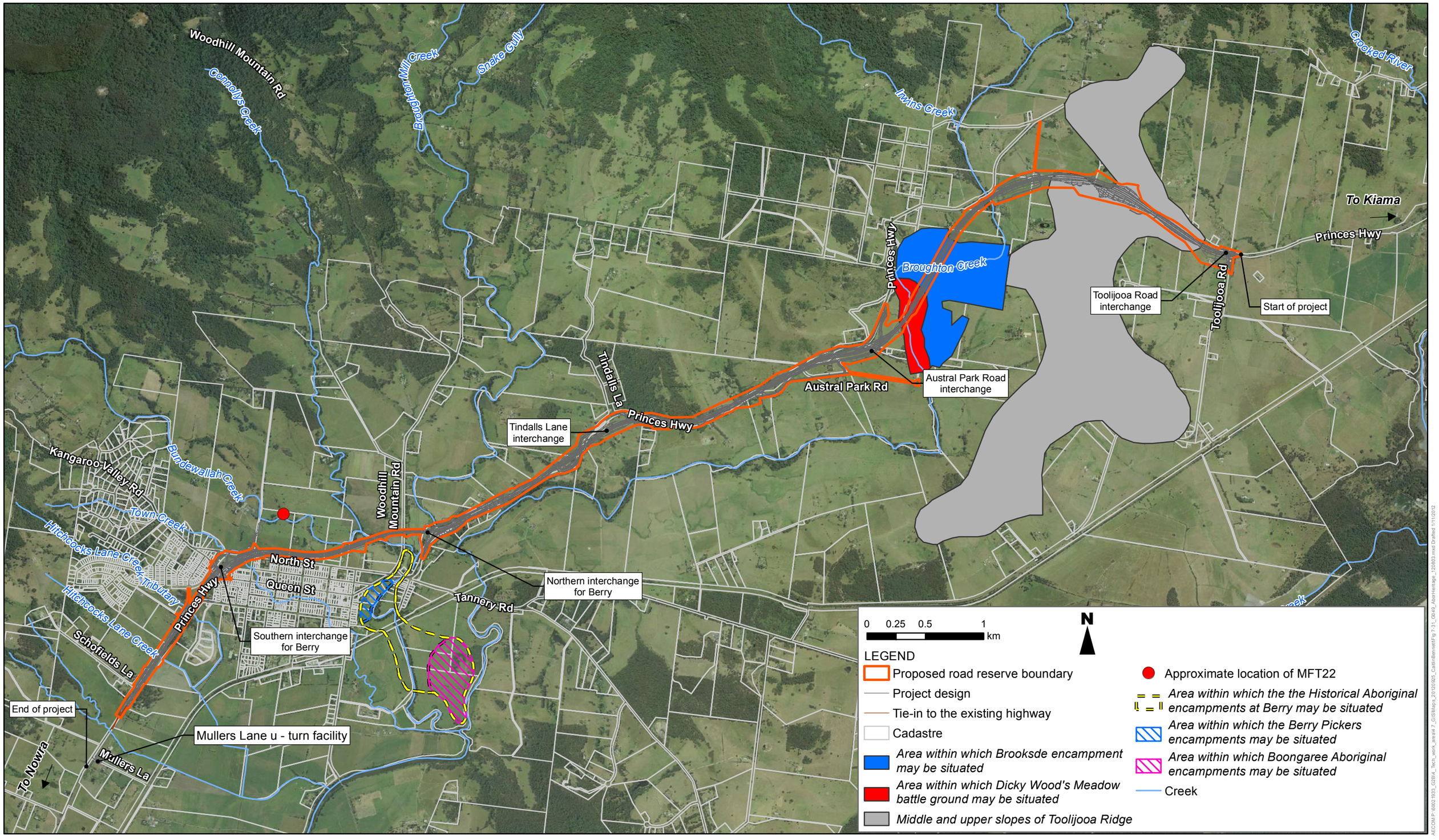

Figure 7-41 General location of Aboriginal culturally significant places and landscapes in relation to the project

Source: AECOM (2012)

7.7.3 Assessment of potential impacts

The potential impacts of the project on Aboriginal heritage recordings include:

- A direct impact and disturbance to the entire site or the majority of a site containing Aboriginal objects due to the construction of the project (that is, the footprint of the upgraded highway).
- A direct impact and disturbance to the entire site or the majority of a site containing Aboriginal objects within proposed areas for ancillary facilities situated outside of the project corridor.
- Complete or varying degrees of direct impact and/or disturbance to items with Aboriginal cultural significance which do not fall into the category of an Aboriginal object, such as mature fig trees.
- Indirect impact to Aboriginal objects, or non-Aboriginal objects with Aboriginal cultural value, such as from development related changes to the landscape or scenic context of a site or item.

The impacts of the project on 42 Aboriginal heritage recordings were assessed. This included:

- Two sites containing surface artefacts.
- The 23 sites determined to contain subsurface artefacts based on the test excavation of PASAs.
- One PAD.
- Four places or landscapes of reported historical and cultural Aboriginal significance. These include three ethno-historical recordings and one cultural landscape, being the 'Brookside' Aboriginal encampment, the Aboriginal encampments at Berry, Dicky Wood's Meadow battleground and TRACL. The assessment of impact on these sites also allows for the assessment of potential Aboriginal burials.
- Twelve fig trees.

Of the 42 recordings, sixteen would not be impacted by the project, eighteen would be partially impacted, and eight fully impacted. Of those fully impacted, all consist of archaeological deposits, with the exception of one fig tree. Partially and fully impacted sites, which include two ethno-historical recordings and one cultural landscape, are listed in **Table 7-60**. Direct impacts on the historical Aboriginal encampments at Berry have been avoided by limiting the construction of the Woodhill Mountain Road roundabout to within the corridor that has already been disturbed by road construction activities.

The potential avoidance of the above sites by the realignment of the preferred project route would be counterproductive, given that in most cases the identified archaeological deposits extend either side of the construction footprint. A shifted alignment would simply impact the same archaeological resource within an adjacent area. A re-alignment would also move the preferred project alignment away from the disturbance corridor associated with the existing highway, which is paralleled closely by the project works.

The approach taken to minimise impacts where possible is to locate the project disturbance as close as possible to the existing disturbance corridor rather than establish new corridors which would likely impact a more intact and less degraded archaeological resource.

At the AFG held on 21 November 2011, a resolution was made relating to minimising damage as much as possible to Toolijooa Ridge and Dicky Wood's Meadow, and that these places should be protected at all costs.

Table 7-60 Summary of anticipated construction related impacts to recorded archaeological deposits

Site ID	Recording type	Local significance	Direct impact	Degree of impact	Comments
G2B A13	Ethno-historic place (Dicky Wood's Meadow battleground)		Yes	Partial	The actual size and location of the battle ground remains unknown, however, the area of potential for this site has been estimated at around 136 hectares. Around 9.4 hectares (or 6.8 per cent) of this area would be impacted by the project. This includes a 200 metre buffer around the project. The impacts on this site would be primarily related to the potential to uncover burial sites. This would be heightened through any required excavation across the potential location of the site which would disturb the existing soil profile in the area. Disturbance to the natural soil profile would be minimised by constructing the proposed carriageway on an embankment. Where practicable, the removal of top soil would be avoided or minimised prior to the placement of fill.
G2B A14	Ethno-historic place ('Brookside' Aboriginal historic encampment)		Yes	Partial	The actual size and location of the encampment is unknown, however 0.4 kilometres of the construction footprint passes through an area within which the encampment is likely to have been situated. The encampment is associated with the potential for archaeological occupation deposits, which could be disturbed during construction of the project. Disturbance to the natural soil profile would be minimised by raising the elevation of the proposed carriageway on imported fill. Where practicable, the removal of top soil would be avoided or minimised prior to the placement of fill.
TRACL	Cultural Landscape (Toolijooa Ridge)		Yes	Partial	Approximately 1.4 kilometres of the project would traverse the higher slopes of the Toolijooa Ridge and its associated side spurs. Impacts would include the carriageway formation, deep cuttings, and visually obtrusive embankments.
MFT12	Fig tree		Yes	Full	The tree is situated within the construction footprint.
G2B A15	Archaeological deposit	Low	Yes	Full	The deposit exists within the construction footprint.
G2B A16	Archaeological deposit	Moderate	Yes	Partial	The deposit is likely to extend to either side of the construction footprint.

Site ID	Recording type	Local significance	Direct impact	Degree of impact	Comments
G2B A17	Archaeological deposit	Low	Yes	Partial	The deposit extends to either side of the construction footprint.
G2B A18	Archaeological deposit	Moderate	Yes	Partial	The deposit would be impacted by the trench for the Town Creek diversion but extends to either side of proposed trench.
G2B A19	Archaeological deposit	Low	Yes	Partial	The deposit is likely to extend to either side of the project.
G2B A21	Archaeological deposit	Low	Yes	Partial	The deposit is likely to extend to either side of the project.
G2B A22	Archaeological deposit	Moderate	Yes	Full	Most of the site focus is likely to be present within the construction footprint.
G2B A23	Archaeological deposit	Low	Yes	Full	Most of the site focus is likely to be present within the construction footprint.
G2B A24	Archaeological deposit	Moderate	Yes	Full	Most of the site focus is likely to be present within the construction footprint.
G2B A25	Archaeological deposit	Low	Yes	Partial	The deposit exists within the construction footprint and is likely to extend downslope and to the south of the construction footprint.
G2B A26	Archaeological deposit	Moderate	Yes	Full	The deposit exists within the construction footprint.
G2B PAD1	Potential archaeological deposit	Low to high*	Yes	Partial	The deposit is likely to extend to either side of the construction footprint.
G2B A27	Archaeological deposit	Low	Yes	Partial	The deposit is likely to extend to either side of the construction footprint.
G2B A28	Archaeological deposit	Moderate	Yes	Partial	The deposit is likely to extend to either side of the construction footprint.
G2B A29	Archaeological deposit	Moderate to high	Yes	Partial	The deposit is likely to extend to either side of the construction footprint.
G2B A30	Archaeological deposit	Moderate to high	Yes	Partial	The deposit is likely to extend to either side of the construction footprint.
G2B A31	Archaeological deposit	Moderate to high	Yes	Partial	The deposit is likely to extend to either side of the construction footprint.
G2B A32	Archaeological deposit	Moderate	Yes	Partial	The deposit is likely to extend to either side of the construction footprint.
G2B A33	Archaeological deposit	Moderate	Yes	Partial	The deposit is likely to extend to either side of the construction footprint.

Site ID	Recording type	Local significance	Direct impact	Degree of impact	Comments
G2B A34	Archaeological deposit	Low	Yes	Partial	The deposit is likely to extend to either side of the construction footprint.
G2B A35	Archaeological deposit	Low	Yes	Full	The deposit is likely to extend to either side of the construction footprint. However most of the focus of the site occurs within the construction footprint.
G2B A36	Archaeological deposit	Moderate	Yes	Full	Most of the likely archaeological deposit on this spurline shoulder would be impacted.

** In the absence of any surface or subsurface artefact data, it is not possible to provide a significance assessment for this recording. The significance listed in the table is based on test excavation results elsewhere along the project and the predictive model.*

Impacts on the cultural landscape

The project would have varying degrees of impact on the cultural landscape values, including:

- The cutting at Toolijooa Ridge.
- The loss of one large fig tree.
- The loss of some areas of native vegetation which may include plants known to have traditional uses.
- Substantial modification of natural landforms within the project area, through the construction of road platforms and cuttings.

Specifically, the project has the potential to impact the cultural values of the TRACL. The physical, visual and potential habitat changes across Toolijooa Ridge resulting from the project would amount to a substantial impact to the Aboriginal cultural values of the ridgeline. As stated earlier within this section, the stakeholders also resolved that little damage to the ridge should be incurred.

Approximately 1.4 kilometres of the project would traverse the higher slopes of the Toolijooa Ridge and its associated side spurs. Impacts would include the carriageway formation, deep cuttings, and visually obtrusive embankments. The cutting through Toolijooa Ridge would be about 900 metres in length, a maximum of 130 metres wide and a maximum of about 26 metres deep.

These impacts would affect the Aboriginal cultural values of the landscape. The cutting through the ridge would result in significant alteration to the profile from various viewing angles. The visual continuity of the crest of the ridge would also be impacted. The presence of the project corridor would prevent vehicles and pedestrians travelling along the ridge crest. This constraint is significant given the value of the ridge as a former pathway.

The vegetation clearance required for the project would reduce the current extent of vegetation cover. Aboriginal stakeholders have expressed concern that this may also impact habitat values.

Impacts resulting from ancillary construction facilities

The impact associated with ancillary construction facilities includes a range of works and actions that may result in a complete impact, a majority impact or a partial impact to any Aboriginal objects present. Works would include:

- Establishment of bunded fuel and chemical storage areas.
- Construction of offices and sheds.
- Installation of sewerage and other services, as required.
- Sediment and erosion control works.
- Clearing and levelling.
- Construction of hard stand areas for plant and equipment.
- Temporary storage of construction materials or material generated from within the construction site.
- Erection of fencing.

The exact location, configuration and scope of the impacts within the construction ancillary facility sites is unknown at the current stage of project planning. This is due to the number variables which would only be clarified at the detailed design stage of the project, and would also be dependent on the operational preferences and logistical constraints of the construction contractors. This uncertainty has implications for the effective management of potential impacts to heritage values. One option would be to conduct a full scale test excavation program to define archaeological sensitivity across all possible ancillary areas. This, however, would result in considerable unnecessary testing impact to sites given that not all of the proposed ancillary sites would be impacted.

Where possible, direct impact to areas of potential heritage significance would be avoided. This is would be achieved by fencing and excluding certain areas from use, or by temporarily covering deposits with hard stand gravels and rehabilitating the area upon completion. Where and if necessary, a delayed and focused pre-construction testing program would be conducted, once areas of planned and unavoidable impact have been defined. Further details on the testing and management of ancillary facilities have been provided in **Section 7.7.4**.

The following is an outline of the Aboriginal heritage items and areas which may be potentially impacted by the location of the ancillary facilities. Locations of the ancillary facilities are shown in **Figure 4.19**.

Site A (adjacent to the Toolijooa Road interchange)

One known Aboriginal archaeological site has been identified, together with an associated area of predicted archaeological potential (G2B A38). G2B A38 is an isolated surface artefact situated on basal slopes with archaeological potential.

A confirmed sub-surface Aboriginal archaeological deposit (G2B A12 (PASA 31), NOHC 2011a), is located outside of the ancillary facility site on the crest of the spurline extending to the east of the intersection of the Toolijooa Road and Princes Highway. Given the high degree of direct impact which has occurred in this area as the result of road and house construction, it is considered unlikely that the deposit now extends into the ancillary facility site.

The higher ground on the spurline in the north western portion of the area falls within the approximately defined boundary of the Aboriginal cultural landscape of the Toolijooa Ridge.

Sites B and C (Toolijooa Ridge)

This area occurs within the Aboriginal cultural landscape of the Toolijooa Ridge. There is one confirmed sub-surface Aboriginal archaeological deposit within the northern area, G2B A35. This deposit is likely to extend to the north of the limit of archaeological testing, along the crest of the ridge, including the proposed vehicle access to the northern area. A further area of predicted archaeological potential is situated on the crest of a ridgeline knoll in the southern area.

A large fig tree (MFT12) is situated at the eastern end of the northern area and may be subject to direct impact from construction, independent of any preparation or function of the ancillary facility.

Site D (East of Broughton Creek)

There are no known Aboriginal sites within this area. Based on the recovery of artefacts from archaeological test pits just to the north (G2B A33 and 34), it is probable that archaeological deposits are also present within the proposed ancillary facility site. The area of predicted archaeological potential covers approximately two thirds of the proposed ancillary facility.

Site E (West of Broughton Creek)

There are no confirmed Aboriginal sites or archaeological deposits within this area. However, the whole of the area is classed as having archaeological potential for the following reasons:

- A confirmed archaeological deposit (G2B A32) is situated just north of the proposed ancillary facility. This indicates that part of the archaeological deposit may be present in the northern portion of the proposed ancillary facility.
- A confirmed archaeological deposit (G2B A31) situated adjacent to the north bank of Broughton Creek, just west of the proposed ancillary facility. This indicates that archaeological deposit would likely be present along the southern margin of the proposed ancillary facility, where it occurs within at least 200 metres of the river bank.
- The southern two thirds of this area falls within the potential location of Dicky Wood's Meadow. If a margin of up to 200 metres from the meadow is allowed for the potential location of associated burials, the whole of the proposed ancillary facility falls within this outlined area of potential.

Site F (Greystanes lodge)

This area includes a mature fig tree (MFT16) which was probably planted in association with a former Berry Estate tenant farmhouse at this location. In addition, this area is situated on the edge of a potential location of Dicky Wood's Meadow. If a margin of up to 200 metres from the meadow is allowed for the potential location of associated burials, the whole of this proposed ancillary facility falls within this outlined area of potential.

Site G (South east of the intersection of Austral Park Road and the Princes Highway)

There are no known Aboriginal sites within this area. There is one area of predicted archaeological potential on a small spurline shoulder located immediately east and south east of the building located in this area.

Site H (South west of the intersection of Austral Park Road and the Princes Highway)

There are no known Aboriginal sites within this area. There are two areas of predicted archaeological potential within this area:

- A spurline shoulder on the western margin of the proposed ancillary facility.
- The banks of an unnamed tributary creek, flowing along the northern edge of the Broughton Creek valley. This area of potential occurs within the south eastern portion of the proposed ancillary facility.

Site I (West of the intersection of Tindalls Lane and Princes Highway)

A confirmed archaeological deposit (G2B A24) is situated immediately adjacent to the eastern boundary of this proposed ancillary facility. It is considered unlikely that this deposit extends further downslope and into the proposed ancillary facility. An area of predicted archaeological potential occurs along the northern portion of the proposed ancillary facility.

A large fig tree (MFT19) is situated in the base of a gully on the western boundary of this area. There are a number of mature native trees within the area which have not been inspected for the possible occurrence of Aboriginal scars.

Site J (Oakleigh farmhouse and area)

There are no known Aboriginal sites or areas of predicted archaeological potential within this area.

A large fig tree (MFT23) occurs in the middle of the proposed ancillary facility, and was probably planted in association with the early history of the present farmhouse, or a former homestead at this location.

Site K (Western end and south of North Street, Berry)

There are no known Aboriginal sites within this area. However a confirmed subsurface archaeological deposit (G2B A16) is situated immediately to the east, adjacent to flats bordering Town Creek. This indicates that an archaeological deposit may be present in the southern, upslope portion of the proposed ancillary facility.

Site L (southwest of Princes Highway, south of Graham Park)

The majority of this area has not been the subject of archaeological survey. Survey of the proposed Princes Highway upgrade, along the eastern margin of this area, resulted in the identification of a potential archaeologically sensitive area (PASA 11) in association with an unnamed creek. This PASA falls within the future assessment area of the proposed Berry to Bomaderry upgrade and has not been the subject of test excavation.
There are a number of mature native trees within the area which have not been inspected for the possible occurrence of Aboriginal scars.

Impacts from the realignment of services and utilities

Service and utility realignments required as part of the project have been presented in **Section 4.2.11**. Generally, the works involved would occur within the assessed footprint of the project and the associated easement. These impacts have been assessed as part of this environmental assessment. There remains some potential for the realignment of services outside of the proposed project easement, such as where major utilities would require realignment. In this case, an appropriate heritage assessment and impact mitigation process would be required to be completed prior to any disturbance.

Representative and worst case impact scenarios

For this assessment, representative impact is defined as that impact which has been anticipated in the impact analysis and to which the proposed management and impact mitigation strategies are directed. It is representative of the expected scenario, based on an analysis of the best information available and on a reasonable or normative level of prediction.

Worst case impact is defined as an extreme scenario where the highest conceivable degree of impact is anticipated due to unexpected occurrences which are extraordinary and outside of a reasonable level of prediction.

The worst case scenario with regard to Aboriginal heritage would consist of an unexpected encounter of an Aboriginal object or objects which, due to an exceptional level of assessed significance warrants *in situ* conservation and a consequential change in the project alignment. This would conceivably be due to the discovery of a previously undetected or unpredicted item.

Worst case scenario discoveries fall into two broad categories:

- An archaeological deposit or feature with exceptional Aboriginal cultural value.
- A previously unassessed place of exceptional Aboriginal cultural value which may, or may not be associated with archaeological material.

The following are potential examples which may constitute a worst case scenario, depending on the Aboriginal cultural and scientific values associated with the find and its' *in situ* conservation:

- Unique or rare site types.
- Evidence of mid to early Holocene and/or Pleistocene occupation (meaning it is older than 5,000 years before present).
- A burial ground (or grouping of burials), or a single burial with high significance grave goods.
- An archaeological deposit containing rare and well preserved organic items due to water logged and anaerobic conditions, such as may be found within a swamp or peat deposit.

It is considered that the potential for a worst case scenario has been minimised by the application in this assessment of a robust analysis which included:

- The participation of registered Aboriginal stakeholders and the exchange of information and discussion of issues at AFG meetings.
- A review of ethno-historical sources.
- Reference to oral tradition and information provided by local community sources.
- The use of predictive archaeological modelling.
- Archaeological survey and interpretation.
- Review of aerial photography.

An unexpected finds procedure has been developed by RMS which defines a protocol to be followed in the event that an unexpected find is made during the process of construction (refer **Appendix H** of the *Aboriginal Cultural Heritage Technical Paper* at **Appendix J**). The adoption of this procedure provides both a safeguard and management process in the event of a worst case scenario.

Cumulative impacts

The cumulative impacts of the project can best be understood by dividing the assessment area into broad landscape suites. This allows a comparison of similar known or predicted archaeological resources according to the premise that the distribution of, and variability in, Aboriginal sites tends to be related to landscape types and associations. The incidence of six broad landscape suites, or topographies, has been assessed across the project area and the two adjacent section of the Princes Highway upgrade – the Gerringong upgrade and the Berry to Bomaderry upgrade. Further details and associated mapping is provided in **Section 10.7** of the *Aboriginal Heritage Technical Paper* (**Appendix J**).

The six landscape suites are:

- *Low relief, locally elevated, undulating bedrock slopes adjacent to the Shoalhaven River gorge.* This topography occurs within the southern end of the Berry to Bomaderry upgrade, but is widespread on either side of the Shoalhaven river gorge upstream from Nowra.
- *Basal slopes, spurs and interfluves fringing the coastal flats (which were former estuary basins).* This topography dominates the Berry to Bomaderry upgrade and Gerringong upgrade. It forms a margin of descending spurlines and drainage lines around the edge of the coastal plain. The plain, now relatively well drained, was formerly dominated by swamp basins, and before that, by estuarine embayments. This topography consists of the terminal slopes of the south-eastern fall of the Illawarra Range.

- *Ridges, spurs and interfluves fringing major alluvial valley floors*. This topography dominates the (Foxground and Berry bypass) project area and is characterised by the spurlines, slopes and drainage gullies which border the major alluvial valleys that drain onto, and later merge with, the coastal plain. Those portions occurring within all three project areas form part of the Broughton Creek and Broughton Mill / Bundewallah Creek valleys.
- Major alluvial valley floors (excluding former estuary basins). Despite numerous drainage lines crossing the three project areas, only two major valley floors are traversed which are situated away from former estuarine basins of the coastal plain. These are the valleys of Broughton Creek and Broughton Mill / Bundewallah Creeks. Both are traversed in the (Foxground and Berry bypass) project area.
- *Higher ridges and spurs.* This topography consists of the higher ground within the three project areas and occurs across Toolijooa Ridge and Mount Pleasant. This topography dominates the lower-middle portion of the southeastern fall of the Illawarra Range.
- *Wetland basin (drained), former estuary basin.* This topography dominates the coastal plain of the Southern Illawarra, situated between the coastal sand bodies and the bedrock slopes. The three project alignments largely avoid this flood prone topography, except for Omega flat in the Gerringong upgrade project area.

All of these topographies extend to a majority degree, to either side of the project areas for the three sections of the Princes Highway upgrade between Gerringong and Bomaderry. None of these categories are rare across the Southern Illawarra and the proportion subject to impact from the upgrade projects is very small relative to their total distribution.

As shown in **Table 10-2** of **Appendix J**, the greatest net impact of all three sections of the Princes Highway upgrade between Gerringong and Bomaderry occurs across the alternating spurs and valleys of the coastal plain margin, with 55 per cent of the projects traversing this topography. Only seven per cent of this net impacted area however occurs within the Foxground and Berry bypass project.

The Foxground and Berry bypass project is dominated by the spurlines, slopes and gullies which fringe the valleys of the Broughton and Broughton / Bundewallah Creek valley floors. This topography accounts for 44 per cent of the project and 36 per cent of all confirmed Aboriginal recordings. The next largest landscape within the project is major alluvial valley floors, again belonging to the Broughton and Broughton / Bundewallah Creek valleys. These comprise 31 per cent of the project and account for 50 per cent of all confirmed Aboriginal recordings.

The remaining topography is of the higher ridges and spurs. This comprises 14 per cent of the project and accounts for four per cent of all confirmed Aboriginal recordings. Fifteen per cent of the Gerringong upgrade project area also includes higher ridges and spurs, and includes 22 per cent of the confirmed Gerringong upgrade Aboriginal recordings.

The topographies traversed by the three sections of the Princes Highway upgrade between Gerringong and Bomaderry have a relatively high site incidence, 1.14 sites per kilometre in the Gerringong upgrade project area and 2.48 sites per kilometre in the Foxground and Berry bypass project area. However, they do not in themselves provide a basis for broad concern about the cumulative impact of the project or the broader Princes Highway upgrade development context. In all cases, the topographies are not rare within the Southern Illawarra, and all extend up and downslope, and/or up and downstream of the highway easement. The archaeological resource encountered within the three sections of the Princes Highway upgrade between Gerringong and Bomaderry can be expected to similarly occur in adjacent areas. Given the linear nature of the highway project, the potential for substantial impact to a full suite of related landforms is low.

The location of the highway through the former location of Dicky Woods Meadow (G2B A13), and around the northern margin of Berry could be considered a cumulative impact. The high Aboriginal cultural significance of the former Meadow cannot be compared, or weighed against, an equivalent or expected archaeological resource elsewhere within the same topographic zone. This ethnographically recorded traditional battle ground is a rare site type and would be hard to predict elsewhere using archaeological and landscape criteria. The construction of the highway through the potential area of the former Meadow represents a substantial cumulative impact to the remaining area of that site.

The township of Berry is situated in the lower catchment of Broughton Mill Creek. Its continuing urban development has substantially impacted a suite of low spurs, basal slopes and creek flats at a point where the catchment merges with the coastal plain and the former estuary. Although this transitional zone, from bedrock basal slopes to the flat coastal plain, is extensive and continues southwest to Bomaderry, Berry remains the only section intersected by a major alluvial valley. As such, the impact of the Foxground and Berry bypass project along the northern margin of the town poses a further cumulative impact to this particular topographic nexus.

7.7.4 Environmental management measures

Mitigation and management measures would be implemented to avoid, minimise or manage Aboriginal heritage impacts. These mitigation and management measures have been identified in **Table 7-61** and incorporated in the draft statement of commitments in **Chapter 10**.

Throughout all phases of the project Aboriginal stakeholders would continue to have the opportunity to actively participate in an on-going consultation program regarding the management of Aboriginal cultural heritage within the project in accordance with the Procedure for Aboriginal Cultural Heritage Consultation (RMS, 2011).

Table 7-61 Mitigation and management measures

Potential impacts	Mitigation and management measures
Construction	
Stakeholder consultation	Continue ongoing consultation between RMS and Aboriginal stakeholders regarding the management of aboriginal cultural heritage within the project area.
General construction impacts	Develop a Heritage Management Plan prior to construction. The plan would include: • Registered archaeologists and representatives of registered Aboriginal parties to train construction teams prior to the commencement of construction. • Implement the Unexpected Finds Procedure (refer to **Appendix H** of the *Aboriginal Cultural Heritage Technical Paper* at **Appendix J**) for the unanticipated discovery of Aboriginal objects, burial sites and human remains. • Include appropriate training in site inductions for construction staff regarding the Unexpected Finds Procedure and the cultural significance of the Dicky Wood's Meadow, Brookside and Toolijooa Ridge. Where possible this training would be given by a project archaeologist and a representative of the registered Aboriginal parties. • Outline the assessment process for any works to be conducted outside of the currently defined project area. This would include activities such as realignment of utilities, land rehabilitation and revegetation programs.

Potential impacts	Mitigation and management measures
Impacts on cultural values and ethno historic sites	Minimise disturbance to the natural soil profile of G2B A13 and G2B A14 within the construction footprint. This would generally be achieved by constructing the proposed carriageway on embankment, reducing the need to cut into the natural soil profile. Where practicable, the removal of top soil would be avoided or minimised prior to the placement of fill. Further details on the suitability of this method are provided in **Section 11.1.2** in the *Aboriginal Heritage Technical Paper* (**Appendix J**). Reduce the visual impacts associated with the construction and finishing of the embankment and cutting faces along Toolijooa Ridge. This would be achieved in accordance with the mitigation measures in **Section 7.6** and would minimise impacts to the cultural values of the TRACL. Re-establish vegetation along the ridge as soon as practicable. Conduct archaeological salvage excavation prior to the commencement of construction works within G2B A13. Excavation would be conducted in all areas where it is anticipated that the natural soil profile would be impacted, such as from pier, abutment and swale construction. Consideration would be given to the use of remote sensing techniques as an initial stage of the salvage excavation program. This could assist in the selection of areas warranting detailed salvage methodologies. Design and construct the roundabout at the intersection of Woodhill Mountain Road and the current Princes Highway so that direct impacts are limited to the area of existing disturbance around the intersection (refer to **Appendix I** of the *Aboriginal Cultural Heritage Technical Paper* at **Appendix J**). Erect temporary fencing between the zone of construction activity and any adjacent areas of the historical Aboriginal encampments at Berry (G2B A39) to define a 'no–go' area for vehicles, material storage or other actions likely to result in ground disturbance. Avoid direct impacts to mature fig trees in the project area through the detailed design phase of the project. If direct impacts to fig trees are unavoidable, a management program would be established in consultation with the AFG. Where practicable, trees in poorer condition would be selected for removal in preference to those displaying signs of good health. Provide an opportunity for the Aboriginal stakeholders to conduct ceremonial activities, where required, within the project area of G2B A13 and TRACL prior to construction works.
Impacts to Aboriginal archaeological Impacts	Avoid unnecessary impact to site G2B A3. Conduct a program of salvage archaeological excavation at sites with research potential, including G2B A16, G2B A18, G2B A24, G2B A29, G2B A30, G2B A31, G2B A32, G2B A33, G2B A36 and G2B PAD1 prior to the start of construction related ground disturbance within the area of those sites. Erect temporary fencing between the zone of construction activity and any adjacent Aboriginal site, or portion of the site and/or archaeological deposit to define a 'no–go' area for vehicles, material storage or other actions likely to result in ground disturbance. This would apply to sites G2B A2, G2B A3, G2B A15, G2B A16, G2B A17, G2B A18, G2B A19, G2B A21, G2B A23, G2B A24, G2B A25, G2B A26, G2B A27, G2B A28, G2B A29, G2B A30, G2B A31, G2B A32, G2B A33, G2B A34, G2B A35, G2B A36 and G2B 38.

Potential impacts	Mitigation and management measures
Impacts from ancillary facilities	Adopt the following selection criteria for the location of ancillary facilities: • Locate ancillary facilities on sites that have a low likelihood of having Aboriginal heritage significance and/or potential. • Sites or areas of moderate to high Aboriginal heritage significance and/or potential, including known sites, potential archaeologically sensitive areas and areas of Aboriginal cultural significance, are not to be used for ancillary facilities except where the impact is authorised and managed by a relevant approval or an approved Heritage Management Plan. Fence Aboriginal sites adjacent to ancillary facilities and exclude these areas from ancillary functions and use. Avoid disturbance to the natural soil profile, by overlaying the area with a protective treatment barrier (such as geotextile), followed by a layer of hard stand gravels, all of which would be removed after construction during site rehabilitation. Conduct the required test excavation programs prior to construction as part of the detailed design phase of the project. Where direct impact to sites of Aboriginal heritage significance from the location and set up of ancillary construction facilities cannot be avoided: • Conduct a program of salvage excavation prior to impact on areas of potential that represent a continuation of landforms that are known to contain archaeological deposits. This would apply to the proposed ancillary sites D, E, F, I and K (refer to **Figure 4.20**). • Conduct a program of test excavation and management strategies for areas of greater than low predicted archaeological potential that are unrelated to adjacent confirmed archaeological deposits prior to direct impact. This applies to the proposed ancillary sites A, C, H and L (refer to **Figure 4.20**).
Operation	
Longer term impacts on Aboriginal cultural values and ethno-historic recordings	Develop a Heritage Interpretation Plan (HIP), with the aim of identifying options for the promotion of the cultural values of the project area for current and future generations. The HIP would be developed in consultation with Aboriginal stakeholders, landowners and local Councils. Options may include interpretive signage, educational materials, and supporting local museum displays. In particular, the HIP would acknowledge and promote the Aboriginal cultural values associated with TRACL and Dicky Wood's Meadow battleground (G2B A13).
Ongoing care of artefacts	Liaise with Aboriginal stakeholders regarding the management and curation of all Aboriginal artefacts (Aboriginal objects) recovered or salvaged from the project, following the completion of any required description and analysis. Submit an application for a Care Agreement to the OEH where artefacts are to be held in the care of an individual or organisation. Alternatively, recovered artefacts may be re-buried on-site or deposited with the Australian Museum (Sydney) pursuant to section 88 of the *National Parks and Wildlife Act 1974*.

Potential impacts	Mitigation and management measures
	Ensure all management and curation actions are consistent with OEH policy, comply with any necessary permit or agreement conditions and satisfy documentation standards. Record the location of all reburied Aboriginal objects on an OEH Aboriginal site recording form and submit to the OEH.
Impacts to cultural landscape values	Reduce the visual impact of the project through the planting and regeneration of vegetation. Minimise and mitigate the impact to ecological values. Re-establish native vegetation as a priority in areas requiring revegetation. Encourage the use of native plant species with Aboriginal cultural values in revegetation programs. Appropriate species would be identified through liaison with Aboriginal stakeholders. Incorporate or allow for the interpretation of cultural values, through the erection of signage, the adoption of Aboriginal nomenclature, or the inclusion of appropriately commissioned Aboriginal art or motifs.