

# **Appendix L** – Aboriginal archaeological survey report

# Richmond Vale Rail Trail Shared Pathway

Aboriginal Archaeological Survey  
Report

Report to GHD

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 artefact

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## EXECUTIVE SUMMARY

City of Newcastle Council, along with Cessnock City Council and Lake Macquarie City Council, is proposing to develop a 32-kilometre shared pathway from Kurri Kurri to Shortland (the 'Proposal'), utilising a former late nineteenth and early twentieth century rail corridor, known as the Richmond Vale Rail Trail (RVRT). The Proposal will involve the construction of a three-metre-wide path along the existing railway corridor and will involve ground disturbing activity along the route.

Artefact has been engaged by GHD, on behalf of City of Newcastle Council, to prepare an Aboriginal Archaeological Survey Report (ASR) for the proposed development. This ASR will be inputted into the REF and EIS which is being prepared for the Proposal in accordance with the requirements of Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

This report assesses and documents the potential Aboriginal heritage impacts of the proposal. The aim of this report is to identify whether any Aboriginal objects or areas of archaeological potential would be impacted by the proposal, whether an Aboriginal Heritage Impact Permit (AHIP) would be required from the Office of Environment and Heritage (OEH), and to recommend if any further assessment and/or management or mitigation measures are required.

### Overview of Findings

Based on current designs, the proposal would cause ground-disturbing impacts to the following identified Aboriginal sites:

- RVRT AS1 (AHIMS ID 38-4-1874/ 38-4-1919)
- RVRT IF1 (AHIMS ID 38-4-1881/ 38-4-1920)
- RVRT AS2 (AHIMS ID 38-4-1875/ 38-4-1918)
- RVRT AS3 (AHIMS ID 38-4-1876/ 38-4-1917)
- RVRT IF2 (AHIMS ID 38-4-1882/ 38-4-1910)
- RVRT IF3 (AHIMS ID 38-4-1883/ 38-4-1922)
- RVRT AS 7 (AHIMS ID 38-4-1880/ 38-4-1923)
- RVRT IF4 (AHIMS ID 38-4-1884/ 38-4-1913)
- RVRT AS4 (AHIMS ID 38-4-1877/ 38-4-1915)
- RVRT AS5 (AHIMS ID 38-4-1878/ 38-4-1912)
- RVRT AS6 (AHIMS ID 38-4-1879/ 38-4-1916)
- RVRT PAD 1 (AHIMS ID 38-4-1926)
- RVRT IF8 (AHIMS ID 37-6-3806/ 37-6-3834)
- RVRT IF10 (AHIMS ID 37-6-3808/ 37-6-3832)
- RVRT IF11 (38-4-1925)
- HS2A (AHIMS ID 38-4-1583)

The following sites are immediately outside the study area and will not be impacted:

- RVRT IF5 (38-4-1885/ 38-4-1921)
- RVRT IF6 (AHIMS ID 38-4-1886/ 38-4-1911)

- RVRT IF7 (38-4-1887/ 38-4-1921)
- RVRT IF9 (37-6-3833/ 37-6-3807)

The study area boundary has been modified since the archaeological survey was conducted, resulting in removal of impacts to RVRT IF 3.

## Recommendations and Mitigation Measures

**Table 1: Overview of recommendations and mitigation measures**

Development	Discussion
<b>Approvals</b>	<p>Should it not be possible to avoid impacting Aboriginal sites during design and construction works, an AHIP is required prior to impacts. This AHIP application must be submitted to OEH with an Aboriginal Cultural Heritage Assessment Report (ACHAR). Full consultation with Aboriginal stakeholders in accordance with the OEH consultation requirements would need to be conducted.</p> <p>Archaeological test excavation, where required, would need to take place prior to the AHIP application being submitted.</p> <p>An impact assessment would need to be prepared for any early works that result in ground disturbance, such as geotechnical investigation, to determine if an AHIP would be required prior to early works commencing.</p>
<b>Avoidance of impact</b>	<p>Detailed design for the proposal should avoid impacting identified Aboriginal sites.</p> <p>The location and extent of potential impacts to identified sites within the disturbance boundary should be determined through detailed design and finalisation of constructability documentation. There is the potential to avoid impact to recorded Aboriginal sites within the disturbance boundary by relocating the location of vehicle access and ancillary facilities, for example.</p>
<b>Clarification of impacts</b>	<p>A number of recorded Aboriginal sites are located in close proximity to the study area. Following clarification of the location and extent of impacts within the study area, a consistency check, or update to this report, must be undertaken that identifies all recorded Aboriginal sites in close proximity to the study area and whether they will be impacted by the proposed works. There is potential for an increase, or decrease, in impacts to recorded Aboriginal sites.</p>
<b>Aboriginal stakeholder consultation</b>	<p>Comprehensive Aboriginal stakeholder consultation, carried out in accordance with the OEH 'Aboriginal cultural heritage consultation requirements for proponents 2010', must be conducted for the project.</p>
<b>Archaeological test excavation</b>	<p>Three areas have been identified with moderate archaeological potential and archaeological significance. Should these sites be impacted by the proposed works, archaeological test excavation, under OEH code of practice, must take place. Areas where archaeological test excavation is recommended include:</p>

Development	Discussion
	<ul style="list-style-type: none"> <li>• RVRT Archaeological Complex 1</li> <li>• RVRT AS 7</li> <li>• RVRT PAD 1</li> </ul> <p>The scope of archaeological test excavation at each location, particularly RVRT Archaeological Complex 1, and RVRT PAD 1, would require clarification once the extent of proposed works in those areas is known. Test excavation at RVRT Archaeological Complex 1 would focus on undisturbed areas within the site complex that will be impacted.</p>
<b>Further archaeological survey</b>	<p>The study area boundary has been adjusted since archaeological survey was conducted for this assessment. As such, any portion of the clearance and/ or disturbance boundary outside the original investigation area must be subject to further archaeological survey. Where there are no impacts proposed within the additional areas, a heritage consultant will advise if further field survey is required.</p>
<b>Future changes to the study area boundary</b>	<p>Due to the archaeologically sensitive nature of many areas bordering the study area, further archaeological investigation must take place should any aspect of the proposal go outside the area investigated for the archaeological survey.</p>
<b>Aboriginal Heritage Management Plan</b>	<p>An Aboriginal Heritage Management Plan (AHMP) should be prepared prior to commencement of works to delineate the location of Aboriginal sites, or portions of Aboriginal sites, within the study area. Where Aboriginal sites, or portions of Aboriginal sites, are located outside the proposed extent of impacts, those areas should be clearly identified as no-harm areas in order to remove the possibility of inadvertent impact.</p> <p>Several Aboriginal sites are located in close proximity to the study area boundary. As those sites were identified using a hand-held GPS, a surveyor may be required to clearly indicate the location of the study area on the ground in relation to the recorded site location. This will assist with determining impacts and establishing no-harm areas.</p> <p>The AHMP should include an unexpected finds procedure for the proposed works, including details of required Aboriginal stakeholder consultation, identification of the nature and extent of unexpected finds, and any reporting or permits that may be required prior to works recommencing.</p> <p>In addition to identified sites within the study area, an updated AHIMS search must be conducted for the AHMP that identifies Aboriginal sites in the vicinity of the study area for the AHMP. This would identify if Aboriginal sites are located on proposed access tracks, for example.</p>
<b>Identification of existing AHIPs</b>	<p>There is potential for existing AHIPs to overlap with the study area. Further liaison with OEH should be conducted to identify where existing AHIPs overlap with the study area.</p> <p>Where existing AHIPs overlap with the study area, the proponent must liaise with the AHIP holder to ensure that all proposed works are conducted in accordance with the AHIP conditions.</p>

Development	Discussion
	<p>As part of this process, it must be clarified whether recorded Aboriginal site HS2A (AHIMS ID 38-4-1583) has been impacted by recent road construction works.</p>
<b>Review of this report</b>	<p>This report must be forwarded to ALALC, MLALC, and Native Title Claimants for review and comment.</p>

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## 1.0 INTRODUCTION AND BACKGROUND

### 1.1 Introduction

City of Newcastle Council, along with Cessnock City Council and Lake Macquarie City Council, is proposing to develop a 32-kilometre shared pathway from Kurri Kurri to Shortland (the 'Proposal'), utilising a former late nineteenth and early twentieth century rail corridor, known as the Richmond Vale Rail Trail (RVRT). The Proposal will involve the construction of a three-metre-wide path along the existing railway corridor and will involve ground disturbing activity along the route.

Artefact has been engaged by GHD, on behalf of City of Newcastle Council, to prepare an Aboriginal Archaeological Survey Report (ASR) for the proposed development. This ASR will be inputted into the REF and EIS which is being prepared for the Proposal in accordance with the requirements of Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

This report assesses and documents the potential Aboriginal heritage impacts of the proposal. The aim of this report is to identify whether any Aboriginal objects or areas of archaeological potential would be impacted by the proposal, whether an Aboriginal Heritage Impact Permit (AHIP) would be required from the Office of Environment and Heritage (OEH), and to recommend if any further assessment and/or management or mitigation measures are required.

### 1.2 Study Area and Scope

The study area is located within the original alignment of the Richmond Vale Railway (constructed between 1856 and 1904) and includes various access roads and temporary compound and stockpile areas. It crosses through three Local Government Areas (LGA): City of Newcastle Council, Lake Macquarie and Cessnock. The study area is located within the boundaries of the Awabakal Local Aboriginal Land Council (ALALC) and Mindaribba Local Aboriginal Land Council (MLALC). The study area is located within three Native Title claim areas which are discussed in further detail in section 2.4.

The study area is 32 kilometres in length and comprises former railway alignments from Shortland to Kurri Kurri/Pelaw Main. Ancillary tracks also include a two-kilometre spur to Tarro from Hexham and a two-kilometre spur from Minmi to one kilometre east of Lenaghans Drive. A number of construction access roads and potential lay down areas have been included in this assessment.

The study area comprises two impact areas:

- disturbance Boundary
- clearance Boundary

The disturbance boundary is the outer boundary for the project, and delineates the 'study area'. Proposed activities within the disturbance boundary include car parking for site workers, construction vehicle access, stockpile locations, and site compound locations. These works will not necessarily cause any ground disturbing impacts, although vehicle access during wet weather has the potential to impact the ground surface, and stockpile and compound sites can change water run-off patterns and cause erosion in adjacent areas.

Works within the clearance boundary will involve ground disturbing activities. This includes the construction of the shared path, vegetation removal, and modifications to cuttings and bridges, where required.

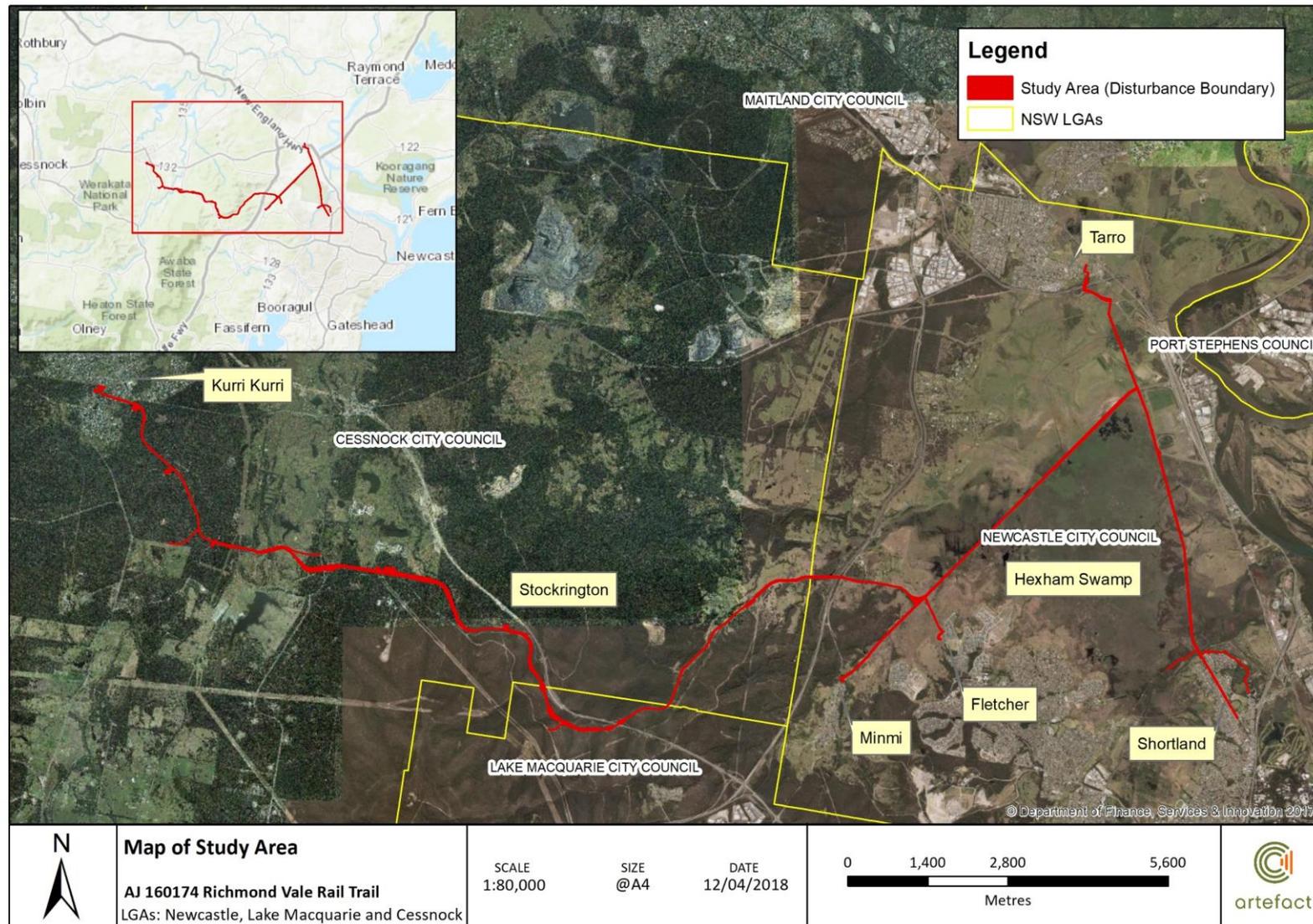
The location and extent of the study area is illustrated in Figure 1.

### 1.2.1 Changes to Study Area Boundary

The study area boundary has changed in certain areas since the archaeological field survey for this assessment was completed. As such, the description and mapping of survey units (Section 4.0) shows the study area boundary at the time the field survey took place. All other mapping shows the current extent of the study area.

The changes to the study area boundary has resulted in a decrease in the investigated area, such as the removal of a portion of the study area at Tarro, and some small increase in the study area in other areas. To manage these changes, a recommendation has been included in this report for further archaeological investigation of any areas where the study area has increased since the archaeological field survey was completed.

Figure 1: Location and extent of the study area



### 1.3 The Proposal

The Proposal seeks to convert the Richmond Vale Railway, a mid-nineteenth and early-twentieth century railway line, into a shared pathway. This pathway would extend from Kurri Kurri to Shortland, utilising the former RVRT railway corridor.

Works for the Proposal would include the following:

- Removal of unsuitable subgrades along the existing rail alignment and proposed access routes and import of pavements such as gravel, asphalt and concrete
- Installation of seats at entrance to path and along path route
- Installation of hardwood timber bollards, heavy duty timber fencing, drinking fountains and bicycle fixing stations near rest/preparation areas
- Construction of an eastern and western embankment near Ironbark Creek Bridge
- Construction of a bridge over Ironbark Creek and clearance of weeds along proposed bridge footprint
- Clearance of overgrown vegetation along length of rail alignment
- Treatment of existing cuttings via:
  - vegetation clearance
  - formation of bund or drain along the upper extent of cuttings
  - Scaling of loose rock and soil along the face and upper extent of cuttings
  - Rock bolting of loose and unstable rock along the face and upper extent of the cuttings
  - Shotcreting weathered rock material along face of unstable cuttings
  - Meshing and fencing along cuttings to protect against rock falls
- Removal of existing timber overpass near Dog Hole Road and existing overbridge near Blue Gum Creek
- Improvement of drainage and paving within Tunnel 1 and Tunnel 2
- Replacement or stabilisation of Tunnel 3 and construction of drainage and paving within tunnel
- Establishment of temporary compound and stockpile areas at Dog Hole Road, Surveyors Creek, Wallis Creek, Knowledge Park, Kurri Kurri and Minmi Junction.
- Construction of carpark at George Booth Drive and Blue Gum Creek and removal of existing fence
- Construction of toilet block, amenities and carpark at Hunter Expressway compound access road
- Construction of an Overpass at Wallis Creek property
- Fencing and planting along existing rail alignment boundary to ensure privacy and security for nearby property at Wallis Creek.
- Fencing along approach and departure zones to bridges and shoulder of trail when running along large embankments.

- Potential removal of an existing timber truss bridge along Surveyors Creek and construction of multi-span concrete girder bridge over Surveyors Creek or construction 70 metre span suspension bridge (or alternative) with three span concrete girder, access path to bridge and coffer dam
- Construction of a small low lying culvert between Wallis Creek and Kurri Kurri
- Construction of a level crossing at Pokolbin Street level crossing, Kurri Kurri
- Construction of an elevated boardwalk along existing HWC pipeline easement between Fletcher and Minmi Junction.
- Addition of lighting at points of conflict such as road crossings, approaches to bridges, car parks and tunnels.
- Installation of directional and risk reduction signage at all access locations and at regular 500 metre intervals

## 1.4 Scope of this Assessment

The purpose of this report is to document the results of the assessment of the potential Aboriginal heritage impacts from the construction and operation of the RVRT shared pathway. This report supports the REF and EIS that is being prepared for the project. The scope of the present assessment includes:

- Details of consultation with ALALC, MLALC, and Native Title Claimants
- An overview of the Aboriginal history of the study area
- The results of a site survey
- Identification of Aboriginal sites and areas of archaeological potential within the study area
- Assessment of the significance of identified Aboriginal sites
- Conclusions and recommendations for the project in regard to Aboriginal heritage.

This study area is predominantly a long, linear transect which adheres to the former alignment of the RVRT. Only those areas which were designated within a potential disturbance boundary for the project was assessed in this report (the study area). Areas adjacent to the study area were not assessed in this report.

## 1.5 Report Structure

- Section 1 – Introduction: this section provides an introduction and background information for the proposal
- Section 2 – Statutory Requirements: describes the relevant heritage legislation for Aboriginal heritage in the study area
- Section 3 – Study Area Context: provides a succinct overview of the environmental and archaeological context of the study area
- Section 4 – Survey Methodology: methodology for the archaeological survey
- Section 5 – Survey Results: describes the site survey conducted for this assessment

- Section 6 – Archaeological Sites: describes AHIMS and newly identified Aboriginal archaeological sites identified during the survey
- Section 7 – Analysis and Discussion: provides a discussion of the results of the site survey
- Section 8 – Significance Assessment: provides an assessment of archaeological significance for the study area
- Section 9 – Impact Assessment: assessed potential impacts to identified Aboriginal sites
- Section 10 – Management and Mitigation Measures: outlines relevant management and mitigation measures for the proposal
- Section 11 – Conclusions and Recommendations: presents a summary of the study's findings and further requirements for Aboriginal heritage

## 1.6 Limitations and Constraints

This report provides an assessment for Aboriginal heritage. It does not provide an impact assessment for built heritage and archaeological potential.

Only the area within the provided disturbance boundary was surveyed for Aboriginal objects and sites. Areas outside the study area were not assessed for Aboriginal objects or archaeological potential.

Since completing site inspection and archaeological assessment, additional areas have been added to the study area for the Richmond Vale Rail Trail shared pathway project. This report only assesses those areas which have been physically surveyed. Further survey and Aboriginal stakeholder consultation will be required for additional areas outside the study area that were not subject to field survey for the current assessment.

## 1.7 Aboriginal Community Involvement

Three Aboriginal stakeholders were invited to participate in the site survey and provide Aboriginal cultural context. These participants were:

- Peter Townsend, representing the Awabakal Local Aboriginal Land Council (ALALC)
- Jason Brown, representing the Mindaribba Local Aboriginal Land Council (MLALC)
- Peter Leven, claimant for the Awabakal and Guringai People Native Title Claim (NC2013/002)

One Aboriginal stakeholder was invited to participate in the site survey but declined the offer. This was:

- Scott Franks, claimant for the Scott Franks and Anor on behalf of the Plains Clans of the Wonnarua People Native Title Claim (NC2013/006)

## 1.8 Report Authorship and Acknowledgements

This report was written by Duncan Jones (Heritage Consultant). Veronica Norman (Heritage Consultant) conducted background research. Management input and review was provided by Josh Symons (Principal).

## 2.0 STATUTORY REQUIREMENTS

### 2.1 National Parks and Wildlife Act (1974) (NPW Act)

The NPW Act, administered by the OEH provides statutory protection for all Aboriginal 'objects' (consisting of any material evidence of the Aboriginal occupation of NSW) and 'Aboriginal Places' (areas of cultural significance to the Aboriginal community).

The protection provided to Aboriginal objects applies irrespective of the level of their significance or issues of land tenure. However, areas are only gazetted as Aboriginal Places if the Minister is satisfied that sufficient evidence exists to demonstrate that the location was and/or is, of special significance to Aboriginal culture.

The NPW Act was amended in 2010 and as a result the legislative structure for seeking permission to impact on heritage items has changed. A Section 90 permit is now the only AHIP available and is granted by the OEH. Various factors are considered by OEH in the AHIP application process, such as site significance, Aboriginal consultation requirements, ESD principles, project justification and consideration of alternatives. The penalties and fines for damaging or defacing an Aboriginal object have also increased.

As part of the administration of Part 6 of the Act, OEH regulatory guidelines on Aboriginal consultation are in place, which are outlined in the 'Aboriginal Cultural Heritage Consultation Requirements for Proponents' (2010). Guidelines are also in place for the processes of due diligence as outlined in the 'Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW' (2010) in accordance with the 2010 amendment to the Act.

There are no gazetted Aboriginal Places within the proposal areas. All Aboriginal objects, whether recorded or not, are protected under the Act.

### 2.2 Environmental Planning & Assessment Act (1979)

The *Environmental Planning & Assessment Act 1979* (EP&A Act) is administered by the Department of the Planning and Environment and provides planning controls and requirements for environmental assessment in the development approval process. This Act has three main parts of direct relevance to Aboriginal cultural heritage, namely, Part 3 which governs the preparation of planning instruments, Part 4 which relates to development assessment process for local government (consent) authorities and Part 5 which relates to activity approvals by governing (determining) authorities.

Planning decisions within LGAs are guided by Local Environmental Plans (LEPs). Each LGA is required to develop and maintain an LEP that includes Aboriginal and historical heritage items which are protected under the EP&A Act and the *Heritage Act 1977*. The Newcastle (2012) and Cessnock (2011) LEPs (Part 5, Clause 5.10) makes standard provision for the protection of Aboriginal heritage items that applies to the current study area.

Development Control Plans (DCPs) provide specific and more detailed guidelines for certain types of development, or small sections within an LGA. These guidelines are in addition to the provisions of the LEP. Section 5.04.01 of the Newcastle DCP (2012) lists specific controls relating to Aboriginal heritage. Section 2.15 of the Lake Macquarie DCP (2014 – Revision 11) also lists specific controls relating to Aboriginal heritage within the Lake Macquarie area that are relevant to this study, in addition to referring to the Lake Macquarie City Council 'Sustainable management of Aboriginal Cultural Heritage in the Lake Macquarie Local Government Area: Lake Macquarie Aboriginal Heritage Management Strategy' (2011). Cessnock DCP (2010) lists specific control relating to Aboriginal heritage in areas outside of the current study.

### 2.2.1 Lake Macquarie Aboriginal Heritage Management Strategy

Lake Macquarie (2014) LEP (Part 7, Clause 7.7) specifies recognition and conservation practices related to development within sensitive Aboriginal landscape areas, including

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*‘the consent authority may require an Aboriginal Heritage Impact Statement to be prepared before granting consent to the carrying out of development on land identified as “sensitive Aboriginal landscape area” on the Sensitive Aboriginal Landscape Area Map’*

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The study area transects a portion of land marked as sensitive on the “Sensitive Aboriginal Landscape Area Map”, which is administered under the Lake Macquarie Aboriginal Heritage Management Strategy (LMAHMS).

Under provisions outlined in the Section 6 of the LMAHMS, an Aboriginal Heritage Impact Assessment must be prepared for work to be carried out that is located within the Sensitive Aboriginal Landscape Area, and that is within 100m of a registered AHIMS site. The project satisfies both of these criteria.

Under the requirements for an Aboriginal Heritage Impact Assessment for Lake Macquarie City Council (LMCC), the current report satisfies the criteria listed in Table 6.2 (section 6.1.5 of the LMAHMS). As LMCC is one of the consent authorities for the development, this report would be forwarded to them as part of the EIS for the proposal.

### 2.3 Aboriginal Land Rights Act (1983)

The *Aboriginal Land Rights Act 1983* (the Land Rights Act) is administered by the NSW Department of Human Services – Aboriginal Affairs. The Land Rights Act established Aboriginal Land Councils (at State and Local levels). These bodies have a statutory obligation under the Land Rights Act to; (a) take action to protect the culture and heritage of Aboriginal persons in the council’s area, subject to any other law, and (b) promote awareness in the community of the culture and heritage of Aboriginal persons in the council’s area.

The study area is located within the boundaries of the Awabakal Local Aboriginal Land Council (ALALC) and the Mindaribba Local Aboriginal Land Council (MLALC). The location of the study area with respect to the boundaries of these LALCs is illustrated in Figure 2.

### 2.4 Native Title Act (1994)

The NSW *Native Title Act 1994* was introduced to work in conjunction with the Commonwealth *Native Title Act 1993*. Native Title claims, registers and Indigenous Land Use Agreements are administered under the Act.

At the time of the first site inspection (September 2016), National Native Title Tribunal records showed there were two registered claims that overlap with the study area. A third native title claim was also located within the study area; however, this claim was not registered at that time. The two claims that overlap the study area that had been registered for determination by the National Native Title Tribunal were:

- The Awabakal and Guringai People Claim (NC2013/002)

- Scott Franks and Anor on behalf of the Plains Clains of the Wonnarua People Claim (NC2013/006).

The Native Title claim that overlapped part of the study area that had not been accepted for registration is the:

- Wonnarua Traditional Custodians #3 Claim (NC2015/002).

The locations of these native title claims with respect to the study area are illustrated in Figure 3.

However, National Native Title Tribunal records in July 2017 show that there is only one remaining registered native title claim within the study area. This native title claim is:

- Scott Franks and Anor on behalf of the Plains Clains of the Wonnarua People Claim (NC2013/006).

An updated map of the overlap of Native Title areas and the project area at the drafting of this report (July 2017) is provided in Figure 4.

Figure 2: Local Aboriginal Land Council boundaries with respect to the study area

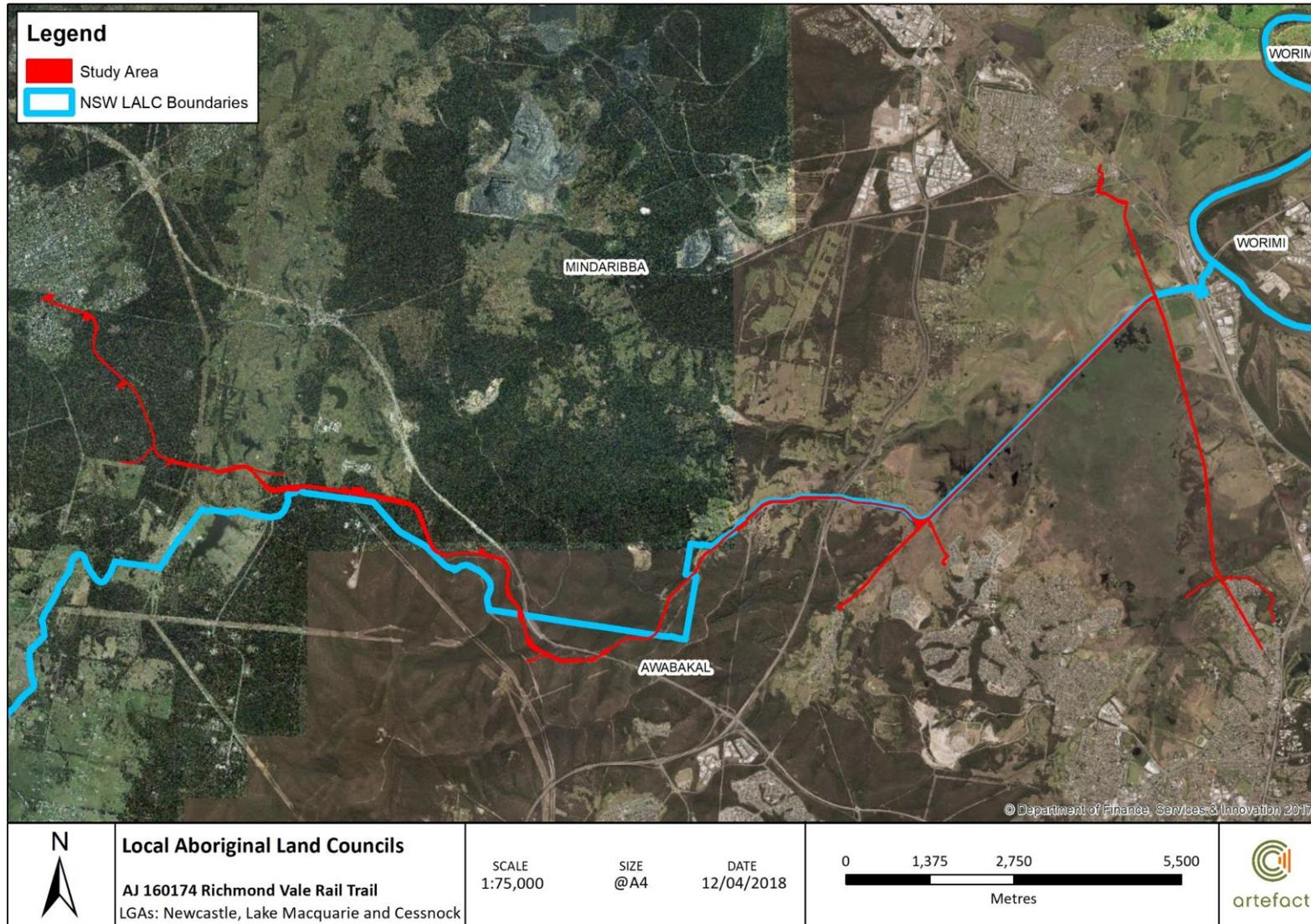


Figure 3: Native Title Claim locations and boundaries with respect to the study area, at the time the archaeological survey was conducted (September 2016)

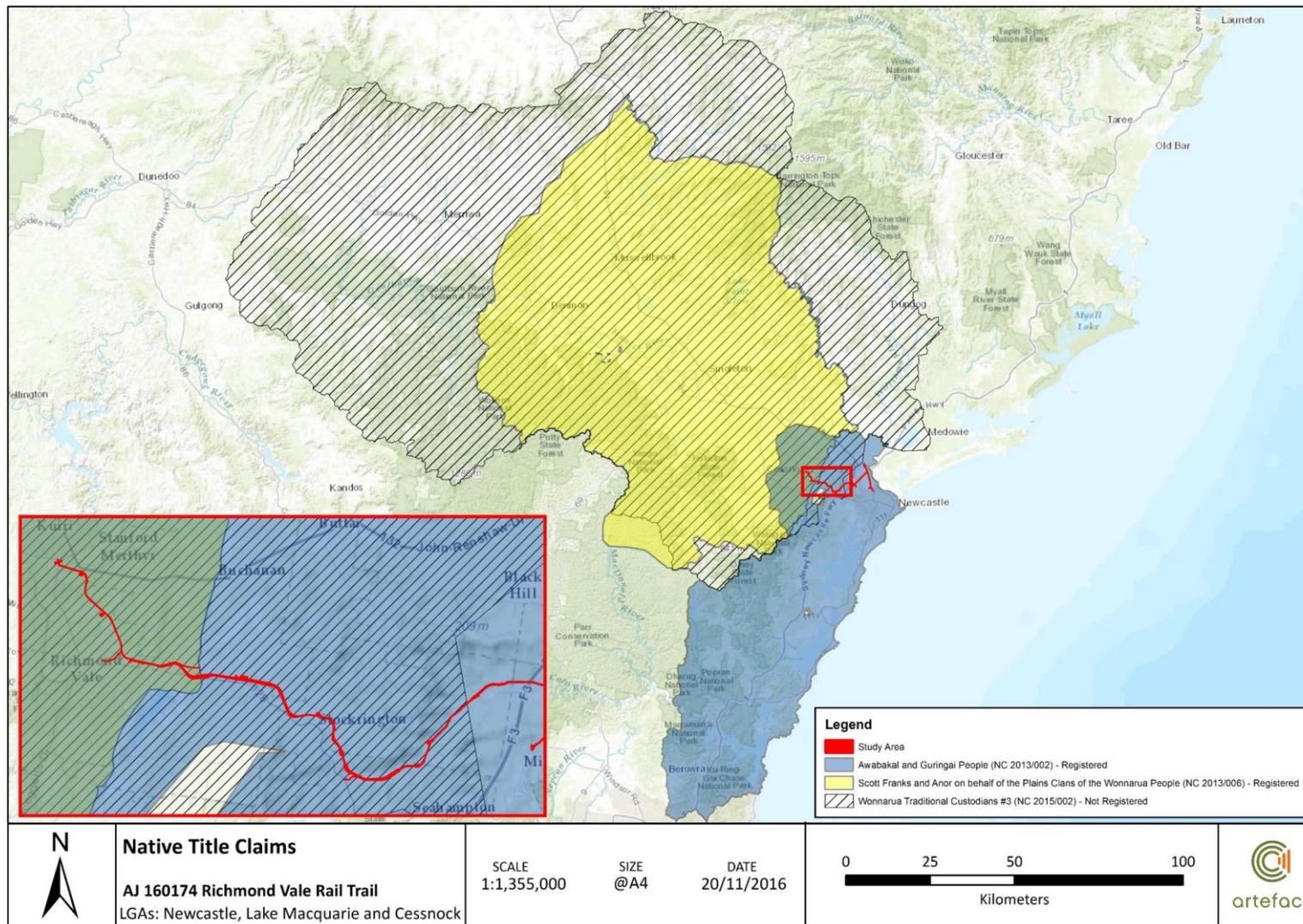
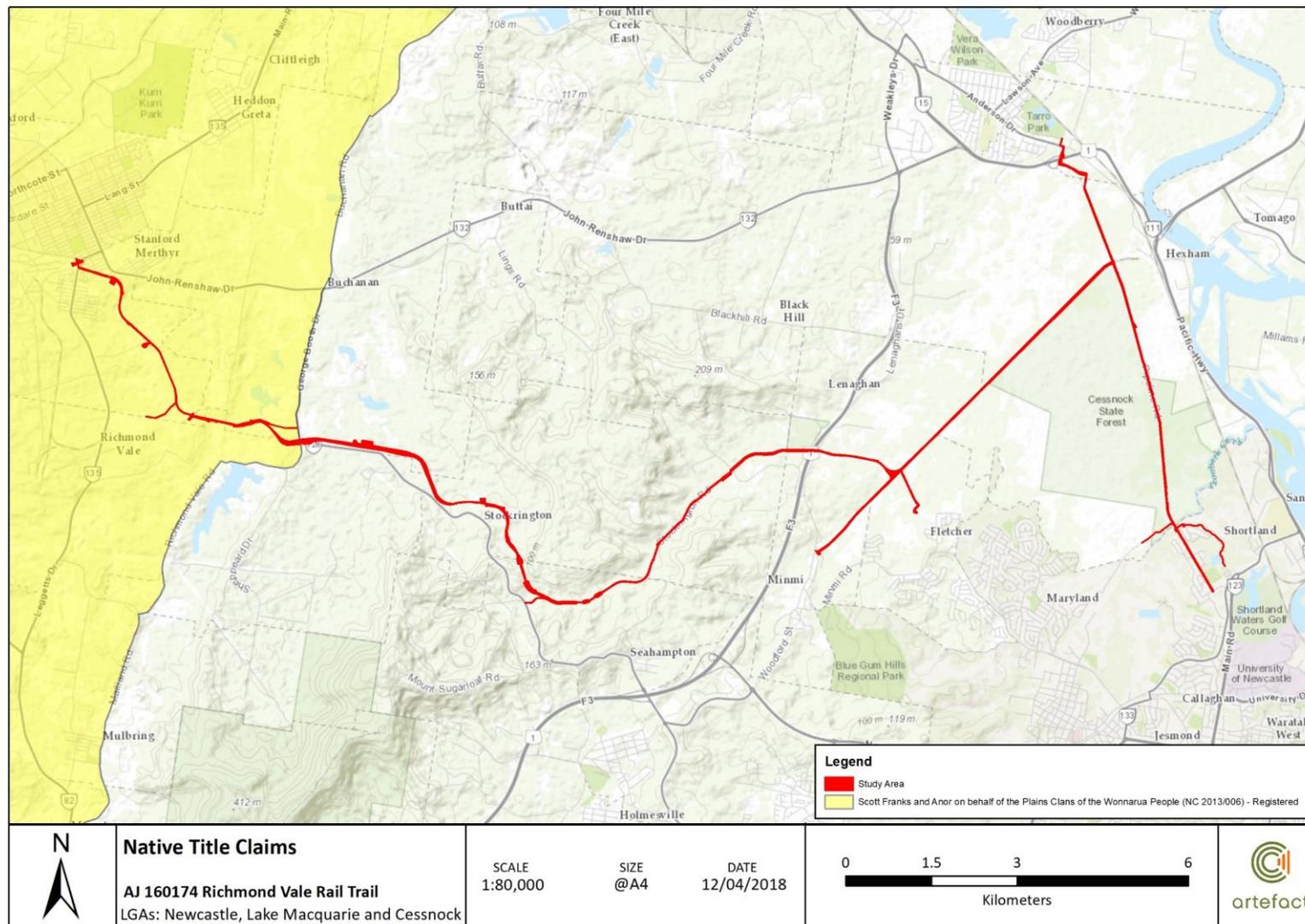


Figure 4: Native Title claims with respect to the study area, July 2017 (current January 2019)



## 3.0 STUDY AREA CONTEXT

### 3.1 Aboriginal Archaeological and Ethnohistorical Context

#### 3.1.1 Aboriginal Ethnohistorical Context

Assumptions about Aboriginal land use patterns are made on the basis of archaeological information gained from the local area, from observations made by Europeans after settlement of the area, and from information known about available natural resources. Prior to the appropriation of their land by Europeans, Aboriginal people lived in small family or clan groups that were associated with particular territories or places. It seems that territorial boundaries were fairly fluid, although details are not known.

The study area is located partly within the Awabakal language group area (Cessnock City Council 2016). The Awabakal language group extends from the Hunter River in the north, down to the south of Lake Macquarie and west as far out as the Sugarloaf Range. The name Awaba means 'flat or plain surface' in the local dialect, and the Awabakal are known as the 'people of the flat surface' (Cessnock Council 2016).

Much of the information on the Awabakal language group comes from the works of Reverend Lancelot Edward Threlkeld (Gunson 1967). Threlkeld operated an Aboriginal mission north of Lake Macquarie for 15 years and documented traditional and early Aboriginal history in the area after 1825 (Gunson 1974). Threlkeld worked for many years with a prominent Awabakal man, Biraban (meaning eagle-hawk), who had learnt to speak English while he was raised in the Military Barracks of Sydney. Together they painstakingly recorded and translated the Awabakal language into English (Umwelt 2011: 3.3). It is from Threlkeld's writings that many early accounts of the Awabakal people were recorded. At the same time, the convict artist Joseph Lycett painted representations of the Aboriginal people who lived in the Newcastle area in the early 1800s, and recorded some details of their life and community in his paintings (for an example, see Figure 5).

Aboriginal people who lived in the vicinity of the study area occupied both the coastal margin, coastal hinterland and inner mountain ranges. Threlkeld mentioned the way in which Aboriginal people would move seasonally from the coast to the mountains (Umwelt 2009). Areas of primary significance for Aboriginal people in the lower Hunter Valley included the highly food abundant Hexham Swamp, and the higher mountain crests of Mount Sugarloaf, Black Hill and the Watagans.

Hexham Swamp is a saltwater and brackish wetland which was host to large quantities of animal and plant resources which were exploited by Aboriginal people. Surrounding the wetland are numerous low hills which project into the swamp on all sides. From these raised terraces on the edge of the swamp, Aboriginal people were able to foray into the wetland to collect food and plant materials at ease.

Further inland, Mount Sugarloaf and Black Hill have been recognised as an area of strong traditional associations for the local Aboriginal people. Ceremonial sites, associated with male initiation ceremonies, have been known to be located on and near these mountains. Threlkeld also recorded that Mount Sugarloaf may also have been a burial place for important Aboriginal people and children (Kuskie 2012: 49).

Between the margin of Hexham Swamp and Mount Sugarloaf, a number of steadily steepening ridge lines are located. These ridgelines were the former transportation routes that would have led from the resource abundant Hexham Swamp fringe to the sacred dreaming and initiation sites in the Mount Sugarloaf hills (Kuskie 2012: 22).

**Figure 5: Fishing by torchlight, other Aborigines beside camp fires cooking fish, circa 1817. Joseph Lycett. Image via National Library of Australia: nla.pic-an2962715-s8**



The arrival of Europeans and subsequent settlement of the region had devastating impacts upon the local Aboriginal community's resources and way of life. Threlkeld recorded violent conflict between settlers and Aboriginal people over the stealing of corn, and described the abduction of Aboriginal women and children in the mid-1820s by runaway convicts, stockmen and other colonists.

### 3.1.2 European Settlement and Land Use

The European exploration of much of the Hunter Region including Newcastle, Lake Macquarie and Cessnock began in the late 18th century and was related to some of the first coal discoveries in New South Wales. Coal was first sighted by a party of escaped convicts led by William and Mary Bryant as they travelled along what is thought to be the Glenrock Lagoon from Port Jackson in 1791 (Lake Macquarie Industrial History, 2014).

The first official exploration of the region was led by Colonel William Paterson in June 1801. Paterson noted that the land around Newcastle contained an abundance of resources such as salt, shells (for lime), fish and coal. He also observed that low-lying land near rivers would be suitable for cultivation, while the remainder provided 'excellent pasture for cattle' (Bladen, 1896)). Upon reading Paterson's report, Governor King decided to form a settlement at the mouth of the Hunter River, setting up camp in what would later be known as Newcastle (Suters, 1997: 2). The camp was abandoned six months later, although resettlement occurred in 1804, at which time Northumberland County was formally named.

Early settlement in Cessnock and Lake Macquarie occurred in the early 1820s. The area around the Cessnock township was originally settled by pastoralists, with the main town centre at Wollombi, 31 km south west of the study area. Cessnock established itself in the late 1850s, acting as a service centre to travellers making their way to Maitland and Singleton (Cessnock City Council, 2016).

Coal deposits in the lower Hunter region were progressively identified and exploited by Europeans throughout the nineteenth century. A colliery at Minmi was established in the 1850s, which

necessitated the construction of a railway line to ship the coal to port. This was the first portion of the Richmond Vale Railway, originally called the Minmi to Hexham Railway. It was constructed in 1856 by John Eales, and linked Eales' colliery in Minmi with the Hunter River foreshore at Hexham.

The route of this original railway line skirted Hexham Swamp from Minmi along the foothills of Black Hill, before heading directly through the centre of Hexham Swamp to terminate at the Hunter River. The construction of the rail line through Hexham Swamp involved the importation of ballast, sand, ash and stone materials to build up the line above the surrounding wetland. Eales went bankrupt and his colliery and railway line was purchased by the Brown Brothers in 1859.

In 1897, the Brown brothers purchased the Richmond Vale Estate where they planned to establish a new colliery and the headquarters for their business, in addition to their collieries in Minmi and elsewhere in the Cessnock region. In order to link these collieries with the coal ports at Hexham and Newcastle, the Minmi to Hexham railway line was expanded, with work on the line being completed in 1904.

The construction of the railway line involved extensive earthworks to create a level line through the steep topography of the Sugarloaf and Black Hill ridgelines. Excavation of ground created deep cuttings through the underlying geology of the region, up to 20m deep in some places. To cross gullies and ravines, large level embankments were constructed, particularly to the north of Mount Sugarloaf.

In the early 20th century, the railway line was effective in providing transport for coal haulage in the lower Hunter area, and a number of new collieries were established near the route. With the continued expansion of coal mining in the region, large portions of the Cessnock area were used for coal mining, with significant underground excavation for deep shaft mines. Timber forests in the region were extensively felled. The towns of Kurri Kurri and Pelaw Main were established as company towns for the workers of these extensive mines.

With the expansion of the regional road networks after the Second World War, the use of the railway line began to diminish. Throughout the later twentieth century the railway line was progressively downsized as road freight was increasingly employed to haul materials throughout the lower Hunter. The railway line was finally closed in 1987 (Andrews, 2004: 109).

From the late 1990s until today, the outer suburbs of Newcastle were progressively expanded to make way for residential housing development. These developments involved the construction of new estates on the spur crests that surrounded Hexham Swamp, which had previously been largely pastoral properties.

### 3.1.3 OEH Aboriginal Heritage Information Management System (AHIMS)

**The location of Aboriginal sites is considered culturally sensitive information. It is advised that this information, including AHIMS data appearing on maps, be removed from this report if it is to enter the public domain.**

Three extensive searches of the Aboriginal Heritage Information System (AHIMS) database were conducted on 26 August 2016. An additional search was undertaken on 21 October 2016 following an extension of the study area. An area of approximately 21 kilometres (east-west) by 8 kilometres (north-south) was searched in order to gain information on the archaeological context of the study area, and to ascertain whether any previously recorded Aboriginal sites are located within the study area.

Two restricted sites were identified during the extensive AHIMS search. The locations and details of restricted sites are not publicly available. OEH was contacted for the locations of these sites, which were located outside of the study area.

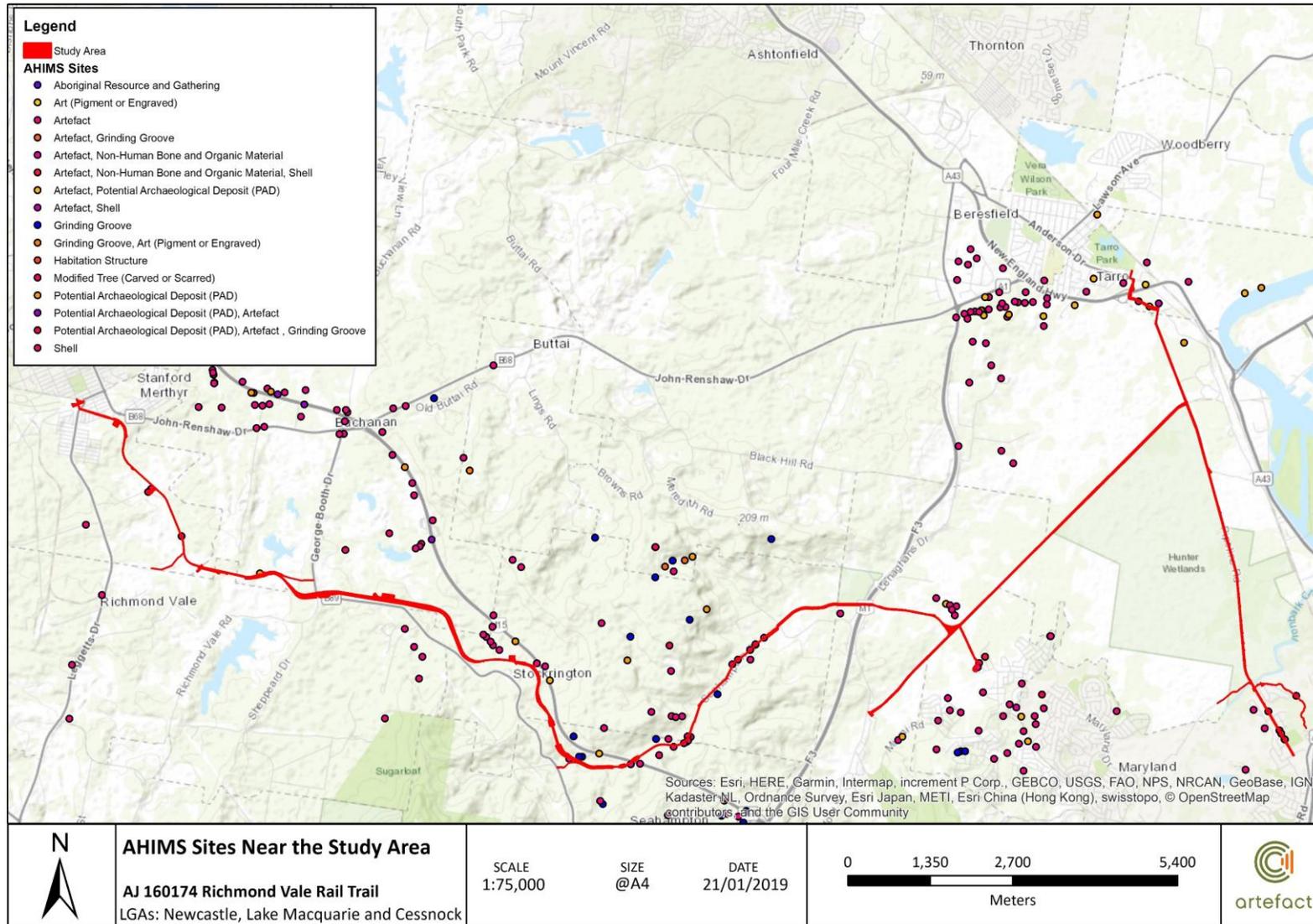
The frequency of recorded site types is summarised in Table 1 below. The distribution of recorded sites within all of the AHIMS search area is shown in Figure 6.

Updated AHIMS searches were conducted on 18 January 2019. Results of the AHIMS search were consistent with the previous AHIMS search conducted on 5 April 2018.

<b>Search 1</b>	
GDA Zone 56	E 372251 – 377466 N 6361004– 6370156
Buffer	0 metres
AHIMS Search ID	393265
<b>Search 2</b>	
GDA Zone 56	E 365364 – 372251 N 6360064– 6364823
Buffer	0 metres
AHIMS Search ID	393266
<b>Search 3</b>	
GDA Zone 56	E 356914 – 365364 N 6361848– 6367759
Buffer	0 metres
AHIMS Search ID	393267
<b>Search 4</b>	
GDA Zone 56	E 377466– 379259 N 6360348– 6362770
Buffer	0 metres
AHIMS Search ID	393268

A description of recorded Aboriginal sites either within or in the immediate vicinity of the study area is included in Section 3.1.4 below.

Figure 6: Results of AHIMS searches for the study area



Document Path: C:\Users\GIS\Desktop\GIS\GIS\_Mapping\160174 Richmond Vale Rail Trail\MXD\New\_mapping\_20190121\ASR\Figure\_06\_AHIMS\_20190121.mxd

### 3.1.4 Recorded Aboriginal Sites Located Within the Study Area

AHIMS searches prior to the archaeological survey for this project identified three recorded Aboriginal sites within the study area. The sites are outlined in Table 2.

**Table 2: AHIMS registered sites located within, or in the immediate vicinity of, the study area**

Site Name	AHIMS no.
Hexham Swamp 2A (HS2A)	38-4-1583
Blue Gum Creek RTA 4 IF	38-4-1348
Blue Gum Creek Artefact Scatter 2	38-4-0761

**HS2A, AHIMS # 38-4-1583** is located approximately 160 metres south of the New England Highway, approximately 160-180 metres from Purgatory Creek. The site was recorded in 2012 as part of investigations of the Hexham Relief Road project. Test excavation works were carried out as part of the Hexham Relief Roads Project. The site consists of three artefacts, including an IMT backed blade, a chert retouched flake and a Fine Grained Siliceous flake. The artefacts were retrieved from two test pits in a disturbed context, and were documented as likely to represent a background archaeological signal in the local area. The site was designated as demonstrating low archaeological sensitivity.

**Blue Gum Creek RTA 4 IF, AHIMS # 38-4-1348** is located approximately 60 metres west of Seahampton Road. The site was recorded in 2010 as part of investigations for the Hunter Expressway project. The site consists of an isolated artefact located on a gently sloping ridge line. The site is situated 140 metres east of a first order tributary of Blue Gum Creek and consists of a silcrete broken flake. The site is defined by surface artefact distribution (1 metre square) on a vehicle track with 85% visibility. The site has been impacted by vegetation clearing, vehicle track construction and use, and erosion. The disturbances have resulted in the exposure of the A2 and B soil horizons. The site is in poor condition with low archaeological integrity and low potential for subsurface archaeological material in the surrounding landscape due to the high levels of vehicle disturbance and erosion.

**Blue Gum Creek 2 Artefact Scatter, AHIMS # 38-4-0761** is located approximately 50 metres south of the M15, on three converging tracks. The site was recorded in 2003 as part of investigations for the proposed extension of the F3 to Branxton. The original site record noted that four artefacts were located spread over an area of 40 metres along a former road that runs northeast to southwest on the eastern side of the Richmond Vale Railway cutting and tunnel. A further 20 artefacts were located on a road that runs parallel to the west of the Richmond Vale Railway. The tracks are extremely eroded (down to clay in many areas) and highly disturbed from works associated with the tracks and the railway. Off road the soil is skeletal and very rocky. The artefacts are associated with two almost level benches on the midslope landform context above Blue Gum Creek.

An updated AHIMS search completed in April 2018 identified the above three recorded Aboriginal sites, plus 17 Aboriginal sites identified during archaeological field survey for the current assessment. Detailed information on those 17 sites is outlined in Section 6 of this report. The 17 Aboriginal sites recorded for the current assessment have each been entered into the AHIMS database twice. These are each duplicate recordings of the same Aboriginal site.

The Office of Environment and Heritage were contacted on 29 May 2018 to remove duplicate entries of listed sites on the AHIMS register. However, as AHIMS sites cannot be formally removed from the register, a number of sites had their "Site Status" amended to "Not a Site" on their formal listing. As

the amended sites are still listed on the AHIMS register they have been included in all mapping and discussion in this report.

Duplicate sites which were listed as “Not a Site” are tabulated in Table 3 below. Table 3 also provides the correct site AHIMS code for each site.

**Table 3: Duplicate AHIMS registered sites listed as “Not a Site”, with correct AHIMS identifier**

Duplicate AHIMS site identifier	Site name	Site Status	Correct AHIMS site identifier
37-6-3832	Richmond Vale Rail Trail Isolated Find 10 (RVRT IF10)	Not a Site	37-6-3808
37-6-3833	Richmond Vale Rail Trail Isolated Find 9 (RVRT IF9)	Not a Site	37-6-3807
37-6-3834	Richmond Vale Rail Trail Isolated Find 8 (RVRT IF8)	Not a Site	37-6-3806
38-4-1880	RVRT AS7	Not a Site	38-4-1923
38-4-1882	RVRT IF2	Not a Site	38-4-1910
38-4-1884	RVRT IF4	Not a Site	38-4-1913
38-4-1910	Richmond Vale Rail Trail Isolated Find 2	Not a Site	38-4-1882
38-4-1911	Richmond Vale Rail Trail Isolated Find 6 (RVRT IF 6)	Not a Site	38-4-1886
38-4-1912	Richmond Vale Rail Trail Artefact Scatter 5 (RVRT AS 5)	Not a Site	38-4-1878
38-4-1913	Richmond Vale Rail Trail Isolated Find 4 (RVRT IF4)	Not a Site	38-4-1884
38-4-1915	Richmond Vale Rail Trail Artefact Scatter 4 (RVRT AS 4)	Not a Site	38-4-1877
38-4-1916	Richmond Vale Rail Trail Artefact Scatter 6 (RVRT AS 6)	Not a Site	38-4-1879
38-4-1917	Richmond Vale Rail Trail Artefact Scatter 3 (RVRT AS3)	Not a Site	38-4-1876
38-4-1918	Richmond Vale Rail Trail Artefact Scatter 2	Not a Site	38-4-1875
38-4-1919	Richmond Vale Rail Trail Artefact Scatter 1	Not a Site	38-4-1874
38-4-1920	Richmond Vale Rail Trail Isolated Find 1	Not a Site	38-4-1881
38-4-1921	Richmond Vale Rail Trail Isolated Find 7 (RVRT IF7)	Not a Site	38-4-1887
38-4-1922	Richmond Vale Rail Trail Isolated Find 3 (RVRT IF3)	Not a Site	38-4-1883
38-4-1924	Richmond Vale Rail Trail Isolated Find 5 (RVRT IF 5)	Not a Site	38-4-1885

The study area boundaries have changed since the original field survey such that an additional two sites registered on AHIMS following the current investigation, AHIMS ID 38-4-1922 and 38-4-1924, are no longer within the study area.

### 3.1.5 AHIMS Sites Located within 200m of the Study Area

There are 22 recorded Aboriginal sites located within 200m of the study area. These sites are outlined in Table 4.

These sites were not visited for this assessment, and as such, the site description information outlined in Table 3 is from information provided on the OEH AHIMS site recording forms for each site.

**Table 4: AHIMS registered sites located within 200m of the study area**

Site Name	AHIMS no.	
CTGM 1/A	38-4-1056	<b>CTGM 1/A, AHIMS # 38-4-1056</b> is located approximately 175 metres east of the current study area. The site consists of an isolated brown silcrete flake, located in a gravel exposure on an unsealed portion of a vehicle track that runs adjacent to the pipeline. The site is located at the northern spur crest overlooking the flats and wetlands of Ironbark Creek and Hexham Swamp. Information on the AHIMS site card states that site has been extensively disturbed through the construction of the existing pipeline, vehicle track, vegetation removal, gravel deposition and erosion, and that there is minimal potential for an in-situ sub-surface deposit. The site has been designated culturally important by ALALC.
CTGM 1/B	38-4-1055	<b>CTGM 1/B, AHIMS # 38-4-1055</b> is located approximately 170 metres west of the current study area, and 350 metres southeast of CTGM 1/a, within the existing CTGM pipeline easement at Shortland, Newcastle. The site is located within an area that has been completely cleared of native vegetation. The local rock type is Tomago Coal Measures. The site consists of an isolated brown tuff flake located towards the northern end of a gentle spur crest overlooking the flats and wetlands of Ironbark Creek and Hexham Swamp. Information on the AHIMS site card states that the site has been extensively disturbed through the construction of the existing pipeline, road construction, drainage control, vegetation removal, gravel deposition and erosion. The site has been designated culturally important by ALALC.
Tarro	38-4-0325	<b>Tarro, AHIMS # 38-4-0325</b> is located approximately 130 metres west of the current study area. The site is located on a low bedrock spur on the northern margin of Hexham Swamp. The local rock type consists of sandstone. The site consists of an artefact scatter, two artefacts were located in an exposure on an embankment, with a further flake located 100 metres away near the tree line in the wetland.
Hexham Swamp (HS) 1	34-4-1588	<b>HS1 (Hexham Swamp 1), AHIMS # 38-4-1478</b> is located approximately 75 metres north east of the current study area, 330 metres east of AHIMS # 38-4-1583 and was originally recorded in 2011. The site was investigated as part of the AMBS Hexham Relief Roads Project, Aboriginal Heritage Impact Assessment. Information on the AHIMS site card states that the site has been subject to damage related to the construction of gravel embankments to create access roads. The site consists of substantial evidence of Aboriginal heritage, the extent of which was not able to be fully recorded during survey. Many artefacts had

Site Name	AHIMS no.	
		<p>been damaged by vehicles or machinery. Several types of stone were noted, predominantly chert/MTC. AMBS determined there was evidence of substantial Aboriginal heritage material below the surface in this area on the margins of the swamp, and other areas in a similar landform should be considered archaeologically sensitive.</p> <p>The site was re-recorded in 2012 by AMBS. It was noted that although there is an Aboriginal silcrete quarry nearby the area, none of the artefacts were made of silcrete. No artefactual material was identified on adjacent access tracks. AMBS determined the artefactual material is confined to the one track and that the artefacts have been brought to the area during the construction of the track, and is not indicative of the local Aboriginal archaeology. The artefactual material <u>located in 2011 was spread over a low-lying alluvial plain and</u> appears to be the result of vehicles crossing the disused track, and unlikely to be associated with the site HS1. The site is considered not to have archaeological sensitivity or be associated with a PAD. This was confirmed by AMBS' October 2012 test excavations.</p>
Lenaghans AS2	38-4-1378	<p><b>Lenaghans AS2, AHIMS # 38-4-1378</b> is located approximately 160 metres north of the current study area. The artefact scatter was originally identified by an ALALC representative in a cleared, pastoral area on lower/midslopes. The site contains at least two artefacts, one silcrete and one chert flake.</p>
Sanctuary Estate Stage4b Fletcher NSW	38-4-1519	<p><b>Sanctuary Estate Stage 4b Fletcher NSW</b> does not have a site card available for this site. Information on this site is limited however it is located in an area of likely high archaeological sensitivity. More information on this site and the surrounding Aboriginal archaeological context is provided in Section 6.</p>
Minmi Road	38-4-0070	<p><b>Minmi Road, AHIMS # 38-4-0070</b> is located approximately 200 metres north of Stockrington Road and 150 metres west of Mimi Road in an alluvial area. The site consists of a scatter of sparse artefacts along the shoulder of the ridge. Extensive vegetation clearance has been undertaken for pastoral purposes.</p>
Blue Gum Creek RTA 8 ST	38-4-1346	<p><b>Blue Gum Creek RTA 8 ST, AHIMS # 38-4-1346</b> is located approximately 70 metres west of the junction of Seahampton Road and a four-wheel drive access track. The site consists of a modified tree located on a midslope, above a gently inclined ridge line. Information on the AHIMS site card states that the tree was</p>

Site Name	AHIMS no.	
		<p>approximately 90 to 125 years old when it died, and has been dead for up to 80 years. The tree has two Aboriginal cultural scars, including a ring bark style indicating a post WWI process with a methodical double ring tomahawk cut. The top portion of the tree was likely cut by chainsaw around the 1960s. The site was assessed as having low Aboriginal cultural significance and low archaeological significance.</p>
Blue Gum Creek RTA 9	38-4-1352	<p><b>Blue Gum Creek RTA 9, AHIMS # 38-4-1352</b> is located less than 20 metres east of the current study area, at the junction of a vehicle track and Seahampton Road. The site is an artefact scatter located on a gently inclined ridgeline and has an outlook to the northwest. The site is situated 140 metres east of a first order tributary of Blue Gum Creek and consists of 28 artefacts made from tuff, chert and silcrete. Information on the AHIMS site card states that the site has been impacted by tree clearing, vehicle disturbance and associated erosion, resulting in the exposure of the A2 soil horizon. The site is in poor condition with low archaeological integrity and low potential for subsurface archaeological material in the surrounding landscape due to the high levels of vehicle disturbance and erosion.</p>
Blue Gum Creek RTA 5	38-4-1349	<p><b>Blue Gum Creek RTA 5, AHIMS # 38-4-1349</b> is located approximately 70 metres west of the junction of Seahampton Road and a four-wheel drive access track. The site consists of an artefact scatter located on a vehicle track on a gently inclined ridge line. The site consists of two tuff broken flakes, both heavily burnt. Information on the AHIMS site card states that the site has been impacted by vegetation clearing, vehicle disturbance and erosion that has resulted in the exposure of the A2 and B soil horizons. The site is in poor condition with low archaeological integrity due to soil profile disturbance and loss of soil within the site. There is low potential for subsurface archaeological material.</p>
Blue Gum Creek RTA 6 IF	38-4-1350	<p><b>Blue Gum Creek RTA 6 IF, AHIMS # 38-4-1350</b> is located less than 20 metres south of the current study area. Approximately 300 metres from the junction of the former Richmond Vale Railway and Seahampton Road. The site consists of one tuff broken flake. The site is located on a vehicle track that has been impacted by vegetation clearing, vehicle disturbance and erosion. The disturbances have resulted in the exposure of the A2 and B soil horizons. Information on the AHIMS site card states that the site is in poor condition with low archaeological integrity and low potential for subsurface archaeological material in the surrounding landscape due to the high levels of vehicle disturbance and erosion.</p>

Site Name	AHIMS no.	
Blue Gum Creek RTA 10 IF	38-4-1353	<b>Blue Gum Creek RTA 10 IF, AHIMS # 38-4-1353</b> is located approximately 60 metres north of the current study area on an access track. The site consists of one tuff core located on a gently inclined lower midslope. The site has been impacted by tree clearing, vehicle disturbance and associated erosion, resulting in the exposure of the A2 soil horizon. Information on the AHIMS site card states that the site is in poor condition with low archaeological integrity and low potential for subsurface archaeological material in the surrounding landscape.
Blue Gum Creek (Grinding Groove)	38-4-0222	<b>Blue Gum Creek (Grinding Groove), AHIMS # 38-4-0222</b> is located approximately 95 metres north of the current study area. The site consists of grinding grooves located in a creek bed on a midslope. The grinding grooves are scattered over an area of approximately 20 metres <sup>2</sup> . Information on the AHIMS site card states that the condition of the site is weathered.
Blue Gum Creek RTA 7	38-4-1351	<b>Blue Gum Creek RTA 7, AHIMS # 38-4-1351</b> is located approximately 150 metres south of the current study area on an access track, at the top of the spur crest. The site consists of a scatter of six oyster shell fragments. The site has been impacted by vegetation clearing, vehicle disturbance and erosion resulting in the exposure of the A2 and B soil horizons. Information on the AHIMS site card states that the site is in poor condition with low archaeological integrity and low potential for subsurface archaeological material in the surrounding landscape.
Blue Gum Creek 1 Artefact Scatter	38-4-0760	<b>Blue Gum Creek 1 Artefact Scatter, AHIMS # 38-4-0760</b> is located approximately 85 metres south of the current study area, underneath a bridged section of the Hunter Expressway. Two flakes, including a broken, retouched flake made from Nobbys tuff and a broken basalt flake, are located on the midslopes of a dirt track. Both artefacts have been burnt. The artefacts are not thought to be in-situ, as they are likely to have been washed down the access road from a site (AHIMS # 38-4-0761) on a level area at the top of slope. The road is extremely eroded with the B horizon and sandstone exposed in some areas. A major tributary of Blue Gum Creek is 50 metres downslope. A minor tributary of the creek runs 10 metres to the south.
Blue Gum Creek 4 Artefact Scatter and associated PAD	38-4-0763	<b>Blue Gum Creek 4 Artefact Scatter and Associated PAD, AHIMS # 38-4-0763</b> is located approximately 195 metres north of the current study area, underneath a bridged section of the Hunter Expressway. Three

Site Name	AHIMS no.	
		<p>Nobbys retouched tuff flakes were located washing down a narrow foot track that leads down to Blue Gum Creek. A level bench was located adjacent to one of the artefacts and above two of the artefacts. An area of PAD was identified on this bench. The track leading down to Blue Gum Creek crosses the lower slope in this area, before increasing again. At this point the creek has a cavernous overhang suitable for Aboriginal occupation, however, no evidence of Aboriginal occupation was observed. The area was identified as highly sensitive by the Awabakal representative on site.</p>
<p>Blue Gum Creek Grinding Grooves</p>	<p>38-4-0235</p>	<p><b>Blue Gum Creek Grinding Grooves, AHIMS # 38-4-0235</b> is located approximately 80 metres north of the current study area. The site consists of three grinding grooves located in a creek bed. The local rock type is sandstone, and the local land is used for coal mining activities. Blue Gum Creek is the source of drinking water.</p>
<p>Blue Gum Creek Grinding Grooves</p>	<p>38-4-0236</p>	<p><b>Blue Gum Creek Grinding Grooves, AHIMS # 38-4-0236</b> is located approximately 50 metres north of the current study area, and approximately 50 metres west of AHIMS # 38-4-0235. The site consists of 6 grinding grooves located in the creek bed.</p>
<p>Blue Gum Creek 3 Isolated Find</p>	<p>38-4-0762</p>	<p><b>Blue Gum Creek 3 Isolated Find, AHIMS # 38-4-0762</b> is located approximately 10 metres south of the current study area. The site consists of one Nobbys tuff flake, broken in two pieces. The site was located on the lower slope on the eastern side of a dirt track that leads down to the Richmond Vale Railway cutting and Blue Gum Creek. The general area has been highly disturbed by works associated with levelling and building up the ground surface for the railway, pit-propping activities and road grading. It was determined unlikely that further artefacts would be present in a subsurface context.</p>
<p>Surveyors Creek RTA 11 (Previously PAD 6 Surveyors Creek)</p>	<p>38-4-0826</p>	<p><b>Surveyors Creek RTA 11 (Previously PAD6 Surveyors Creek), AHIMS # 38-4-0826</b> is located approximately 165 metres east of the current study area. The PAD is on a lower slope 5 metres west of a northerly flowing tributary of Surveys Creek, and 70 metres south of the confluence of two tributaries. Sandstone outcrops are located in the creek bed. There are limited alluvial deposits along the banks of the creek. A level area adjacent to the creek was determined suitable for a camp site. Visibility was zero due to</p>

Site Name	AHIMS no.	
		vegetation.
Surveyors Creek RTA 4	38-4-0808	<p><b>Surveyors Creek RTA 4, AHIMS # 38-4-0808</b> is located approximately 160 metres east of the current study area. Five artefacts were located on a fire trail, on both sides of a tributary of Surveyors Creek. Four of the artefacts were in situ, eroding out of the bank at approximately 10 centimetres' depth. One artefact was located sitting on the aggraded sandy soil, 20 metres east of the watercourse having washing down from above. The artefacts consisted of 2 silcrete flaked pieces, 1 silcrete flake, 1 mudstone broken flake and 1 mudstone heat shatter. Soils consisted of grey sandy loam with pebbles from conglomerate below the loam. The area is highly disturbed from scouring and vehicle access. An area on the western bank was determined to contain potential archaeological deposits in a stratified context.</p>
Surveyors Creek RTA 3 IF	38-4-0807	<p><b>Surveyors Creek RTA 3 IF, AHIMS # 38-4-0807</b> is located approximately 50 metres east of the current study area. An isolated broken silcrete flake was located in an area of exposure on a lower slope. The nearest water source in relation to the site was Surveyors Creek, 150 metres north east. Visibility in the surrounding area was restricted due to vegetation cover and leaf litter. The artefact may have been excavated when a hole for a nearby surveyors peg was dug. The area is disturbed and in poor condition due to clearing of the forest.</p>
Surveyors Creek RTA 24	38-4-1611	<p><b>Surveyors Creek RTA 24, AHIMS # 38-4-1611</b> is located approximately 140 metres north of the current study area. The site consists of two artefacts, a mudstone flake and a silcrete flake, located on an access track adjacent to an old quarry/lay down area. The surrounding landform consists of a midslope landform context, on a spur ridge separating Surveyors Creek, 320 metres to the north, from a first order tributary 460 metres to the west. This track is currently used as access for the Kurri Kurri Motorcycle Club. It is likely that the artefacts have eroded from the track edges which are slightly lower than surrounding landform. Very little or no A1 or A2 horizon soils remain on the track, with only a lag deposit of gravel resting on the clay B horizon surface in most parts. The site is in poor condition with no archaeological integrity remaining.</p>

### 3.1.6 Previous Archaeological Investigations

#### **AMBS (2012) Hexham Relief Roads Project: Aboriginal Heritage Impact Assessment**

Australian Museum Business Services (AMBS) was commissioned by KMH Environmental (KMH) to prepare an Aboriginal Heritage Impact Assessment (AHIA) addressing potential impacts to Aboriginal heritage in relation to the Hexham Relief Roads Project.

An archaeological survey of the area determined the project would have an impact on two Aboriginal sites/PADs: HS1 (AHIMS # 38-4-1478), an artefact scatter with potential subsurface deposit located on the alluvial plain. This site also had an area of PAD inferred around Purgatory Creek, based on the visible extent of HS1. The second site, Cultural PAD, consisted of a potential subsurface archaeological deposit recorded by McCardle Cultural Heritage (MCH). The survey also identified a rise of land on the north-eastern side of the intersection of Woodlands Close and the New England Highway as having some potential for subsurface deposit, although not part of the proposed impacts related to the relief roads, the area was specified as an area to avoid any inadvertent impacts. A rounded stone and some shell material were also located in fill material near the southern end of the relief roads area.

The report recommended an Aboriginal Heritage Management Plan (AHMP) for the project be developed, as well as a program of archaeological test and salvage excavation in any section of site HS1 and the Cultural PAD.

#### **AMBS (2013) Hexham Relief Roads Project: Test Excavation Report**

AMBS was commissioned by KMH on behalf of Upper Hunter Valley Alliance (UHVA) to undertake archaeological test excavations associated with the Hexham Relief Roads Project.

Previously identified Aboriginal site HS1 was found to extend along a constructed track within the disused Hunter Water easement crossed by the proposed Hexham Relief Roads corridor. The site is believed to comprise artefactual stone material that has been brought to the area during the construction of the track, and is not indicative of the local Aboriginal archaeology. The artefactual material previously identified was believed to have been spread across the low-lying alluvial plain, possibly by vehicles using the disused track.

A Cultural PAD had been identified by MCH, based on an apparent lack of disturbance and the importance of the area to registered Aboriginal stakeholders. However, access to the entirety of the Cultural PAD was unable to be obtained prior to test excavations and was therefore postponed. The shell material was considered likely to have been introduced in fill, possibly brought in with dredged sand and is not considered to be representative of the local Aboriginal archaeology or associated with HS1.

Test excavation identified subsurface Aboriginal archaeological deposits comprising three stone artefacts, located in two adjacent test pits along the access road, approximately 160-180 metres from Purgatory Creek. These artefacts were recovered from disturbed contexts, and are likely to represent 'background archaeology of the local area, rather than long term cultural activities that would result in extensive in situ archaeological sites' (AMBS 2013: IV). This material was not considered to be associated with HS1, and was therefore designated as Aboriginal site HS2.

### **JCIS Consultants (2014) Report on Archaeological Monitoring of Vegetation Clearing and Geotechnical Testing – Hexham Relief Roads Project**

The Hexham Relief Roads project involves the construction of five new relief roads (rail tracks) of approximately two kilometres, and their associated infrastructure, adjacent to the existing tracks near Hexham Railway Station.

### **Mills Archaeological and Heritage Services Pty Ltd (2003)**

Monteath and Powys Pty Ltd commissioned Robyn Mills to conduct an archaeological assessment of an area of land at 290 and 302, Minmi Road Fletcher. This area of land was the subject of a rezoning application to City of Newcastle Council for residential development and is located approximately 1.1 kilometres south of the eastern portion of the current study area.

At the time of the field assessment, visibility across the survey area was generally less than 1%, however at all locations where visibility was greater than 30% sites were located. The survey identified four sites

- MR-OS-1: located on a ridge crest adjacent to Minmi Road, artefacts extended across an area 45 metres x 55 metres. Sixteen artefacts were recorded. This site was assessed as having low scientific significance as a result of the extreme disturbance the site had suffered.
- MR-OS-2 and PAD1: located on the edge of an elevated terrace above Hexham Swamp. The site was visible over an area of exposure 10 metres x 5 metres. A total of six surface artefacts were recorded. It was determined that there was a high potential for archaeological deposit to be present on the adjacent elevated terrace, which was identified as PAD1.
- MR-OS-3: located on the shoulder of a spur above an ephemeral creek line. Three artefacts were recorded in a highly disturbed context.
- MR-OS-4: located on a ridge crest adjacent to Minmi Road, approximately 800 metres east of MR-OS-1. Six artefacts were recorded.

Crests and shoulders of spur lines in the vicinity of Hexham Swamp and lower terraces immediately adjacent to Hexham Swamp were identified as having potentially high archaeological sensitivity within the study area. A program of subsurface testing was recommended, with a focus on these highly sensitive landforms.

### **ERM (2003) Aboriginal Archaeology Retrieval Excavation – Hunter Employment Zone, Cessnock NSW. Test Excavation Report**

Environmental Resources Management (Australia) Pty Ltd (ERM) were commissioned by Cessnock City Council to undertake the initial stages of an Aboriginal Archaeological Retrieval Excavation archaeological salvage program required by National Parks and Wildlife Service and specified in the LEP covering the Hunter Employment Zone land at Kurri Kurri. The study area is located approximately 2 kilometres west of the current study area.

Excavation throughout the sand sheets surrounding Kurri Kurri showed that Aboriginal objects were commonly located throughout the landscape. The homogeneity of the sand sheet was also established, to sometimes over 1m in depth. Artefacts were sometimes recovered from up to 1.2m depth in these sand sheets as well.

However, artefact concentrations and densities in the sand sheet were relatively low throughout the testing area, especially at depth.

## 3.2 Landscape Context

### 3.2.1 Introduction

Due to the large size of the study area, and the number of different landforms, geological and soil regimes, watersheds and natural resource systems that the study area passes through, this section provides an overall summary of the Proposal's environmental context. A localised discussion of the environment along the route is presented in the survey results in Section 5.0.

In this section, an overview of four of the main landscape regions present in the study area is provided.

### 3.2.2 Hexham Swamp

Hexham Swamp is a large wetland which is located between the Hunter River in the east and the lower foothills of Black Hill and Sugarloaf Mountain in the west. It is a majority salt-water estuarine landscape, predominantly drained by Ironbark Creek into the Hunter River. Inside the swamp, Quaternary estuarine sediments (clays and silts) dominate. Vegetation in this area is largely mangrove and salt-tolerant species in the lower tidal zone of the wetland, with less salt-tolerant reed and grass species located further inland in the more freshwater portions of the swamp. The wetlands are host to a large variety of fish, bird and other animal species.

Due to severe flood events during the mid-20th century, flood weirs were constructed on Ironbark and other creeks, to control the degree of flooding and water which was channelled through the swamp. This had the result of drying out significant areas of the wetland, with subsequent failures in the wetland ecosystem. These flood gates were permanently removed in 2013 in an attempt to restore the ecological integrity of the wetland system.

Numerous low-lying spur crests extend into Hexham Swamp on its southern, western and northern margins. These hills are largely composed of Beresfield soil landscapes, a residual soil forming out of the parent shales and conglomerates of the underlying Tomago Coal Measures. These hills have gentle to moderate slope gradients and up to 50m relief above the surrounding terrain.

### 3.2.3 Sugarloaf Mountain and Black Hill Foothills

Mount Sugarloaf (412m ASL) and the nearby Black Hill to the north, are low elevation mountains which provide high vantage points over the Newcastle and Lake Macquarie coastlines, as well as over the central Hunter River plain to the north and west. These mountain ranges are connected to each other, and to ranges to the southwest, by elevated ridge lines which traverse steep gullies and creek banks.

The terrain in this part of the study area is characterised by moderate to steep hill slopes, with two east-west orientated ridge lines which rise from the lower Hexham Swamp hill margins from the east. Soil landscapes in the area predominantly consist of colluvial soils which are highly erodible depending on the degree of slope in the local area. These soils overly the shales, conglomerates and sandstones of the underlying Newcastle Coal Measures. There are frequent sandstone outcrops within this area.

Water sources in this region consist of freshwater creeks through the gullies which lie between the ridgelines, fed by numerous ephemeral drainage channels from the surrounding higher slopes. Due to the long history of European coal mining in the area, much of the original old growth eucalypt forest has been removed. Today much of the region is covered in regrowth eucalypt forest.

### 3.2.4 Wallis Creek Valley

Wallis Creek is a north-flowing creek which extends from the northern slopes of the Watagan ranges in the south, following a course west of Sugarloaf Mountain before discharging in the Hunter River near the town of Maitland. The portion of Wallis Creek which extends through the study area is located in a low-lying plain, bounded by the western foothills of Mount Sugarloaf on the east and by the gently sloped rise towards the Kurri Kurri sands in the west.

The relatively flat portion of the Wallis Creek plain in the study area consists of alluvial sandy loam soils which have been deposited by the periodically flooding creek that runs through the valley. Former meander and billabongs of the creek are present in this area, with areas of small rises in between creek channels. A large human-made dam, the Colliery Dam, is located south of the study area, which has reduced Wallis Creek's potential for frequent and damaging floods since its construction.

The Wallis Creek valley today has been cleared of native vegetation and has been almost entirely employed for cattle pasturage. Pasture grasses and low-level eucalypt regrowth is present in the area. Casuarina and other wetland species are present along the creek margins.

### 3.2.5 Kurri Kurri Sand Sheets

Large areas of Neath and Heddon Greta sandy soil landscapes predominate south of Kurri Kurri. These sand sheets can extend up to 1.2m deep, and overlie the predominantly conglomerate and shale of the Maitland Group geological formation of mudstone, sandstone and conglomerates.

This portion of the study area has been associated with coal mining since the late 19th century. The area through which the former railway line traverses is now a thickly revegetated State Conservation Area (SCA), consisting of open eucalypt forest with dense understory. The conservation area is abundant in bird and animal species.

Freshwater courses are located throughout this portion of the study area, originating in springs and pooling in wetland sumps that are located in the sandy landscape. These water courses drain into Wallis Creek to the north of the study area, south of Maitland.

## 3.3 Predictions

Archaeological data gathered in the locality suggests that artefact sites are often located on elevated areas that border wetlands. Artefacts are found across the landscape in varying densities, with higher densities expected in close proximity to Hexham Swamp, and along ridge crests and saddles that lead up to Mount Sugarloaf.

The main limitations to the survival of archaeological material in the study area are related to ground disturbance associated with the railway infrastructure that the shared pathway route largely follows. It would not generally be expected to identify intact archaeological sites within the former railway corridor, due to the high degree of ground excavation, especially in cuttings, and imported material in order to lay a level rail line for steam locomotives.

Based on information from the OEH AHIMS site register search, previous archaeological investigations in the local area, landscape and regional context, the most likely site types to occur within the study area include:

**Artefact sites:** Open artefact sites and areas of PAD may occur in areas not subject to high levels of erosion or modern disturbance. The most common stone artefact material from previous archaeological studies include Indurated Mudstone/Tuff (IMT), silcrete or quartz.

## 4.0 SURVEY METHODOLOGY

Archaeological survey of the study area was conducted in accordance with the OEH Code of Practice over 5 days between 12 and 16 September 2016. All transects were surveyed on foot. The survey was undertaken by Duncan Jones, Adele Zubrzycka (Heritage Consultants, Artefact Heritage), Peter Townsend (ALALC), Jason Brown (MLALC) and Peter Leven (Awabakal and Guringai People Native Title claimant).

An additional pedestrian survey of Survey Unit 2 and Survey Unit 16 was conducted on 10 May 2017 by Duncan Jones and Adele Zubrzycka.

The study area is predominantly a linear route defined by the former alignment of the Richmond Vale Railway. This study area consists of both the rail line itself (where the majority of the shared path construction is to take place) and an area of variable width surrounding the former railway where ground disturbing works may be conducted, such as potential lay down areas and construction access routes.

For the purposes of the archaeological survey, the study area was divided into fifteen separate survey units. These survey units are sequentially numbered one through fifteen between the south eastern commencement of the rail trail to its final western termination in Pelaw Main. The location of these survey units is illustrated in Figure 7.

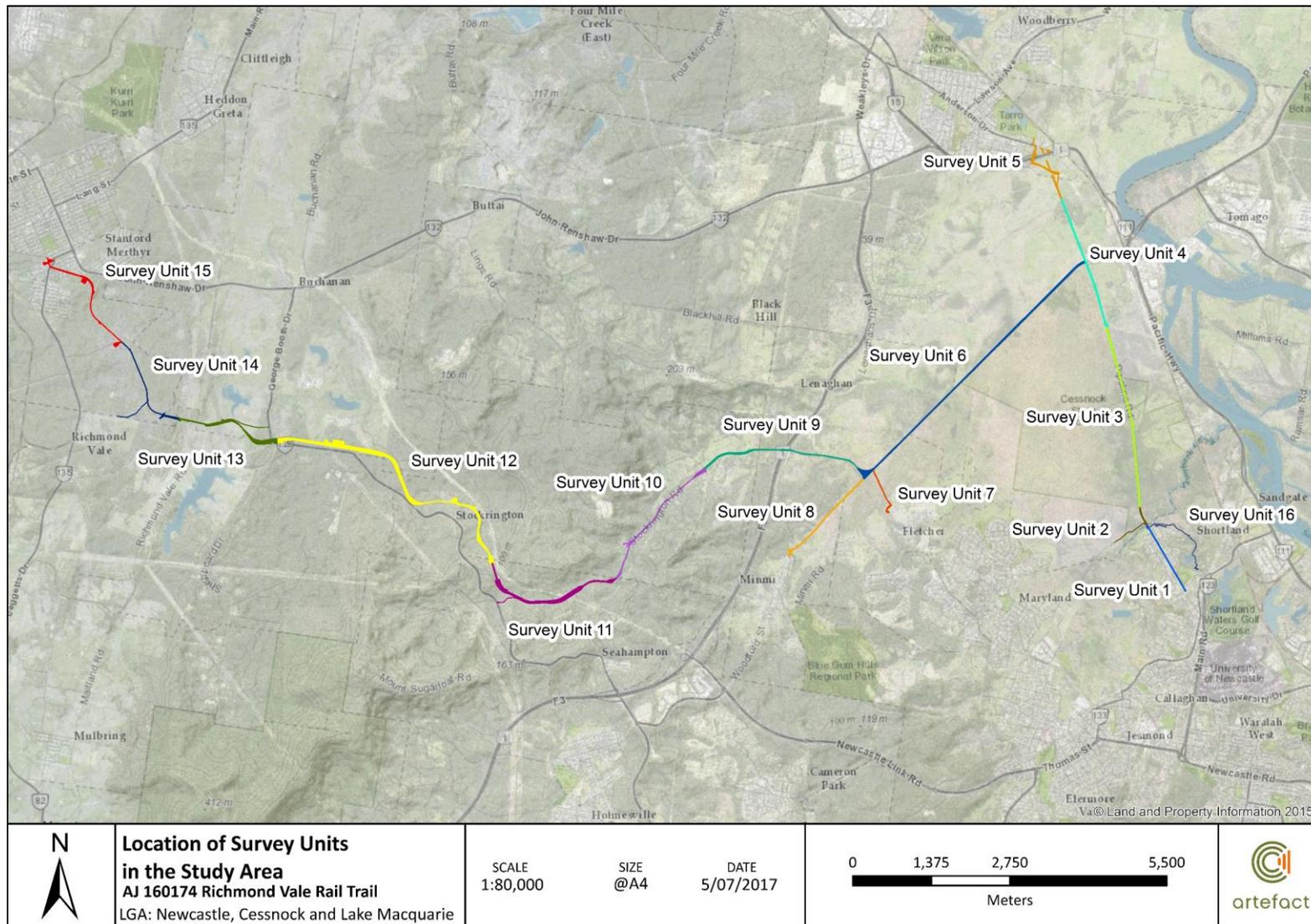
A handheld non-differential Global Positioning System (GPS) was used to track the path of the survey team and record the coordinates of survey transects, including the locations of sandstone outcrops and platforms within the study area, as well as the location of Aboriginal sites. Detailed aerial maps marked with grid coordinates for each of the fifteen survey units were carried by each member of the survey team in the field. The coordinate system projection used for all site recording was GDA94 MGA 56.

All ground exposures were examined for Aboriginal objects (stone artefacts, imported shell, or other traces of Aboriginal occupation). Any identified old growth trees were examined for signs of cultural scarring and marking. All accessible and undisturbed sandstone outcrops, platforms and overhangs were examined for cultural marking (rock art features), such as grinding grooves and engravings. Areas of undisturbed ground located near Hexham Swamp, near freshwater courses or on low-gradient hillslopes and crests were examined for evidence of archaeological potential.

A photographic record was kept of the area within each of the fifteen survey units. Photographs were taken to record aspects of survey units including ground exposures, water courses, vegetation, artificial embankments and cuttings, and other types of ground disturbance. Photographs of recorded and identified Aboriginal sites were made. Scales were used for photographs where appropriate.

All survey units were comprehensively surveyed, except for small portions of these areas that were inaccessible. Areas which were inaccessible predominantly consisted of areas associated with extensive modern disturbance caused by the construction of the 19th and early 20th century railway line, principally steep sandstone railway cuttings. A description of areas that were inaccessible during the survey is included below in the description of each survey unit.

Figure 7: Location of survey units within the study area



## 5.0 SURVEY RESULTS

### 5.1 Survey Unit 1

#### 5.1.1 Location and Description

Survey Unit 1 is located on the central ridge-line in Shortland and runs south-east to north-west with a moderate slope at its northern end where it approaches Ironbark Creek (Figure 9). The study area is bounded by private properties to the west, Marton Street to the south, a grass verge and road reserve of King Street to the east and by Ironbark Creek in the north.

The majority of the survey unit adjacent to King Street is a grassed road-side verge, and was formerly the location of a Hunter Water pipeline which was removed in 2010. The northern portion of the survey unit descends to the bank of Ironbark Creek via the former Hunter Water pipeline easement. It is surrounded by pastoral properties to the west (Figure 10) and residential properties to the east (Figure 11).

#### 5.1.2 Environmental Context

The survey unit is located on a ridge crest landform in Shortland, a gentle low-lying hill which projects into Hexham Swamp to the north. This ridge line is roughly orientated north-west to south-east, with the Hexham Swamp surrounding it to the west, north and east. The soil in this area consists of Beresfield residual soils, degrading from underlying parent bedrock mudstone and shale of the Tomago coal measures. Much of the upper profile of these soils consists of light brown sandy loam. The nearest natural water courses are Ironbark Creek, Crawchie Creek and Boatman's Creek, located in the surrounding low-lying Hexham Swamp.

#### 5.1.3 Ground Visibility and Disturbance

The eastern portion of the survey unit between Marton Street and the King Street / King Trail junction is a grassed road verge with ground exposures located frequently along the road margin. Areas around planted trees (Figure 12) and the path of an informal pedestrian walkway had high surface visibility.

A low wooden fence is located in the centre of this survey unit for the extent of the area adjacent to King Street. The former pipeline is located west of this wooden fence, and was constructed on a minor artificial embankment (Figure 13). The western portion of the survey unit had limited ground visibility compared to the eastern portion closer to King Street (Figure 14).

North of the King Street / King Trail junction, the area was heavily grassed, with no areas of exposed ground. The northern extent of the study area terminated in an intertidal mudflat on the banks of Ironbark Creek (Figure 15).

Stormwater drains and water service utilities were apparent in the centre of the survey unit. Several culverts were located in the survey unit, crossing east the line of the RVRT route. Telecommunication and electrical services were identified immediately to the east of the survey unit, directly abutting King Street.

The edge of the hillcrest at the commencement of the descent to Ironbark Creek showed signs of land modification and disturbance, as a result of construction of both the former rail line and subsequent Hunter Water pipeline. The banks of Ironbark Creek showed minor signs of disturbance and sediment resettling from the former Ironbark Creek bridge.

**Figure 8: Shortland hill crest, south aspect**



**Figure 9: Moderately sloped embankment away from Ironbark Creek, north aspect**



**Figure 10: Pastoral properties to the west of the survey unit, north aspect**



**Figure 11: Residential dwellings in the vicinity of the survey unit, east aspect**



**Figure 12: Exposures near trees in road verge, west aspect**



**Figure 13: Artificial embankment from the former Hunter Water pipeline, south aspect**



**Figure 14: Grassed area of survey unit, north aspect**



**Figure 15: Intertidal margin of Ironbark Creek, north west aspect**



#### 5.1.4 Aboriginal Sites in Survey Unit 1

There are no previously recorded Aboriginal sites located in Survey Unit 1.

Four previously unrecorded Aboriginal sites were identified in Survey Unit 1.

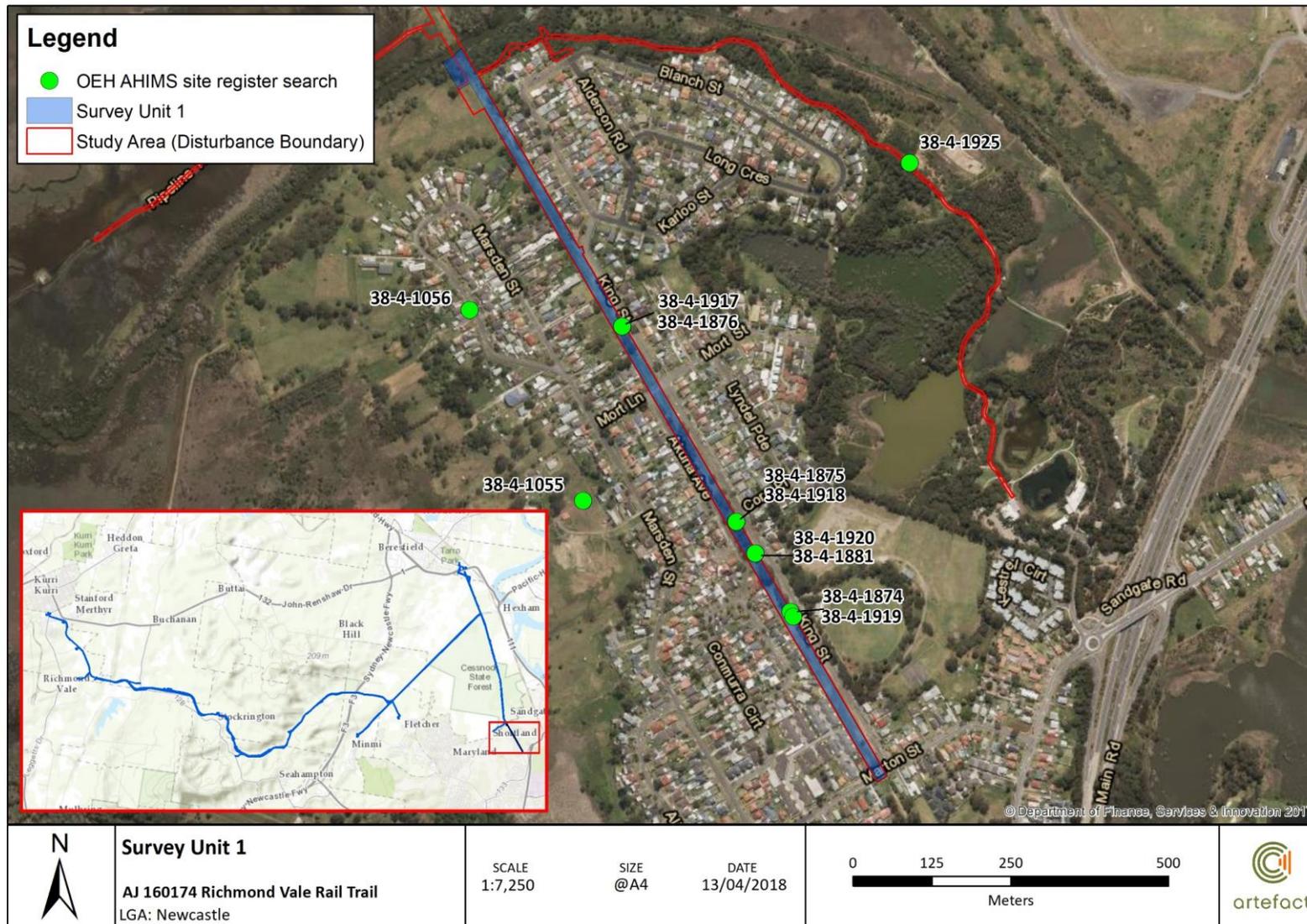
The four newly recorded sites are summarised in Table 5 and their locations shown in Figure 16. Due to the integrity of the landform and the consistency of recovering artefacts in ground exposures along the Shortland crest, these sites have been classified as an archaeological complex (Richmond Vale Rail Trail Archaeological Complex 1 [RVRT AC1]).

A full discussion of these sites is presented in Section 6.2.

**Table 5: Aboriginal sites in Survey Unit 1**

Site Name	Easting	Northing	Extent
Richmond Vale Rail Trail Artefact Scatter 1 (RVRT AS1) (AHIMS ID 38-4-1874/ 38-4-1919)	377648	6361534	7m x 36m
Richmond Vale Rail Trail Isolated Find 1 (RVRT IF1) (AHIMS ID 38-4-1881/ 38-4-1920)	377593	6361617	0.5m x 0.5m
Richmond Vale Rail Trail Artefact Scatter 2 (RVRT AS2) (AHIMS ID 38-4-1875/ 38-4-1918)	377563	6361668	9m x 5m
Richmond Vale Rail Trail Artefact Scatter 3 (RVRT AS3) (AHIMS ID 38-4-1876/ 38-4-1917)	377382	6361974	3m x 4m

Figure 16: Survey Unit 1



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## 5.2 Survey Unit 2

### 5.2.1 Location and Description

Survey Unit 2 consisted of a short 150m segment through Hexham Swamp between Ironbark Creek and Fishery Creek, and north of the suburb of Shortland. The survey unit also includes the east-west connecting Pipeline Road, used as an easement for the high voltage transmission line that crosses the study area.

The survey unit is predominantly located on a raised embankment (Figure 17) that traverses Hexham Swamp (Figure 18). This embankment is in poor condition and is flooded across much of the western and northern portions of the survey unit (Figure 19).

The location of Survey Unit 2 is illustrated in Figure 21.

### 5.2.2 Environmental Context

The portion of Hexham Swamp which surrounds this survey unit is a large semi-inundated salt-water estuary. Hexham Swamp is largely drained into the Hunter River through Ironbark Creek, to the south of Survey Unit 2. The swamp has been the home to a wide variety of fish, bird and plant resources. Historical floodgates on Ironbark Creek were constructed in 1970 to control periodic flooding of the region, with the result that the swamp partially dried out. These floodgates were permanently removed from Ironbark Creek in 2013 in an attempt to restore the wetlands to their natural state.

The soils of the Hexham Swamp consist of Quaternary estuarine sediments of dark silts and clays. The largest watercourse in the area is Ironbark Creek to the south, and several transitory tributaries that cross the swamp from north to south. The swamp is heavily populated with juvenile mangroves which are developing with the restoration of salt-water to the area, and a wide variety of tussock grasses.

### 5.2.3 Ground Visibility and Disturbance

Survey Unit 2 is entirely located on a raised artificial embankment that is associated with the electricity easement through Hexham Swamp and the former alignment of the Hunter Water pipeline. This artificial embankment has been constructed through Hexham Swamp, although it has heavily degraded since the removal of the Ironbark Creek floodgates. The Ironbark Creek and Fishery Creek banks are also artificially raised on these embankments. Portions of the embankment are raised with artificial mounds to support high voltage electricity transmission towers (Figure 20).

As such, Survey Unit 2 is classified as an artificial landform, and disturbed. Surface visibility across the survey unit is very low, due to thick grasses in raised areas of the embankment, and sediment and water in those areas where the embankment has been disturbed.

**Figure 17: Embankment along Pipeline road, west aspect**



**Figure 18: Hexham Swamp adjacent to survey unit, north aspect**



**Figure 19: Pipeline Road embankment with flooded sections, east aspect**



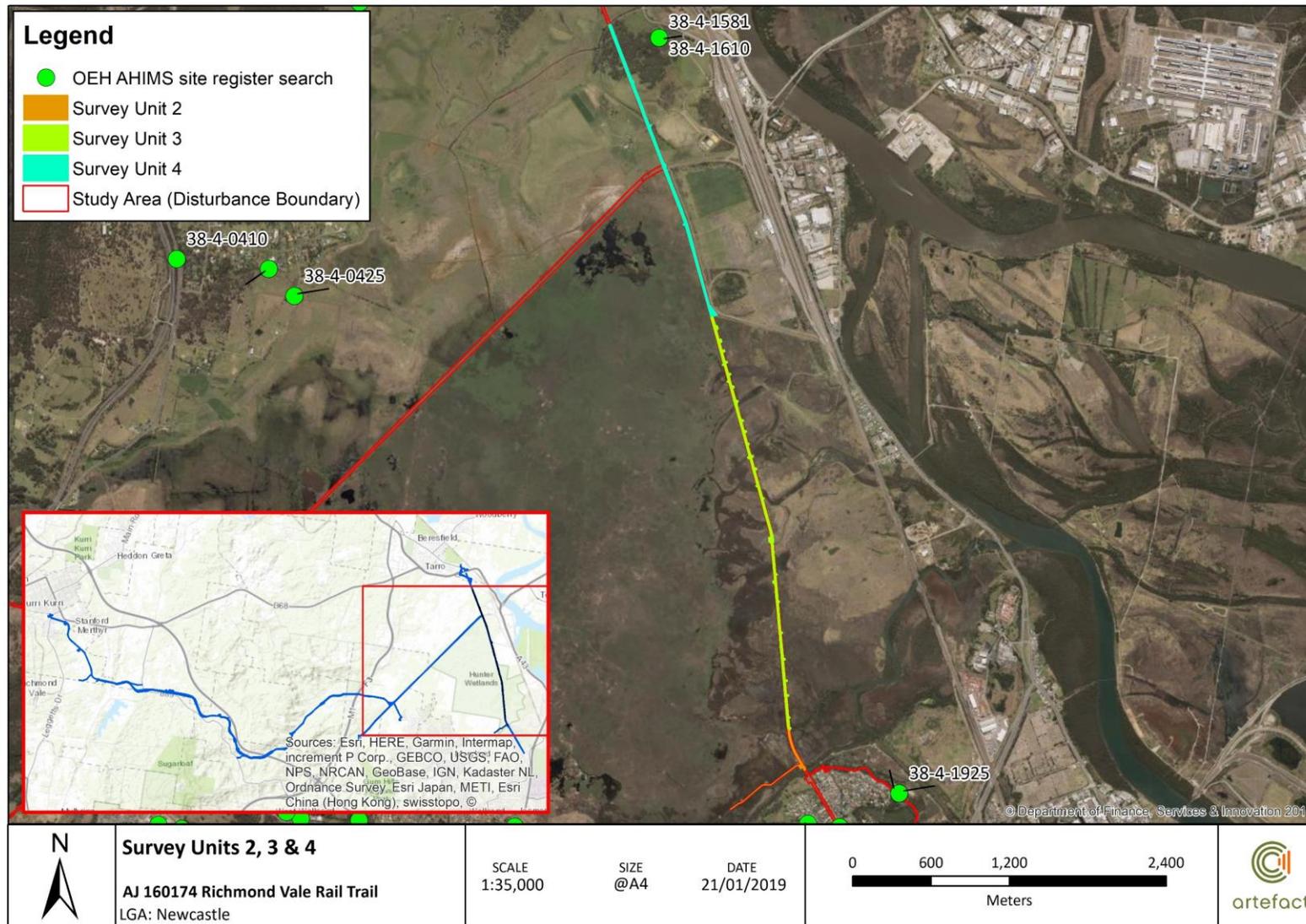
**Figure 20: Transmission line tower on raised embankment, north aspect**



#### 5.2.4 Summary of Aboriginal Sites

No Aboriginal sites were identified within Survey Unit 2.

Figure 21: Location of Survey Units 2, 3 and 4



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## 5.3 Survey Unit 3

### 5.3.1 Location and Description

Survey Unit 3 is approximately 3.1km in length through Hexham Swamp along Pipeline Road, Hexham. It extends from Fishery Creek in the south (Figure 22) until the road reaches an intersection with the Aurizon mining facility roads in Hexham in the north.

The survey unit is located on raised embankment associated with Pipeline Road, which used to carry the Hunter Water pipeline (now removed). This embankment is up to two metres higher than the surrounding low-lying and periodically inundated Hexham Swamp (Figure 23). The embankment is approximately 10m to 15m wide, with several wider areas up to 30m wide.

The location of Survey Unit 3 is shown in Figure 21.

### 5.3.2 Environmental Context

The portion of Hexham Swamp which surrounds this survey unit is a large semi-inundated salt-water estuary. Hexham Swamp is largely drained into the Hunter River through Ironbark Creek, to the south of Survey Unit 3. The swamp has been the home to a wide variety of fish, bird and plant resources. Historical floodgates on Ironbark Creek were constructed in 1970 to control periodic flooding of the region, with the result that the swamp partially dried out. These floodgates were permanently removed from Ironbark Creek in 2013 in an attempt to restore the wetlands to their natural state.

The soils of the Hexham Swamp consist of Quaternary estuarine sediments of dark silts and clays. The largest watercourse in the area is Ironbark Creek to the south, and several transitory tributaries that cross the swamp from north to south. The swamp is heavily populated with juvenile mangroves which are developing with the restoration of salt-water to the area, and a wide variety of tussock grasses (Figure 24).

### 5.3.3 Ground Visibility and Disturbance

The survey unit is confined to the width of Pipeline Road, which is an unsealed road resting on an artificial embankment rising above the surrounding wetlands. This embankment has been constructed with imported fill materials, including extensive gravels in a sandy-clay matrix (Figure 25). Several concrete culverts have been constructed under Pipeline Road to control water flow in the swamp. As such, Survey Unit 2 is classified as an artificial landform, and disturbed

**Figure 22: Fishery Creek, south aspect**



**Figure 23: Pipeline Road and supporting embankment, north aspect**



**Figure 24: Hexham Swamp juvenile mangroves, tussock grasses and estuarine sediments, north-west aspect**



**Figure 25: Imported fill to construct the Pipeline Road embankment**



#### 5.3.4 Summary of Aboriginal Sites

No Aboriginal archaeological sites were identified within Survey Unit 3.

## 5.4 Survey Unit 4

### 5.4.1 Location and Description

Survey Unit 4 is an approximately 2.3km long area, extending from the intersection of the Aurizon mining site access road in the south to a concrete causeway over an east-flowing tributary of Purgatory Creek in the north (Figure 26).

The survey unit follows the course of Pipeline Road, the alignment of a Hunter Water pipeline through Hexham Swamp. Pipeline Road is located on a raised embankment that is up to two metres higher than the surround swamplands. This embankment is between 15m and 30m wide. The surrounding terrain in this area is almost completely flat.

The location of Survey Unit 4 is shown in Figure 21.

### 5.4.2 Environmental Context

The surrounding Hexham Swamp near this survey unit has been more extensively reclaimed as pasturage than the more heavily inundated swamp to the south (Figure 27). To the east of the southern portion of the survey unit, the Aurizon Hexham Train Support Facility is located on extensively disturbed and artificially built-up ground (Figure 28). A number of smaller industrial facilities are located around the northern part of the survey unit.

Soil mapping resources show that the area to the east of the survey unit has been classified as disturbed terrain, while to the west the soils are characterised as the silty clay loams of the estuarine Millers Forest landscape. Water courses in the area include unnamed upper tributaries of Ironbark, Fishery and Purgatory Creeks through Hexham Swamp.

### 5.4.3 Ground Visibility and Disturbance

The survey unit is confined to the width of Pipeline Road, which is an unsealed road resting on an artificial embankment rising above the surrounding wetlands. This embankment has been constructed with imported fill materials. A water main is located in the eastern part of the survey unit (Figure 29). The former Minmi to Hexham railway line crosses perpendicularly over the centre of the survey unit.

Survey Unit 4 consists almost entirely of disturbed ground.

**Figure 26: Concrete causeway over unnamed tributary of Purgatory Creek, south aspect**



**Figure 28: Pipeline Road with Aurizon facility disturbed ground at left of image, south**



**Figure 27: Pastoral properties to the east of the survey unit, east aspect**



**Figure 29: Water main in survey unit, east aspect**



aspect



#### 5.4.4 Summary of Aboriginal Sites

No Aboriginal archaeological sites were identified within Survey Unit 4.

## 5.5 Survey Unit 5

### 5.5.1 Location and Description

Survey Unit 5 is approximately 1.4km long and located on the northern margin of Hexham Swamp leading into the low spur crest landform context of the Tarro area. The survey unit is situated on the northern extent of Pipeline Road (Figure 30) before deviating to the west onto a new road (an unnamed road which diverges off the Maitland Road) (Figure 31). The shared pathway route then extends to the north over the Maitland Road overpass at Tarro, continuing north along this road until it turns down a laneway between 25 and 27 Anderson Drive before terminating at an unnamed road.

Several locations for proposed ancillary facilities are included in this survey unit, including areas designated for laydown and construction areas off Pipeline Road and at the eastern end of Anderson Drive (Figure 32). The survey unit boundary includes an area over Maitland Road which could be redeveloped for a bike lane overbridge.

The southern two-thirds of the survey unit is located on level ground on the northern margin of Hexham Swamp, before meeting a moderate slope at Tarro (Figure 33). The majority of the survey unit is located on existing sealed and unsealed roads and adjacent disturbed road reserves.

A map of Survey Unit 5 is provided in Figure 40.

### 5.5.2 Environmental Context

The southern portion of Survey Unit 5 is located in the Quaternary estuarine silt and clay deposits of Hexham Swamp, while the very north portion of the survey unit on the elevated spur crest at Tarro is located in the Millers Forest estuarine soil environment. The Millers Forest soil environment is characterised as poorly drained black-brown silty clay loam overlying silty clays and plastic clays.

Water sources in the study area include Purgatory Creek and the Hexham and Tarro Swamps.

### 5.5.3 Ground Visibility and Disturbance

The majority of the survey unit has been exposed to widespread ground disturbance, predominantly from the construction of an embankment through Hexham Swamp for Pipeline Road (see also Survey Units 2 and 3). The area surrounding the northern reaches of Pipeline Road is partly pastoral, with fence construction on the edge of the artificial road embankment (Figure 34). Recent construction of the Hexham Relief Road is evident (2014-2015), which involved significant earthworks during its construction. Several large stormwater services are also located throughout the area (Figure 35).

The area immediately south of the Tarro spur crest consists of the upper margin of Hexham Swamp that has been used for cattle pasturage. This area has been extensively ground-disturbed by cattle trampling in boggy ground conditions (Figure 36).

The northern portion of the study area on the spur crest in Tarro has experienced widespread ground disturbance from road construction and construction redevelopment activity (Figure 37). In addition, a number of Hunter Water services are located in the area, converging on the former Hunter Water pumping station on Anderson Drive.

However, a number of small isolated areas of ground that have only experienced at most shallow topsoil disturbance were identified in the study area. These areas were located on the higher spur crest of land immediately adjacent to the cul-de-sac at the eastern end of Anderson Drive, and on land on the south-facing hillslope south of Anderson Drive.

Ground visibility across the survey unit is very low, with areas of exposed ground principally occurring in areas where roads and access tracks have been developed or in areas where cattle-trampling of fields has turned up earth which has then dried out (Figure 38). Isolated ground exposures are visible adjacent to Anderson Drive as informal pedestrian paths. The remainder of the survey unit was grass covered or covered in extensive weed regrowth (Figure 39).

**Figure 30: Northern extent of Pipeline Road, south aspect**



**Figure 31: Unnamed Aurizon facility access road, west aspect**



**Figure 32: Eastern end of Anderson Drive, west aspect**



**Figure 33: Lower slope of Tarro spur crest north of Maitland Road, south aspect**



**Figure 34: Pipeline Road showing imported gravel on embankment and pastoral fences and gates, south-east aspect**



**Figure 35: Newly installed stormwater culvert, south-east aspect**



**Figure 36: Pastoral property with boggy cattle** **Figure 37: Area of ground disturbance from**

**trampling**



**Figure 38: Area of dried out cattle trampling damage, south-east aspect**

**redevelopment in Tarro**



**Figure 39: Weed regrowth on margin of Anderson Drive, Tarro. North aspect.**



**5.5.4 Summary of Aboriginal Sites**

There is one AHIMS listed Aboriginal site located in survey unit 5, summarised in Table 6 (AHIMS# 38-4-1583). This site is listed as being located underneath a newly (2014 – 2015) constructed road, south of Maitland Road. This site is discussed in Section 6.1.1 and was not relocated during the site inspection.

**Table 6: Previously recorded Aboriginal site in Survey Unit 5**

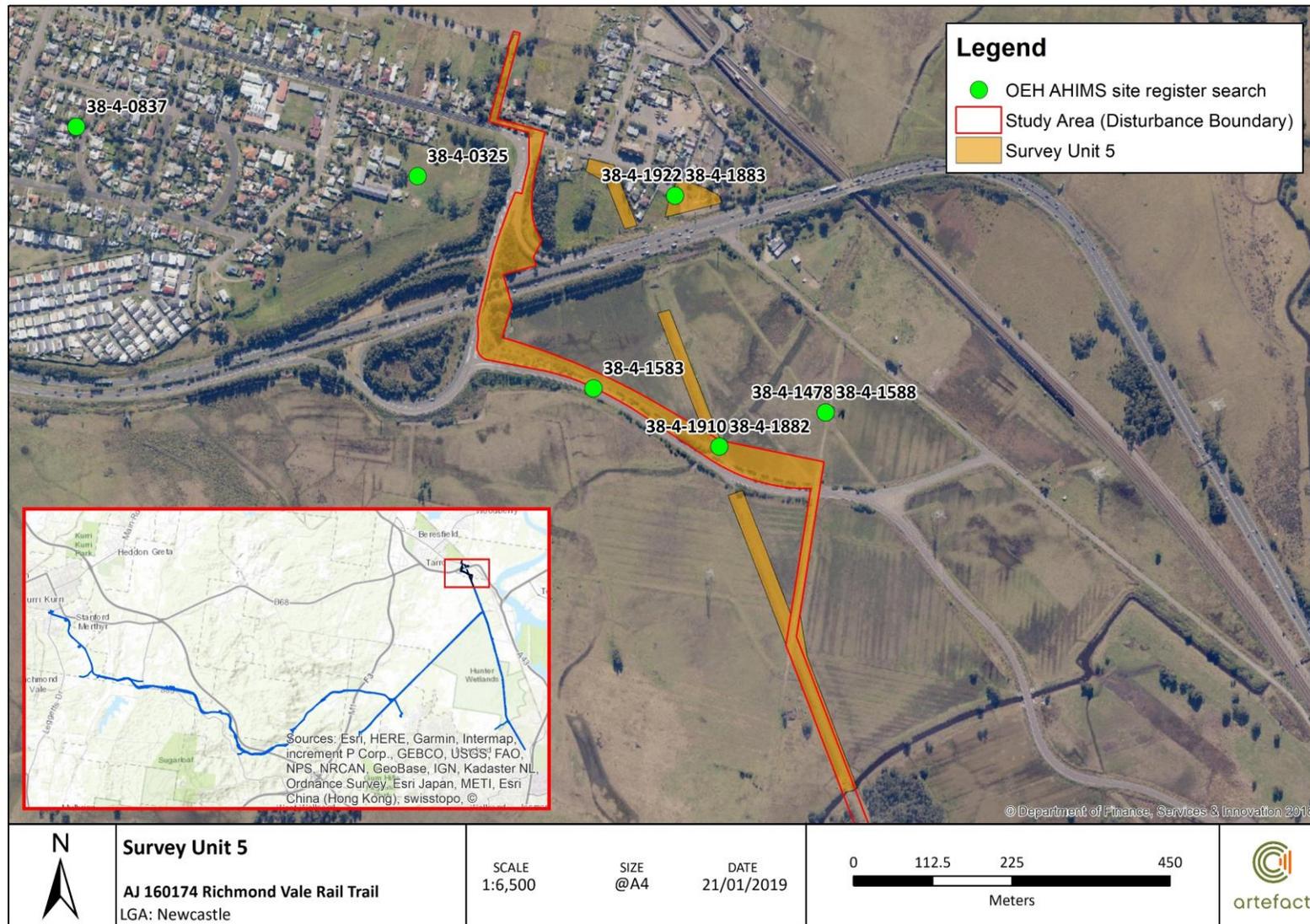
Site Name	Easting	Northing	Extent
HS2A (AHIMS ID 38-4-1583)	375255	6368640	Not provided

Two previously unrecorded Aboriginal sites were identified during the site inspection, RVRT IF 2 and RVRT IF 3. These two sites are discussed in Sections 6.4.1 and 0, and summarised in Table 7.

**Table 7: Aboriginal sites in Survey Unit 5**

Site Name	Easting	Northing	Extent
Richmond Vale Rail Trail Isolated Find 2 (RVRT IF 2) (AHIMS ID 38-4-1882/ 38-4-1910)	375434	6368558	0.5m x 0.5m
Richmond Vale Rail Trail Isolated Find 3 (RVRT IF 3) (AHIMS ID 38-4-1883/ 38-4-1922)	375371	6368912	0.5m x 0.5m

Figure 40: Map of Survey Unit 5 with Aboriginal sites



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## 5.6 Survey Unit 6

### 5.6.1 Location and Description

Survey Unit 6 is an approximately 5.7km long linear area running through Hexham Swamp and oriented approximately north-east to south-west. The survey unit is situated on an embankment constructed for the former Minmi to Hexham Railway Line (later the Richmond Vale Railway) (Figure 41). The embankment is up to 2m higher than the surrounding Hexham Swamp terrain and up to 15m in width. At the south-western end of the survey unit the area expands to include Minmi Junction, a large artificial embankment which used to be a three-way railway junction.

The location of Survey Unit 6 is illustrated in Figure 45.

### 5.6.2 Environmental Context

The survey unit is surrounded by Hexham Swamp, a largely salt-water estuarine environment. There are two soil landscapes in this surrounding area, the Hexham Swamp estuarine deposits, and the Bobs Farm estuarine soil landscape. The latter consists of former lake shore sandy beach deposits overlying partially desaturated Hexham Swamp silty clay deposits.

To the north of the railway embankment, much of Hexham Swamp was partially inundated at the time of the site inspection (Figure 42). Gently sloped spur crests are located near the southern end of the survey unit, extending into Hexham Swamp. Water courses in the area have a higher freshwater proportion than the brackish and salty streams located further east in Hexham Swamp, with the upper tributaries of Back Creek and Fishery Creek being located within 200m of the survey unit on either side.

### 5.6.3 Ground Visibility and Disturbance

Ground visibility in the survey unit is low, due to extensive vegetation growth over much of the former railway line. Areas of surface visibility were observed along the edge of the embankment where ground exposures have formed from erosion of the embankment. These exposures confirm that the embankment is constructed entirely of artificially imported material, predominantly shale, sand and fly ash (Figure 43). At Mimi Junction in the south of the survey unit, vehicle tyre ruts reveal mixed sand and fly ash to up to 0.4m depth (Figure 44).

Almost the entirety of the survey unit is considered to be introduced material, and as such is classified as disturbed ground.

**Figure 41: Former Minmi to Hexham railway line embankment, south-western aspect**



**Figure 42: Partially inundated area of Hexham Swamp, north aspect**



**Figure 43: Exposure on former Minmi to Hexham railway line, south-east aspect**



**Figure 44: Tyre rut at Minmi Junction, showing extensive artificial deposit, south aspect**

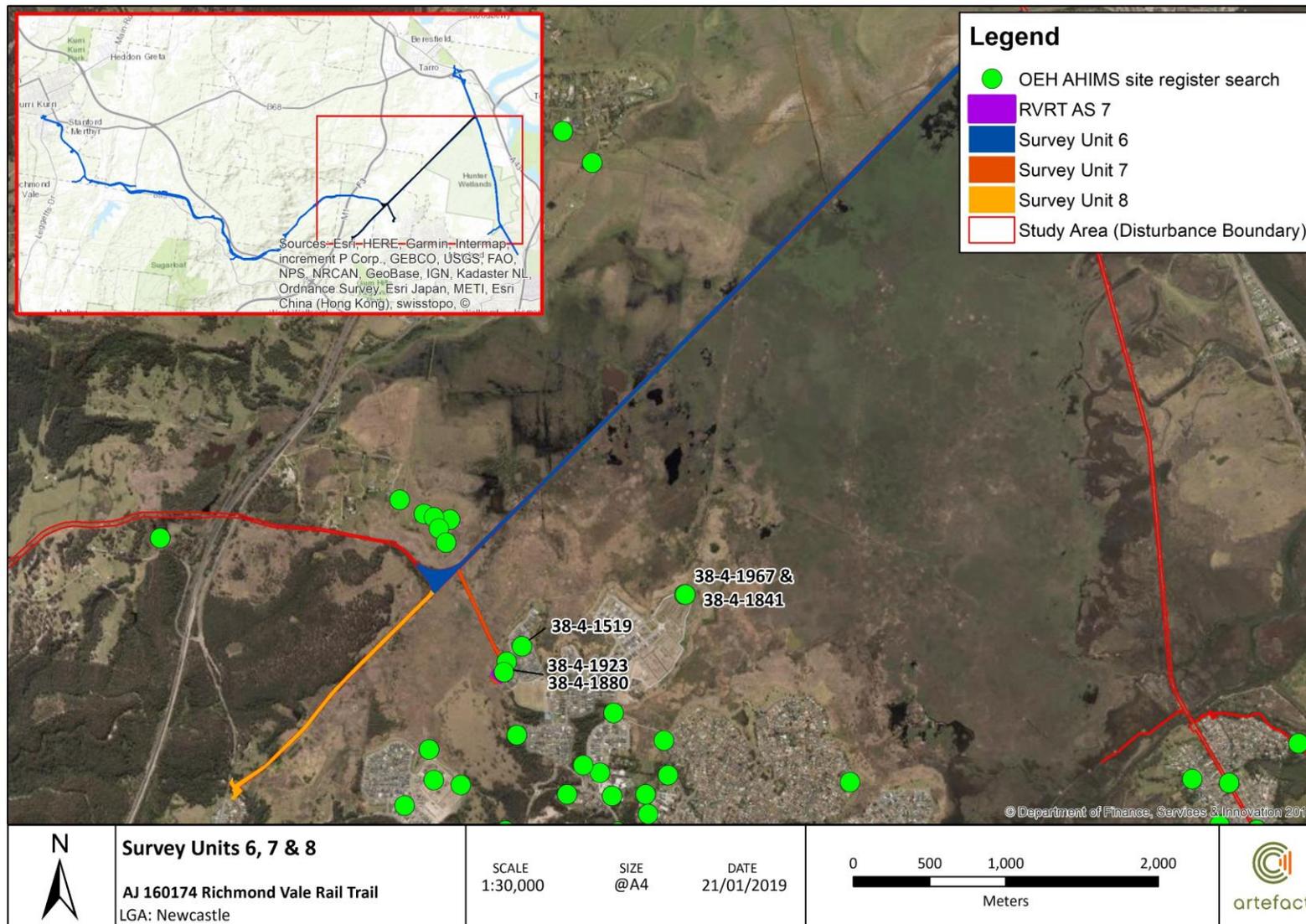


#### 5.6.4 Summary of Aboriginal Sites

AHIMS site Lenaghans AS 2 (AHIMS ID 38-4-1378) is located 158m to the north-west of the southern extent of the study area, on a spur crest in nearby private property and outside the study area. As such, the site was not visited during the survey.

No Aboriginal sites were identified within Survey Unit 6.

Figure 45: Map of Survey Units 6, 7 and 8



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## 5.7 Survey Unit 7

### 5.7.1 Location and Description

Survey Unit 7 is an approximately 850m long linear transect through Hexham Swamp with a small portion at its south-eastern extent rising onto a gently sloped spur crest in the suburb of Fletcher (Figure 46). The majority of this survey unit follows the alignment of a Hunter Water pipeline, which runs through tall estuarine reeds in the upper reaches of Hexham Swamp (Figure 47). The survey unit curves around the outer edges of the Fletcher spur crest before rising to level with the crest itself (Figure 48). The location of Survey Unit 7 is illustrated in Figure 45.

### 5.7.2 Environmental Context

The survey unit is located in two soil landscape areas. Across Hexham Swamp, the area is located in the Bobs Farm soil landscape, consisting of aeolian deposited sand overlying partially dried estuarine silty clay deposits. This area was heavily vegetated with reeds and grasses (Figure 49). The south-eastern portion of the survey unit is located on the Beresfield residual soil landscape, consisting of dark brown upper topsoils overlying lighter brown sandy loam.

Water courses near this survey unit include the predominately freshwater upper tributaries of Fishery Creek and Back Creek.

### 5.7.3 Ground Visibility and Disturbance

Ground visibility through the Hexham Swamp portion of the survey unit was nil, due to the thick reeds and grasses. Pedestrian access was only possible by traversing the Hunter Water pipeline through the area. The pipeline itself was resting on concrete footings which would likely have caused minor subsurface disturbance during their installation.

The Fletcher hillslope did not show significant signs of ground disturbance. There was moderate surface visibility across the crest landform in Fletcher due to erosion and pedestrian paths at the edge of the crest (Figure 50). Disturbance across the crest context included construction of a new footpath as well as a new stormwater drainage line (Figure 51), with new garden beds installed in this area as well. These disturbances were generally limited to a curving margin directly adjacent to Kural Crescent, with the area between the new footpath and the edge of the hillslope largely intact.

**Figure 46: Newly built Sanctuary Estate in the suburb of Fletcher, north-eastern aspect**



**Figure 47: Hunter Water pipeline through survey unit, south-east aspect**



**Figure 48: View from edge of Fletcher hillcrest over hillslope and Hexham Swamp, north-west**

**Figure 49: Thick vegetation in Hexham Swamp**

aspect



Figure 50: Exposures along edge of Fletcher hillcrest, south-west aspect

in the survey unit, south-western aspect



Figure 51: Newly constructed footpath with stormwater drain to left, south-western aspect



#### 5.7.4 Summary of Aboriginal Sites

One Aboriginal site was identified in Survey Unit 7, called Richmond Vale Rail Trail Artefact Scatter 9 (RVRT AS 7). This artefact site and associated archaeological potential is located on the edge of the Fletcher hillcrest, directly to the north and west of Kural Crescent. The site encompasses the majority of the outer hillcrest and upper slope at Fletcher component of Survey Unit 7. A complete description of the site is provided in Section 6 and site details are summarised in Table 8.

**Table 8: Aboriginal sites in Survey Unit 7**

Site Name	Easting	Northing	Extent
Richmond Vale Rail Trail Artefact Scatter 7 (RVRT AS 7) (AHIMS ID 38-4-1880/ 38-4-1923)	372599E	6362722N	160m x 10m

## 5.8 Survey Unit 8

### 5.8.1 Location and Description

Survey Unit 8 is an approximately 1.9km long linear transect through the upper reaches of Hexham Swamp (Figure 52) between Minmi Junction and the township of Minmi, terminating at an unsealed access road from McInnes Street and Woodford Street. Survey Unit 8 follows the line of the former Minmi to Hexham Railway Line, and is located on a raised embankment through Hexham Swamp that meets with the gentle slopes of the township of Minmi. In approximately the centre of the survey unit, a concrete culvert and bridge has been erected over the course of Minmi Creek (Figure 53).

### 5.8.2 Environmental Context

The survey unit traverses the upper portion of Hexham Swamp through the Bobs Farm landscape variant, consisting of former lake shore sandy beach deposits overlying estuarine silty clays. In the south of the survey unit as the study area rises into the low hills at Minmi, the soil landscape shifts to the Killingworth colluvial soils on top of the underlying Newcastle Coal Measure geology. This landscape is characterised by rolling low hills with relatively shallow topsoils.

Water courses near this survey unit include the freshwater streams of Back and Minmi Creeks that feed into Hexham Swamp (Figure 54).

### 5.8.3 Ground Visibility and Disturbance

Surface visibility in the northern part of the survey unit is poor, with limited exposures along the former railway line where vehicle tracks have worn away the local grass cover. Exposures in this area reveal black fly ash and ballast-laden soils, confirming the artificial nature of the embankment. This embankment is further cut across with utility services.

The embankment continues in the southern part of the survey unit, where grass cover is thicker and surface visibility is nil (Figure 55).

**Figure 52: Reeds in upper part of Hexham Swamp, west aspect**



**Figure 53: Concrete culvert and bridge over Minmi Creek, north-east aspect**



**Figure 54: Minmi Creek, north-west aspect**



**Figure 55: Grass cover on Minmi to Hexham railway line in southern portion of survey unit, south-west aspect**



#### 5.8.4 Summary of Aboriginal Sites

No Aboriginal sites were identified in Survey Unit 8.

## 5.9 Survey Unit 9

### 5.9.1 Location and Description

Survey Unit 9 extends west from Minmi Junction out of Hexham Swamp through low gradient rolling hills (Figure 56). The survey unit then passes through tunnels beneath Lenaghans Drive (Figure 57) and the M1 Pacific Motorway before traversing the Pambalong Nature Reserve (Figure 58). Survey Unit 9 then takes a slight south-western turn through predominantly pastoral properties before terminating at Dog Hole Road in Stockrington. The survey unit is approximately 2.9km long.

The eastern portion of Survey Unit 9 alternates between raised embankments and railway cuttings (Figure 59), before entering excavated rail cuttings as it travels through low hills before reaching the Lenaghans Drive tunnel. The area through the Pambalong Nature Reserve consists of a raised embankment. West of the Pambalong Nature Reserve, the route alternates between built up former rail embankments and cuttings through the low hills of the surrounding area. Cuttings through former low relief hills in this area are up to 5m in height.

The location of Survey Unit 9 is illustrated in Figure 62.

### 5.9.2 Environmental Context

The eastern portion of the survey unit is located within the Bobs Farm soil landscape, characterised by thin sandy deposits overlying deeper estuarine silts and clays, in the upper reaches of Hexham Swamp. From here, the local soil landscape shifts to a Beresfield soil landscape in the low hills of Lenaghan and Minmi which the route passes through. While the route is located on a level embankment which has been either cut through or built up over the low rolling hills, this embankment closely fringes spur crests and nearby upper tributaries of Hexham Swamp.

After passing through the Lenaghans Drive and M1 Pacific Motorway tunnels, the survey unit traverses the rail embankment through Pambalong Nature Reserve. The nature reserve consists of a remnant portion of the upper freshwater portion of Hexham Swamp, now partially cut off from the remainder of the swamp following construction of the M1 Motorway.

The western portion of Survey Unit 9 traverses the Beresfield soil landscape where low rolling hills rise out of the upper reaches of Hexham Swamp. The Beresfield soil landscapes consists of brown sandy loams which are highly erodible.

Water courses in this location consist predominantly of the freshwater Pambalong Swamp, the upper reaches of Hexham Swamp, and a number of unnamed freshwater feeder streams.

### 5.9.3 Ground Visibility and Disturbance

Ground visibility across the survey unit was relatively low during the survey, with exposures and visibility only present along areas of the route which have been disturbed by vehicle traffic. These exposures reveal deposited black railway ballast. In the west parts of the survey area, washed in sediment has accumulated from nearby unsupported railway cuttings (Figure 60).

Vegetation cover throughout the route is very high, with a portion between Minmi Junction and the Lenaghans Drive tunnel difficult to traverse because of extensive vegetation regrowth.

Railway beams and sleepers are present through parts of the survey unit (Figure 61). The railway line is constructed of built up imported fly ash, slate and sand. This railway ballast is present in areas where the rail line is cut through the low relief hills in the region as well.

The survey unit is almost entirely ground disturbed from construction of the original railway line.

**Figure 56: Low hills near the survey unit, north aspect**



**Figure 57: Lenaghans Drive tunnel portal, west aspect**



**Figure 58: Pambalong Nature Reserve swamps and vegetation, north-west aspect**



**Figure 59: Railway line cut through nearby hills, north-west aspect**



**Figure 60: Washed in sediment over the rail route, west aspect**



**Figure 61: Rail lines and sleepers in the survey unit, west aspect**



#### 5.9.4 Summary of Aboriginal Sites

No Aboriginal sites were identified within Survey Unit 9.

During the site survey, two areas immediately adjacent to the alignment of the former railway line were identified as areas of possible archaeological sensitivity. Although the purpose of this investigation was not to identify areas of archaeological potential outside the study area, these sections were observed and recorded. These sensitive areas were located in contexts of spur crests

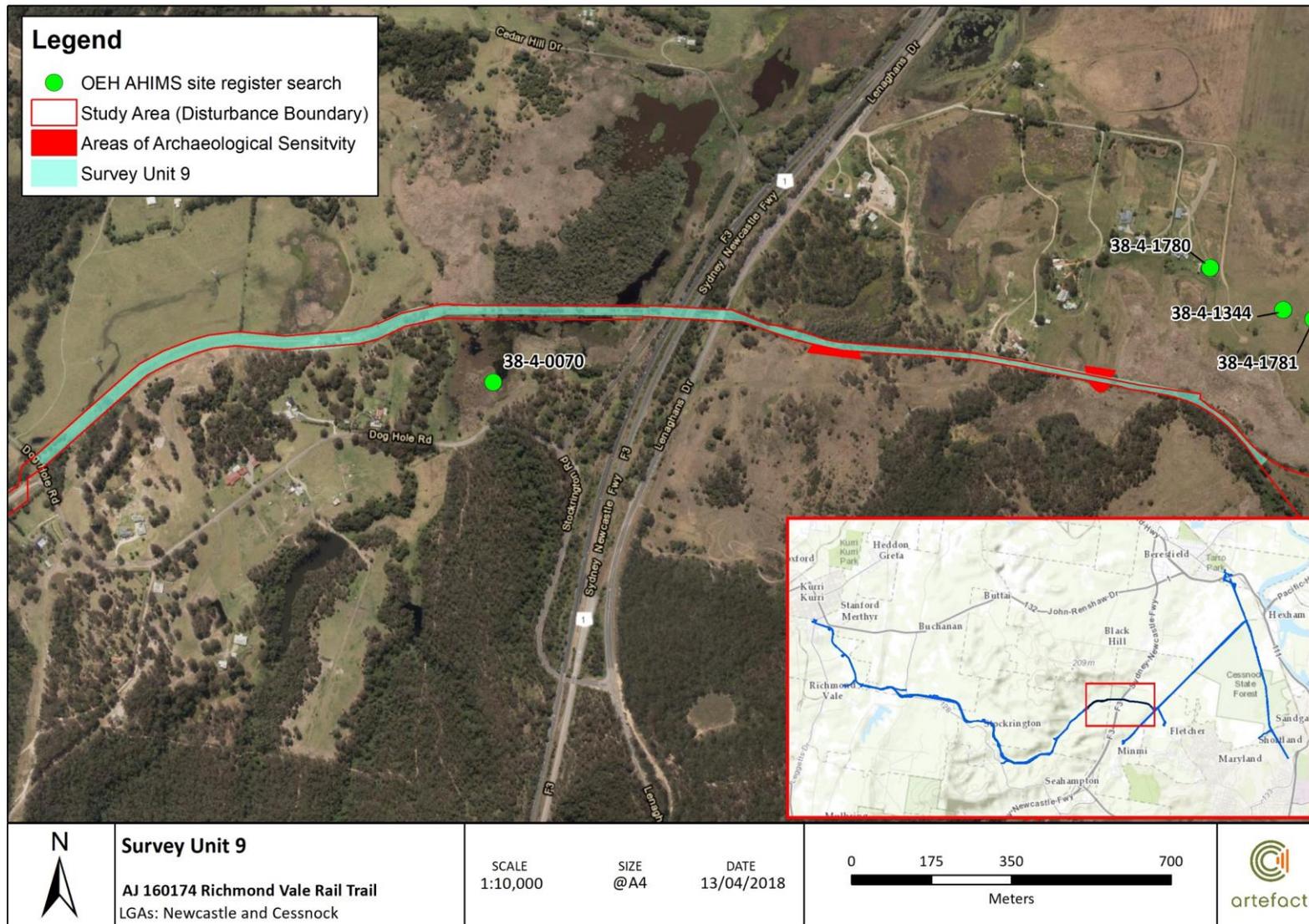
which adjoined the upper margins of Hexham Swamp, and due to the topography, the embankments and cuttings of the former Richmond Vale Railway Line directly contacted these areas of sensitivity at their edges. These spur crests were identified as sensitive areas due to the location of this landform near the swamp edge, and the correlation of these landforms with other nearby spur crests which registered Aboriginal sites listed on the OEH AHIMS site register are associated with.

Due to the survey being geographically constrained to the study area only, the exact degree of archaeological sensitivity, and the extent of any areas of PAD, could not be accurately assessed. A map of these areas of sensitivity is provided in Figure 62. Further investigation would be required to determine the nature and extent of these areas of sensitivity in locations which exceed the boundaries of the study area of the current assessment.

It should be noted that this area of archaeological sensitivity was only opportunistically examined due to low vegetation coverage and relatively easy access to the surrounding landform in this area. It is likely that other areas of archaeological sensitivity exist directly adjacent to the study area in similar landform contexts. If the study area is ever expanded in this area, further detailed survey of these areas would be required for assessment and to describe what future archaeological investigation will be required, such as test excavation.

Proposed project boundary changes overlap some of these areas. Further investigation is required of this area before this report can be finalised.

Figure 62: Location of Survey Unit 9



## 5.10 Survey Unit 10

### 5.10.1 Location and Description

Survey Unit 10 commences at the intersection of Dog Hole Road and Seahampton Road (Figure 63). The route follows the former alignment of the Richmond Vale Railway (Figure 64) and a section of Seahampton Road, which mostly follows the former railway route. Much of this section of Seahampton Road consists of unsealed road with deposited gravel road base. The road is level throughout the survey unit, with the route alignment following the south-eastern bank of the Blue Gum Creek valley in rolling, hilly terrain (Figure 65). The route has been laid level with numerous railway cuttings through these hills (Figure 66).

Survey Unit 10 then meets an intersection at the Quarry Access Road and includes several lay-down areas which are located in cleared areas around the Seahampton Road / Quarry Access Road intersection. The survey unit then proceeds further to the south, through heavily vegetated hills, with a number of significant railway cuttings incised through the local landscape.

Survey Unit 10 terminates at the Cessnock LGA / Lake Macquarie LGA boundary. The survey unit is approximately 2.5km in length. The location of Survey Unit 10 is illustrated in Figure 69.

### 5.10.2 Environmental Context

Survey Unit 10 is located in the eastern foothills of Black Hill, with the gradient of the undulating terrain increasing as the survey unit proceeds south-west. The survey unit is largely located on the upper margin of the Blue Gum Creek valley and is approximately 5m to 10m higher than the adjacent creek line. Construction of the Richmond Vale Railway involved incised cuttings through the sandstone geology and hills in this area, with significantly steep open cuttings visible on either side of the route.

Soil landscapes in the vicinity are a mix of residual and colluvial soils, of the Beresfield, Rivermead, Cedar Hill, Killingworth and Stockrington soil landscapes. The Beresfield soil landscape consists of light brown sandy loam soils, while the remaining colluvial soil landscapes are brown to dark brown clayey loams with significant ironstone and gravel inclusions. These soils are highly erodible.

Water bodies in the area include the nearby Blue Gum Creek and its unnamed ephemeral tributaries.

### 5.10.3 Ground Visibility and Disturbance

Ground visibility for much of the survey unit is relatively high, due to the majority of the survey unit being located on an unsealed access track. This access track, particularly in the southern part of the survey unit, has areas which have been heavily eroded causing some areas of significant sub-surface exposure.

A large area in the northern portion of the survey unit has thick grass and weed which reduces the ground visibility to nil (Figure 68). This area, near the Dog Trap Road intersection, is also situated on the former alignment of the Richmond Vale Railway. However, in this area, much of the route follows Seahampton Road. Seahampton Road is partially bituminised in the northern portion of Survey Unit 10. The road has been extensively modified with episodes of road grading as well as the distribution of road base and gravels to stabilise the road. Much of this road is also located within Richmond Vale Railway cuttings, indicating that the natural bedrock below any introduced roadway fill would be considered archaeologically sterile.

Much of the southern and central portion of the route is located on top of the former rail alignment, and the ground has been extensively disturbed in these areas with the construction of the rail line and the introduction of fly ash and railway ballast. Large portions of this part of the route are located inside former railway cuttings (Figure 118), and the natural bedrock located below any introduced fill would be considered archaeologically sterile.

**Figure 63: Intersection of Dog Hole Road and Seahampton Road, north-east aspect**



**Figure 64: Remains of Richmond Vale Railway line, Seahampton Road at right of image. South-western aspect.**



**Figure 65: Rolling hills to the north-west of the survey unit, with creek terrace and Blue Gum Creek visible in the background. North aspect.**



**Figure 66: Railway cuttings through the survey unit, south-western aspect**



**Figure 67: Dense grass and weed in northern portion of the survey unit, west aspect**



**Figure 68: Sandstone railway cutting, south aspect**



#### 5.10.4 Summary of Aboriginal Sites

One previously recorded Aboriginal site is located in Survey Unit 10. However, this site was not able to be re-located during the site inspection. This site is summarised in Table 9 and discussed in Section 6.1.2.

**Table 9: Previously recorded Aboriginal sites in Survey Unit 10**

Site Name	Easting	Northing	Extent
Blue Gum Creek RTA 4 IF (AHIMS ID 38-4-1348)	367872	6361569	0.5m x 0.5m

Six previously unrecorded Aboriginal sites were identified during the site inspection in survey unit 10. Four of these sites were located in close proximity to each other in deposited road base and have been treated as similar sites (RVRT IF 4, RVRT AS 4, RVRT AS 5, RVRT IF 6). Five of these newly identified sites are located within the study area and are summarised in Table 10. One site was identified approximately 20m from the study area and is summarised in Table 11 (RVRT IF 5). The locations of these sites are illustrated in Figure 69.

The four sites located within the Seahampton Road deposited road base are described in Section 6.3, while RVRT AS 6 is discussed in Section 6.4.6.

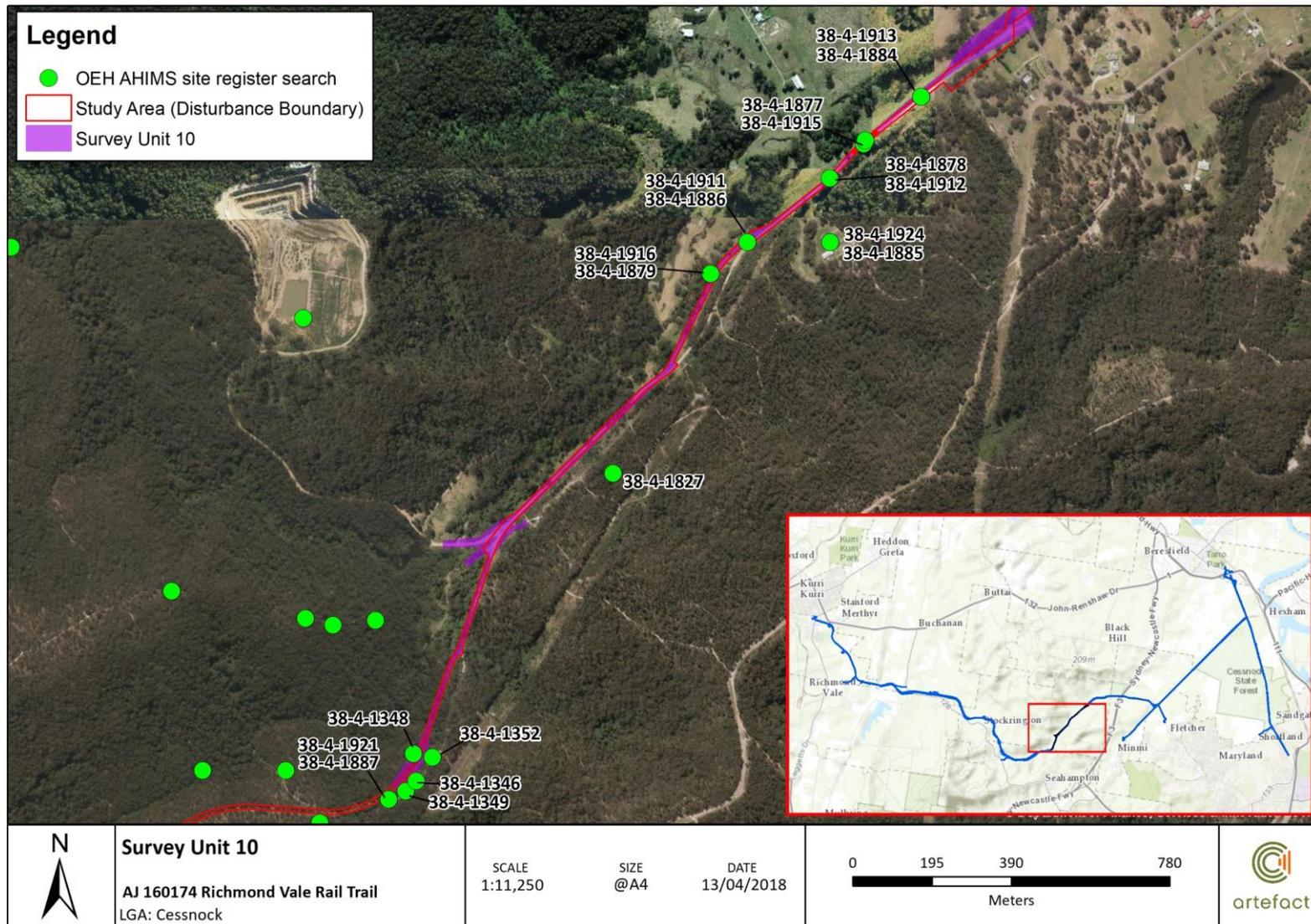
**Table 10: Aboriginal sites in Survey Unit 10**

Site Name	Easting	Northing	Extent
Richmond Vale Rail Trail Isolated Find 4 (RVRT IF 4) (AHIMS ID 38-4-1884/ 38-4-1913)	369122	6363174	0.5m x 0.5m
Richmond Vale Rail Trail Artefact Scatter 4 (RVRT AS 4) (AHIMS ID 38-4-1877/ 38-4-1915)	368985	6363063	82m x 9m
Richmond Vale Rail Trail Artefact Scatter 5 (RVRT AS 5) (AHIMS ID 38-4-1878/ 38-4-1912)	368897	6362975	3m x 3m
Richmond Vale Rail Trail Isolated Find 6 (RVRT IF 6) (AHIMS ID 38-4-1886/ 38-4-1911)	368695	6362819	0.5m x 0.5m
Richmond Vale Rail Trail Artefact Scatter 6 (RVRT AS 6) (AHIMS ID 38-4-1879/ 38-4-1916)	368604	6362742	4m x 2m

**Table 11: Aboriginal site located near Survey Unit 10**

Site Name	Easting	Northing	Extent
Richmond Vale Rail Trail Isolated Find 5 (RVRT IF 5) (AHIMS ID 38-4-1885/ 38-4-1924)	368898	6362943	0.5m x 0.5m

Figure 69: Location of Survey Unit 10 showing Aboriginal sites



## 5.11 Survey Unit 11

### 5.11.1 Location and Description

Survey Unit 11 commences at the boundary between Cessnock and Lake Macquarie LGAs and follows the alignment of the former Richmond Vale Railway along an unnamed access track to the south-west. The survey unit proceeds along the former rail line alignment through Tunnel No. 1 beneath the Hunter Expressway, before curving to the west and north, before ceasing at the northern end of Tunnel No. 2 (Figure 70).

The majority of the survey unit is located inside deep sandstone cuttings created during the construction of the former railway line (Figure 71). The northern and central portions of Survey Unit 11 consisted of high artificial embankments over nearby steep ravines. Some portions of the survey unit are located on the outer and upper margins of the railway cuttings and embankments, including areas of low disturbance adjacent to the alignment of the former railway line. The topography near the rail line consists of rolling and moderately steep hills and creek gullies covered in regrowth eucalypts and understory (Figure 72).

Survey Unit 11 is 2.6km in length and its location is illustrated in Figure 76.

### 5.11.2 Environmental Context

The survey unit is located in the northern foothills of Sugarloaf Mountain, and roughly parallel to the course of Blue Gum Creek. Two prominent ridge crests which descend off Mt Sugarloaf form the northern and southern watersheds of Blue Gum Creek. The northern end of the survey unit consists of the former railway tunnel which extends through this ridge line.

The survey unit traverses the Killingworth soil landscape, which consists of thin humic topsoil overlying dark grey-brown sandy clays. This soil landscape is highly erodible. Below the clays of the Killingworth soil landscape, the geology consists of the interlaying conglomerate, sandstone and shale strata of the Newcastle Coal Measures (Figure 73).

Water bodies in the area include Blue Gum Creek directly to the north of the survey unit. Burnt Creek and a number of unnamed ephemeral tributaries flow into Blue Gum Creek. The artificial Burrenjim Dam is located to the north of the survey unit. These water courses are up to 20m below the elevation of the former railway line and are at the base of steep gullies.

### 5.11.3 Ground Visibility and Disturbance

The majority of the survey unit has high ground visibility, as the Richmond Vale Railway has been used as a four-wheel drive and motorbike access road since the railway was closed. Those areas of Survey Unit 11 located off the former rail line are covered with a light understory with a heavy covering of leaf litter and minimal surface visibility (Figure 74).

In the north of Survey Unit 11, artificial mounds and rollovers have been created to control stormwater runoff in the area. Vehicle tracks and tyres have caused significant rutting throughout the survey unit while in other locations significant quantities of water and sediment have washed down the sides of the embankment cuttings onto the access track (Figure 75).

Due to the steep topography throughout the survey unit, and the cutting and embankment-building caused by the construction of the original railway line, Survey Unit 11 is predominantly located on artificially-modified ground. Areas in the north of the survey unit are located on natural ground surfaces, although the majority of the route between Tunnel No. 1 and Tunnel No. 2 is situated on

either lowered cuttings through archaeologically sterile stratigraphic units, or on artificially constructed embankments.

Areas of least ground disturbance within the study area are located in the wider margins of the route corridor, on the upper edges of the embankment cuttings above the route. While there has been minor ground disturbance caused by the construction of stormwater channels and fence post installation, the majority of these areas exhibit intact ground surfaces.

**Figure 70: Southern portal to Tunnel No. 2, north aspect**



**Figure 71: Railway sandstone cuttings in survey unit, west aspect**



**Figure 72: Regrowth understory and eucalypts above and around rail cutting in survey unit 11, north east aspect**



**Figure 73: Shale, sandstone and conglomerate strata of Newcastle Coal Measures visible in rail cutting, east aspect**



**Figure 74: Vegetation on either side of the survey unit, north east aspect**



**Figure 75: Vehicle rutting through Survey Unit 11, south-west aspect**



#### 5.11.4 Summary of Aboriginal Sites

There is one previously listed AHIMS site located adjacent to Survey Unit 11, however this site was not able to be relocated during the site inspection. This site is shown in Table 12 and further discussed in Section 6.1.3.

**Table 12: Previously recorded Aboriginal site adjacent to Survey Unit 11**

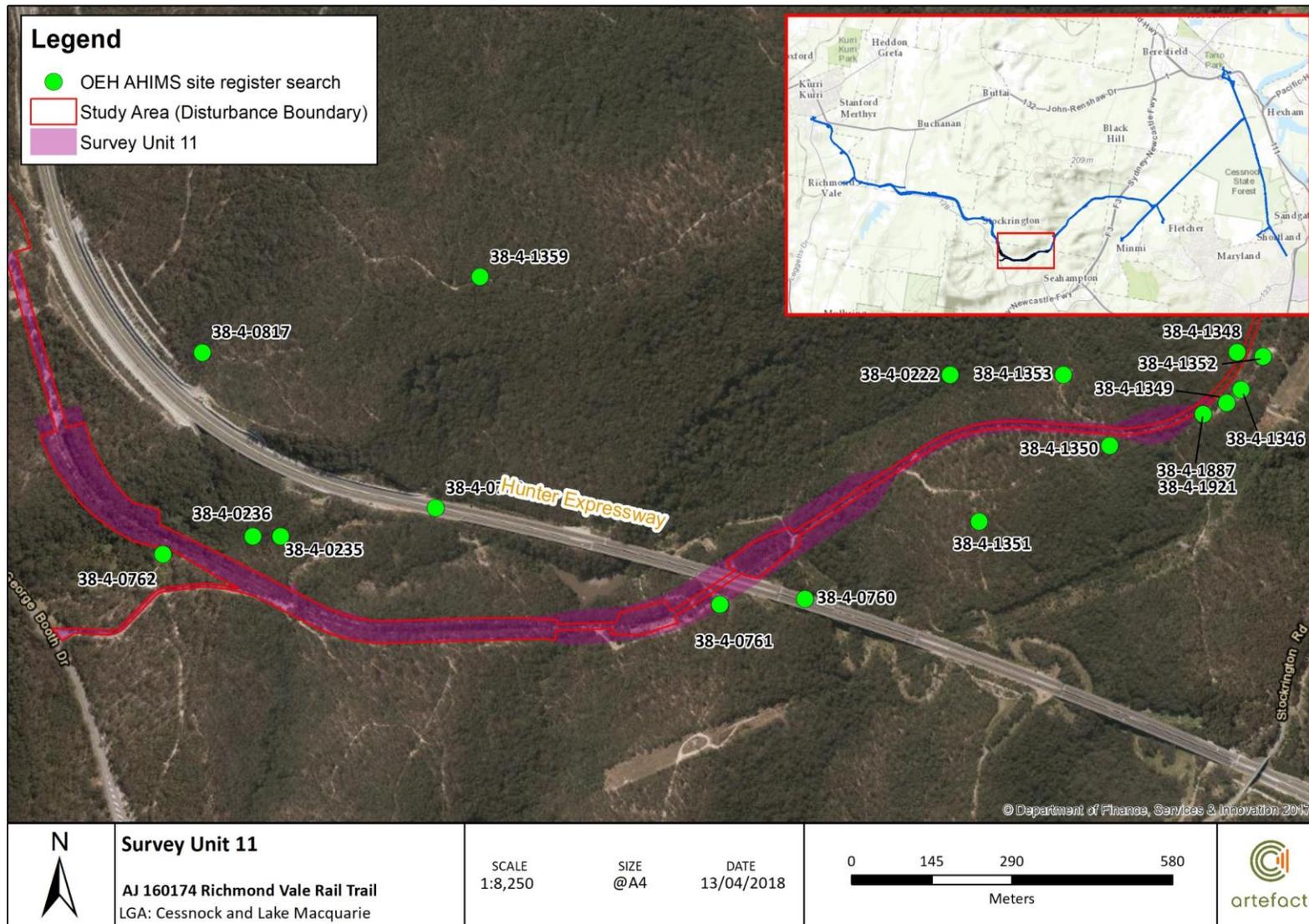
Site Name	Easting	Northing	Extent
Blue Gum Creek 2 Artefact Scatter (AHIMS ID 38-4-0761)	366939	6361118	Not provided

One previously unrecorded Aboriginal site was identified during the site inspection. This site is shown in Table 13 and further discussed in Section 6.4.7.

**Table 13: Newly identified Aboriginal site adjacent to Survey Unit 11**

Site Name	Easting	Northing	Extent
Richmond Vale Rail Trail Isolated Find 7 (RVRT IF7) (AHIMS ID 38-4-1887/ 38-4-1921)	367812	6361459	0.5m x 0.5m

Figure 76: Location of Survey Unit 11 with Aboriginal sites



## 5.12 Survey Unit 12

### 5.12.1 Location and Description

Survey Unit 12 commences at the northern portal of Tunnel No. 2, and curves to the north then west around the northern protruding spur lines that descend from Mount Sugarloaf. This region of the route consists of steep cut cuttings and embankments (Figure 77) and tall constructed embankments over deep creek gullies (Figure 78). The survey unit then traverses to the west through slightly more level country, before crossing Surveyors Creek on large constructed former rail embankments. The survey unit then terminates at the eastern portal of Richmond Vale Railway Tunnel No. 3 in a deep sandstone cutting.

Survey Unit 12 predominately adheres to the former width of the Richmond Vale Railway line, with some portions of the study area slightly wider than the former railway alignment to include the larger supporting embankment base and the upper edges of the sandstone cuttings. Two lay down and construction areas are also included in the survey unit, located to the north of the former rail alignment in cleared and levelled areas.

The survey unit is approximately 5km long and its location and features are illustrated in Figure 83.

### 5.12.2 Environmental Context

The eastern portion of the survey unit is located through and over the far northern margin of three north-south aligned spur crests that descend from Mount Sugarloaf. Located between these spur crests are three unnamed upper tributaries of Surveyors Creek. The soil landscapes in these areas alternates between Killingworth and Beresfield residual soil landscapes, both of which are highly erodible. These soil landscapes overlies the conglomerates, shales and sandstone of the Newcastle Coal Measures.

As the northern Mount Sugarloaf spur crests level out towards the north, the slope gradient decreases as the survey unit extends north and west. In the west of the survey unit, the ground levels out to open rolling plains towards Richmond Vale, with lower gradient hill slopes and wider expanses between ridge lines.

Water courses in the survey unit consist of Surveyors Creek and its tributaries. The ground near Surveyors Creek and the former rail bridge in that location consists of eroded and disturbed sand beds (Figure 79).

### 5.12.3 Ground Visibility and Disturbance

The majority of the survey unit consists of either deep sandstone cuttings or high elevation embankments over the surrounding terrain. These areas have a high degree of visibility where vehicle traffic has removed vegetation. The ground surface in these areas shows significant amounts of rail ballast and ash (Figure 80), or has been extensively eroded to expose the underlying conglomerate soil and geological material (Figure 81 and Figure 82). These areas of the survey unit are considered entirely disturbed.

The laydown areas to the north of the main rail alignment are located on level ground which has been previously cleared for vehicle use and for lay down areas. Ground visibility in these areas is high, however frequent vehicle traffic in these locations has heavily disturbed the ground surface, with evidence of introduced road base and deposited gravels as well as the removal of the former ground surface.

**Figure 77: Shallow sandstone cutting through survey unit, south-west aspect**



**Figure 78: Edge of raised embankment through the survey unit, north aspect**



**Figure 79: Eroded and disturbed sandy creek bank at Surveyors Creek, north aspect**



**Figure 80: Ash and rail ballast on raised embankment, west aspect**



**Figure 81: Underlying geology of route exhibited in eroded portion of the trail, west aspect**



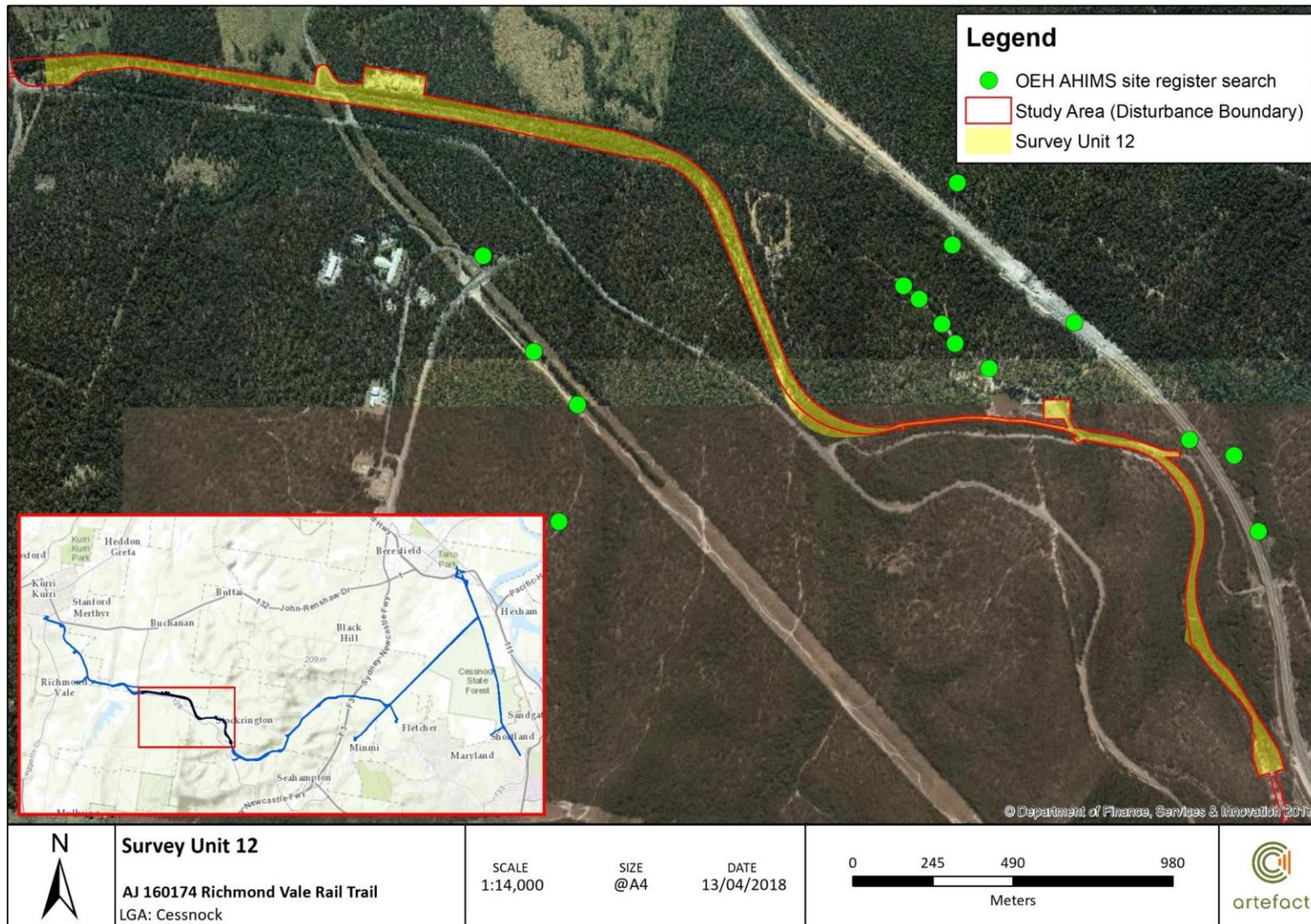
**Figure 82: Strata of rail ballast overlying soil and conglomerate layers, north aspect**



#### 5.12.4 Summary of Aboriginal Sites

No Aboriginal sites were identified within Survey Unit 12.

Figure 83: Location of Survey Unit 12



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## 5.13 Survey Unit 13

### 5.13.1 Location and Description

Survey Unit 13 commences at the eastern portal of Tunnel No. 3 and traverses the low sloping terrain of the Wallis Creek valley (Figure 84). The majority of the survey unit is located in cleared open pasture with areas of vegetation predominately located at the far western and eastern ends of the area. The survey unit is located within former railway cuttings in the east of the survey unit (Figure 85), before resting on a small artificial embankment until it reaches Wallis Creek.

The survey unit adheres to the alignment of the railway line, with an additional area to the north which consists of a driveway for a property that links to George Booth Drive. Additional areas on the banks of Wallis Creek to the north and south of the rail alignment on both sides of the creek were also included in the survey unit.

The survey unit is approximately 1.8km long. The location of the survey unit is illustrated in Figure 90.

### 5.13.2 Environmental Context

The survey unit traverses across the largely north-south orientated, low relief, Wallis Creek valley. This valley is fringed by two low relief ridgelines, also orientated to the north and south. The survey unit traverses across and through the eastern ridgeline (Figure 86), before cutting through a low relief knoll in the centre of the valley and then reaching the alluvial plain at Wallis Creek. The soil landscapes in this area consist of Beresfield residual soils in the east with alluvial deposited Wallis Creek soils in the centre and west of the survey unit. On the western side of Wallis Creek, the route diverts to the south to cross over a gentle spur crest before rising in elevation again.

Water courses in the survey unit consist of Wallis Creek and its unnamed upper tributaries. The banks of Wallis Creek are partially terraced, with an extensive flood zone on either side (Figure 87).

### 5.13.3 Ground Visibility and Disturbance

Grass covers the majority of the former railway line in this survey unit, which is predominantly located through private property and the surface has not been significantly de-vegetated through vehicle traffic. While the Richmond Vale Railway traverses slightly less steep terrain, the majority of the route is raised on embankments or in artificial cuts. Hill slopes have been partially excised to form cuttings on the taller side, with redeposited material used to build up the embankment on the lower elevated side. The railway line is not located on a natural ground surface, and the majority of the survey unit on the former line would be considered non-natural disturbed ground.

In the east of Survey Unit 13, the study area includes a wide (up to 70m) area surrounding the former rail line and cuttings, including the natural ground surface above Tunnel No. 3 and on either side of George Booth Drive. This area is partially regrowth eucalypt forest, with light understory. These ground surfaces adjacent to George Booth Drive are considered largely intact (Figure 88).

In the centre of the survey unit, a large area was included to accommodate room for the construction of a potential replacement bridge over Wallis Creek. The ground in this area is located on cleared pastoral terrain that leads onto creek terraces adjacent to Wallis Creek. While vegetation clearing and pastoral land use would have caused some ground disturbance, the ground surface in this area is also considered largely intact.

The unsealed driveway to access the property at 1353 George Booth Drive consists of a graded and levelled access track which cuts approximately 20cm deep into the natural ground surface (Figure

89). Archaeological visibility in this area is considered high, and this driveway is considered moderately ground disturbed.

**Figure 84: Low relief hill slopes in the Wallis Creek valley, north aspect**



**Figure 85: Western portal of Tunnel No. 3 with high steep cuttings, north-east aspect**



**Figure 86: View of low relief hills on western side of Wallis Creek valley, east aspect**



**Figure 87: Banks of Wallis Creek, with regrowth Casuarina along flood zone, north-west aspect**



**Figure 88: Regrowth vegetation on natural ground above Tunnel No. 3, east aspect**



**Figure 89: Graded and levelled driveway at 1353 George Booth Drive, west aspect**



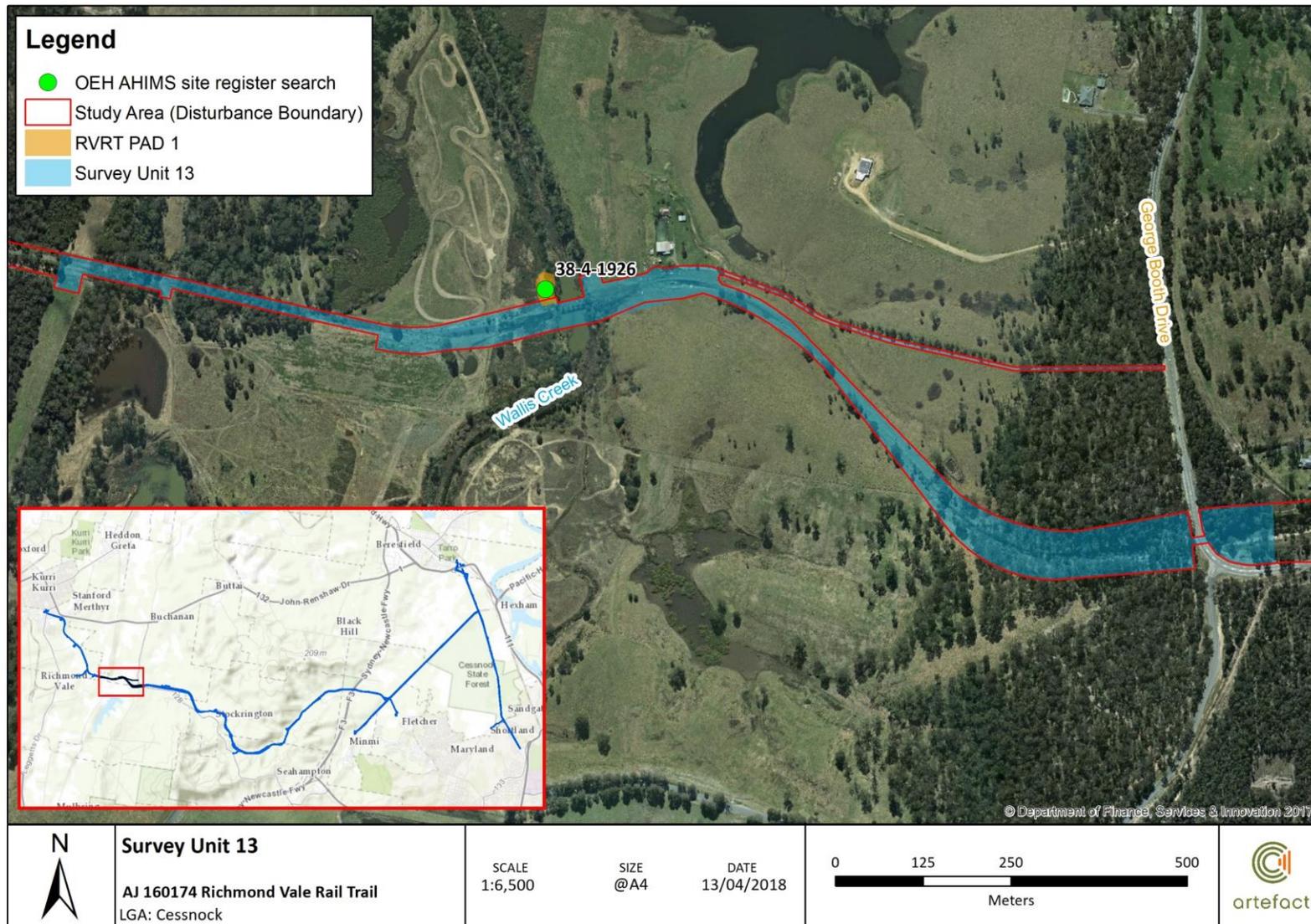
#### 5.13.4 Summary of Aboriginal Sites

One PAD was identified during the site inspection. This PAD is shown in Table 14 and further discussed in Section 6.

**Table 14: Newly identified Aboriginal sites in Survey Unit 13**

Site Name	Easting	Northing	Extent
Richmond Vale Rail Potential Archaeological Deposit 1 (RVRT PAD 1) (AHIMS ID 38-4-1926)	360868	6364221	50m x 25m

Figure 90: Location of Survey Unit 13



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## 5.14 Survey Unit 14

### 5.14.1 Location and Description

Survey Unit 14 commences on the Richmond Vale Railway just before the boundary of the Werakata State Conservation Area (SCA) at the intersection of the railway line with a transmission line easement (Figure 91). The survey unit turns north-west through the conservation area until it terminates just to the south of an open vehicle access area and fire trail intersection in the centre of the park. The survey unit in this area is largely level, with the former railway line either cut through or raised above the surrounding SCA (Figure 92).

The route through this area is predominantly constrained to the width of the former Richmond Vale Railway alignment towards Pelaw Main, with minor ancillary areas located on either side of the route near the entrance to the SCA. An additional area of the survey unit is an ancillary access track which connects to the railway from Leggett's Drive in the west.

The survey unit is approximately 1.8km long and its location is illustrated in Figure 97.

### 5.14.2 Environmental Context

The survey unit traverses through the relatively level terrain of the Werakata SCA, with a gentle hill slope at the east of the survey unit where it exits the outer portion of the Wallis Creek valley. The Werakata SCA contains regrowth sclerophyll (Figure 93) and marshland eucalypt species fringing wetland sumps and ephemeral streams that feed into Wallis Creek.

The soil in this survey unit consist of Heddon Greta and Neath sand profiles, predominantly consisting of an upper stratum of light brown sandy loam and sandy clay. These sands overlie Maitland Group conglomerates and sandstones. Natural silcrete was identified in exposed sand, showing evidence of machine damage (Figure 94).

### 5.14.3 Ground Visibility and Disturbance

The former railway line was constructed either level with the surrounding forest or on small embankments through the area. However, large areas of the former railway line have been machine cleared and graded, exposing the underlying sandy loam and leaving furrows of former rail ballast and ash on the margins of the rail line (Figure 95). Visibility and exposure for much of the survey unit is very high.

Ground disturbance across the survey unit is also quite high, due to the machine levelling and removal of the former railway line. The use of the route as a vehicle access track and fire trail has also caused ground disturbance in the form of wheel ruts and subsequent erosional impacts. Road base and gravels have been deposited on some parts of the route to stabilise the vehicle access road (Figure 96).

**Figure 91: Entrance to the Werakata SCA showing moderate railway line embankment, north-west aspect**



**Figure 92: Graded and cleared access route in survey unit, north west aspect**



**Figure 93: Regrowth eucalypt forest near the survey unit, north aspect**



**Figure 94: Natural silcrete, heavily machine damaged**



**Figure 95: Graded access track with former rail ballast and ashy soil furrowed on edge of road, east aspect**



**Figure 96: Wheel rutting and erosional damage on route, north west aspect**



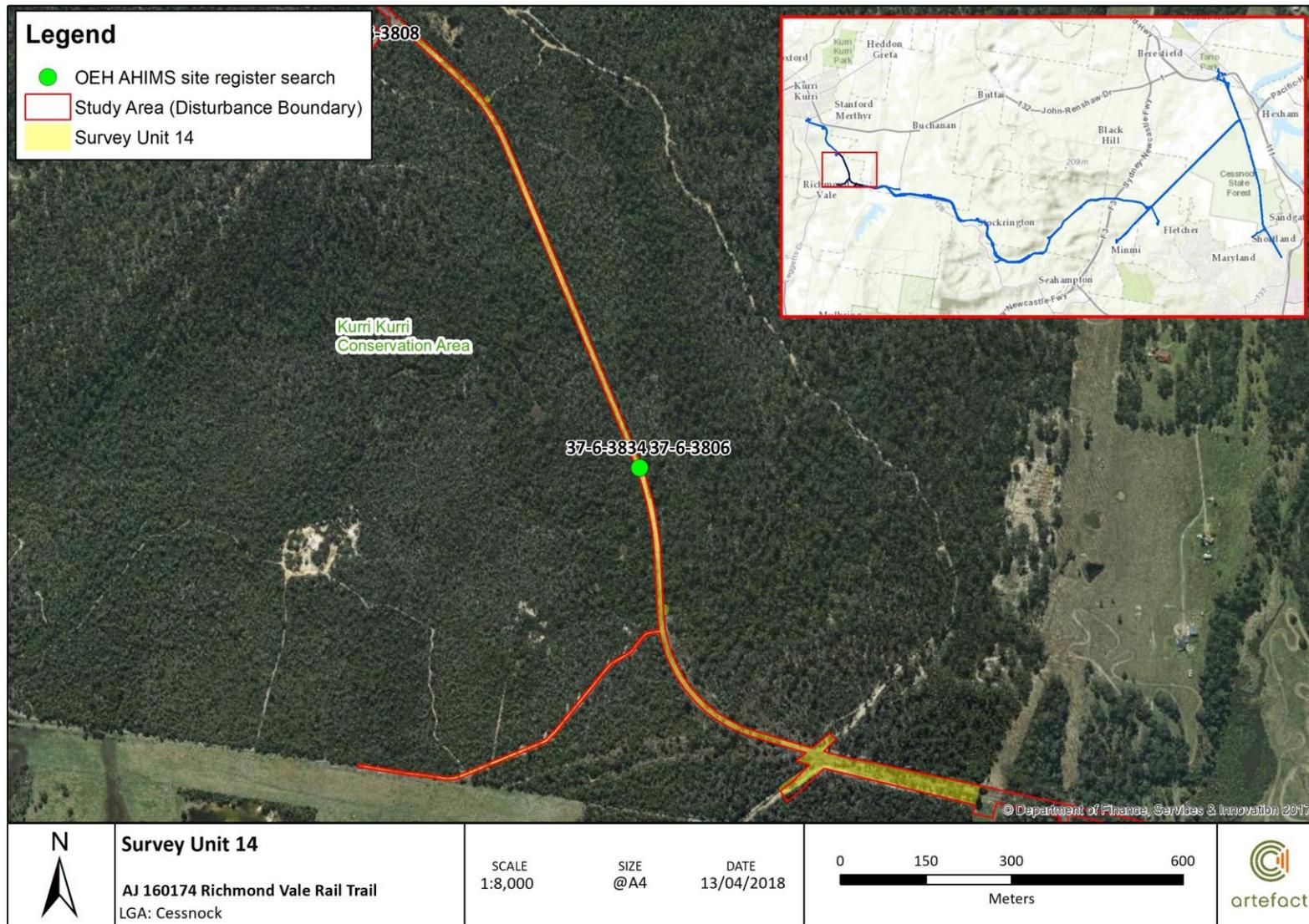
#### 5.14.4 Summary of Aboriginal Sites

One previously unrecorded Aboriginal site was identified during the site inspection in Survey Unit 14. This site is shown in Table 15 and further discussed in Section 6.

**Table 15: Newly identified Aboriginal sites in Survey Unit 14**

Site Name	Easting	Northing	Extent
Richmond Vale Rail Trail Isolated Find 8 (RVRT IF 8) (AHIMS ID 37-6-3806/ 37-6-3834)	359583	6364824	0.5m x 0.5m

Figure 97: Location of Survey Unit 14



## 5.15 Survey Unit 15

### 5.15.1 Location and Description

Survey Unit 15 commences in the middle of the Werakata SCA, south east of Pelaw Main. The unit follows the former Richmond Vale Railway north-west until it crosses Pokolbin Street in to Pelaw Main. It then parallels Pokolbin Street on an open grass verge until it reaches Mulbring Street, where the line terminates.

The survey unit in the east traverses through the revegetated SCA and is located through several cuttings and embankments throughout this portion of the route as the relief gradient increases towards Pelaw Main. The survey unit includes both the sandstone cuttings of the former railway line, and the existing adjacent vehicle access track through the SCA. Once the line has crossed over Pokolbin Street, the route is located on the edge of suburban streets and in cleared and mowed parkland and road verges (Figure 98).

There are three ancillary areas included in the survey unit which are adjacent to the former railway route. At the south-east of the survey unit, a lay down area has been designated in an existing clearing to the south-west of the rail route. A further ancillary area is located in a cleared area south of the route just to the east of where the former rail line meets Pokolbin Street (Figure 99). A final ancillary area has been designated at the end of the line, in a grassed parkland between Mulbring Street and Stanford Street.

The survey unit is approximately 2.4km long and its location illustrated in Figure 104.

### 5.15.2 Environmental Context

The south-eastern portion of the survey unit is located in the Werakata SCA, which is a revegetated eucalypt forest and partial wetland. The area here is relatively level and poorly drained, with estuarine freshwater swamps and sluggish ephemeral creeks (Figure 100). The slope gradient increases towards Pelaw Main, with embankment and excavated cuttings in this part of the route (Figure 101). The soils in this area are characterised by Neath soil landscapes, a brown to light brown sandy loam, overlying conglomerate and sandstone Maitland Group geological resources.

The north-western portion of the survey unit is located within the residential environment of Pelaw Main. The former alignment of the railway is visible on the side of Pokolbin Street as a raised embankment with black ashy soils (Figure 102). Water courses in this portion of the survey unit consist of stormwater drainage and open unnamed creeks which feed into the lower Wallis Creek tributaries.

### 5.15.3 Ground Visibility and Disturbance

Ground visibility in the portion of the survey unit which travels through the Werakata SCA is high, due to the machine grading and levelling of the former railway line. This machine grading has removed the former ballast and rail and exposed much of the underlying sand substrate of the region. As the topography increases to the north-west, the former railway line runs through shallow cuttings which are incised below the natural ground level. The survey unit parallels these cuttings across the existing vehicle access track however, which is located on the natural ground level. Machine grading and erosional damage on the route, adjacent access tracks and nearby cleared lay down areas has caused moderate ground disturbance, however much of the lower sand body remains intact.

Visibility across the portion of the survey unit in Pelaw Main on the other hand is nil to low, due to extensive grass cover and bitumen roads. The survey unit follows the former rail line route in Pelaw

Main and is located on a raised embankment which is imported fill and consequently classified as disturbed ground. Laydown areas in the Log of Knowledge Park at the terminus of the line have not experienced ground disturbance however and would be considered to be largely intact (Figure 103).

**Figure 98: Residential areas near survey unit, Pelaw Main. South aspect.**



**Figure 99: Cleared lay down area in Werakata SCA, west aspect**



**Figure 100: Marshy wetland adjacent to survey unit in Werakata SCA, west aspect**



**Figure 101: Former rail cutting in Werakata SCA, south-east aspect**



**Figure 102: Raised embankment and ashy soil of former rail line, Pelaw Main. North west aspect.**



**Figure 103: Level, relatively undisturbed ground at the Log of Knowledge Park, Pelaw Main. North aspect.**



#### 5.15.4 Summary of Aboriginal Sites

One newly identified Aboriginal site was identified during the site inspection in Survey Unit 15, while another Aboriginal site was identified less than 10m from the outer boundary of the survey unit. These sites are shown in Table 16 and Table 17, and further discussed in Sections 6.

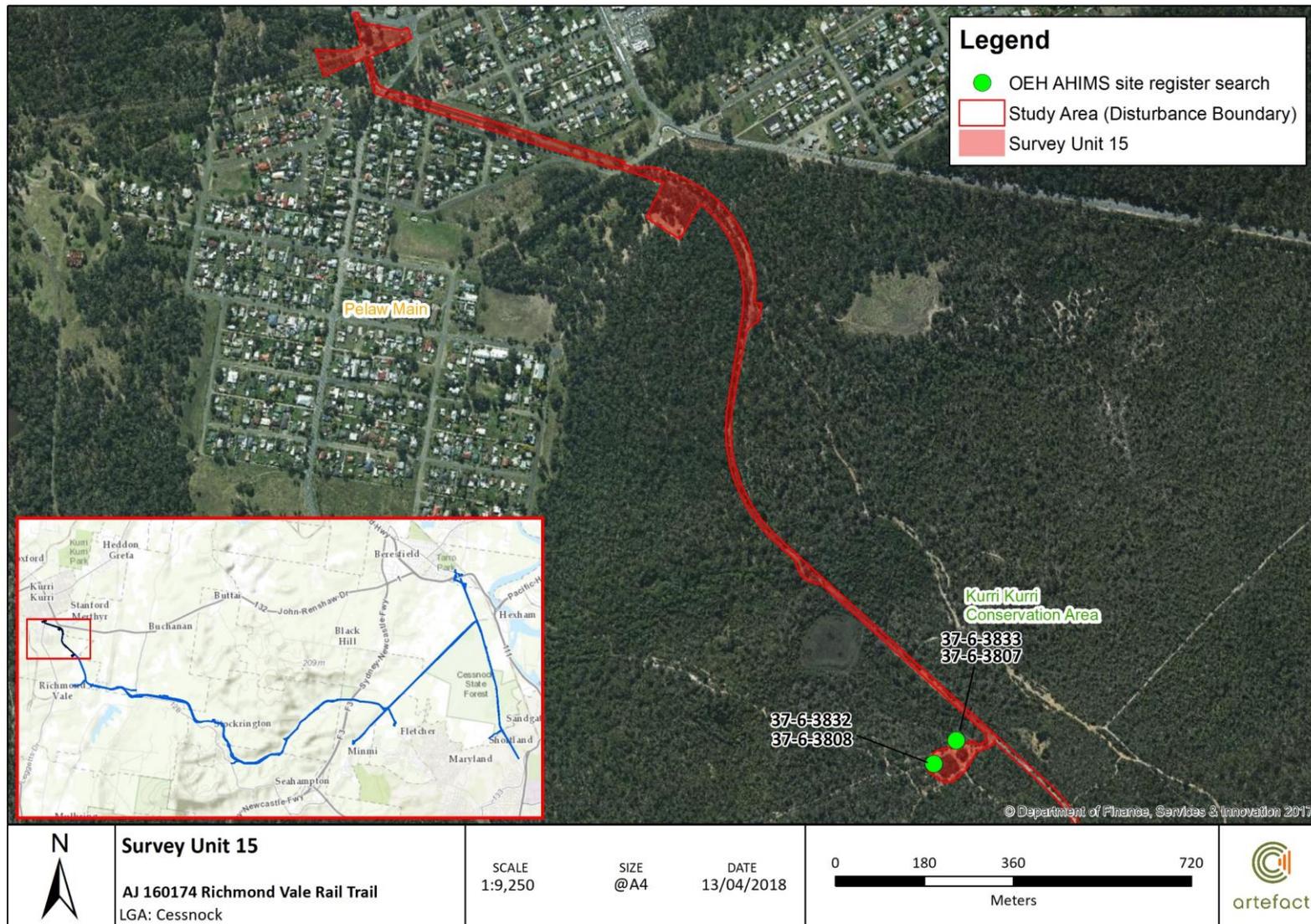
**Table 16: Newly identified Aboriginal sites in Survey Unit 15**

Site Name	Easting	Northing	Extent
Richmond Vale Rail Trail Isolated Find 10 (RVRT IF 10) (AHIMS ID 37-6-3808/ 37-6-3832)	359039	6365545	0.5m x 0.5m

**Table 17: Newly identified Aboriginal sites near Survey Unit 15**

Site Name	Easting	Northing	Extent
Richmond Vale Rail Trail Isolated Find 9 (RVRT IF 9) (AHIMS ID 37-6-3833/ 37-6-3807)	359085	6365592	0.5m x 0.5m

Figure 104: Location and features of Survey Unit 15



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## 5.16 Survey Unit 16

### 5.16.1 Location and Description

Survey Unit 16 commences at the Hunter Wetlands Centre carpark, immediately to the south of the Wetland Centre facility building (Figure 105). The survey unit proceeds as a linear area, following an existing Hunter Wetlands Centre pedestrian walkway (Figure 106), for approximately 1.5 kilometres until it terminates in open ground to the south of Ironbark Creek (in the northern portion of Survey Unit 1).

In addition to the pedestrian pathway, the survey unit also includes several small adjacent areas for construction and stockpiling facilities along the side of the pedestrian pathway. There is also an additional area in the survey unit, located along the northern side of Blanch Street in Shortland, which extends for approximately 180 metres.

The location of the survey unit is illustrated in Figure 111.

### 5.16.2 Environmental Context

The majority of Survey Unit 16 is located within the Hunter Wetlands Centre, which is a restored wetland habitat area (Figure 107). This area is characterised by a mix of Hexham Swamp Quaternary soils (estuarine and lacustrine silty deposits) and areas of infill and disturbed terrain. The survey unit is located along the lower edge of a small spur crest that is located on the edge of Hexham Swamp. The survey unit only traverses directly up onto the slope of this spur crest in its northern portion near Blanch Street (Figure 108).

Intact Beresfield soil landscapes are present directly to the west of Survey Unit 16 where the Shortland spur crest is located on the outer margins of Hexham Swamp. The survey unit transects these spur crests in places, however those sections of the survey unit have been cut-down or infilled from previous infrastructure activities (Figure 109).

### 5.16.3 Ground Visibility and Disturbance

The Hunter Wetland Centre is a restored estuarine landscape which has been restored as a native species habitat within the last thirty years. Prior to this, much of the area was in use as a landfill deposit as well as an area with artificially constructed sports playing fields. The majority of the survey unit is located along reclaimed and infilled ground along the edge of Hexham Swamp. The pedestrian pathway through much of the survey unit has been top-dressed with sand and gravel, with areas of former asphalt evident along the route (Figure 110).

A part of the northern portion of the survey unit is located on the northern hill crest on Blanche Street, Shortland. This area is characterised by a grass verge and partly revegetated lower slope. At the base of the slope there is washed in sediment from the surrounding properties and previous episodes of vegetation clearance. As such, the majority of the survey unit has been characterised as ground disturbed. Due to the survey unit's location on an open unsealed access track, the surface visibility for much of the survey unit is moderate to high.

**Figure 105: Hunter Wetland Centre main facility, with graded pedestrian pathway in foreground, south-east aspect**



**Figure 106: Pedestrian pathway through Survey Unit 16 in Hunter Wetlands Centre, north-west aspect**



**Figure 107: Bridge over channels of Hexham Swamp at the Hunter Wetlands Centre, north-west aspect**



**Figure 108: Blanche Street road verge and revegetated area on edge of lower Shortland hill crest, west aspect**



**Figure 109: Artificial cutting of pedestrian pathway into Hexham Swamp-adjacent spur crest, south-west aspect**



**Figure 110: Asphalt capping on pedestrian pathway, west aspect**



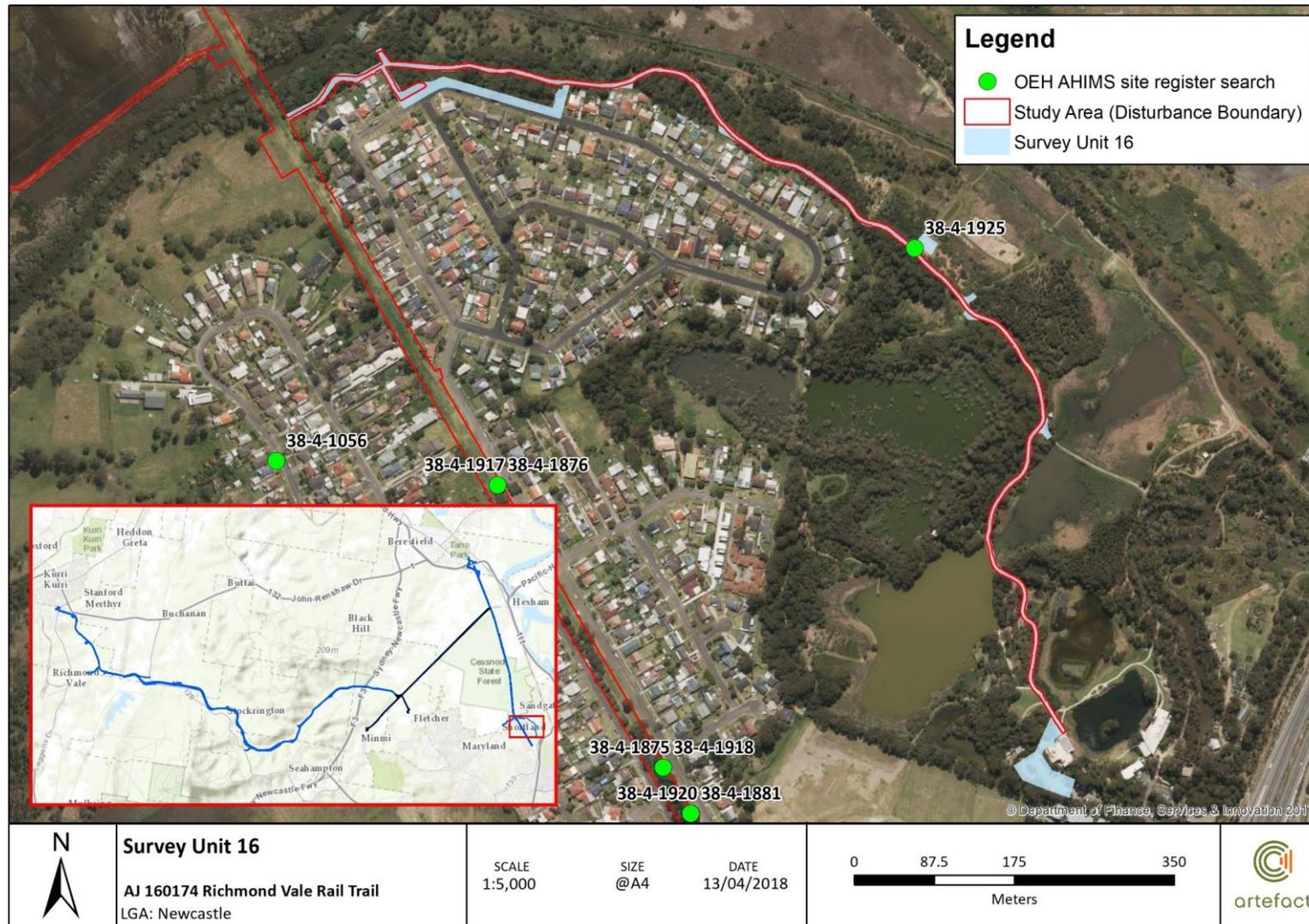
#### 5.16.4 Summary of Aboriginal Sites

One newly identified Aboriginal site was identified during the site inspection in Survey Unit 16. This site is summarised in Table 18 and further discussed in Section 6.

**Table 18: Newly identified Aboriginal sites in Survey Unit 16**

Site Name	Easting	Northing	Extent
Richmond Vale Rail Trail Isolated Find 11 (RVRT IF 11) (AHIMS ID 38-4-1925)	377838	6362231	0.5m x 0.5m

Figure 111: Location of Survey Unit 16 with location of Aboriginal site



## 5.17 Effective Survey Coverage

A summary of survey coverage, in accordance with the OEH code of practice, is outlined in Table 19 and Table 20.

**Table 19: Survey coverage summary – Survey Units**

Survey Unit	Landforms	Survey Unit Area (sq m)	Visibility (%)	Exposure (%)	Effective Coverage Area (sq m)	Effective Coverage (%)
1	Flat, Slope, Crest	24,846	30	25	1864.077	7.50
2	Flat	9,949	20	5	99.49	1.00
3	Flat	64,744	70	30	13596.24	21.00
4	Flat	53,341	70	30	11201.61	21.00
5	Flat, Slope, Crest	48,873	30	10	1466.447	3.00
6	Flat	153,746	30	10	4612.38	3.00
7	Flat, Slope, Crest	15,319	5	5	38.2975	0.25
8	Flat, Slope	40,814	10	5	204.4272	0.50
9	Flat, Slope	60,410	20	10	1208.2	2.00
10	Flat, Slope	48,199	70	20	6748.246	14.00
11	Flat, Slope	121,823	30	15	5478.381	4.50
12	Flat, Slope, Crest	23,4915	30	20	14094.9	6.00
13	Flat, Slope	78,779	20	10	1575.58	2.00
14	Flat, Slope	31,599	80	40	10111.68	32.00
15	Flat, Slope	55,149	50	20	5516.775	10.00
16	Flat, Slope	4,996	80	35	1390.43	28.00

**Table 20: Survey coverage summary – landforms**

Landform	Landform Area (sq. m)	Area Effectively Surveyed (sq. m)	% of landform effectively surveyed	Number of sites	Number of artefacts or features
Flat	543,810	53,614	9.86	6	6
Slope	458,862	25,172	5.49	7	30
Crest	39,284	3,168	8.06	6	39

## 6.0 ARCHAEOLOGICAL SITES

### 6.1 Previously Recorded Aboriginal Sites

A number of previously recorded AHIMS sites are located both within, and in the vicinity of, the study area. Due to the large number of registered AHIMS sites in the vicinity of the study area, only those sites which were located within the study area were prioritised for inspection. Nearby AHIMS listed sites were opportunistically inspected where possible.

The following section describes those sites either listed within the study area, or which were identified near the study area during the survey.

#### 6.1.1 HS 2 (AHIMS # 38-4-1583)

##### **Within the study area**

**Survey Unit:** 5

**Site Location:** 375255E 6368641N

**Site Description:** As discussed in Section 3.1.4, the site was identified as part of the Hexham Relief Roads Project by AMBS in 2011. The site consisted of a chert flake and a fine-grained siliceous flake, recovered from test excavation pits in a disturbed context. The site was designated as having low archaeological sensitivity due to the small number of artefacts recovered and the high degree of disturbance.

**Site Status:** The site is located in the centre of an unnamed Aurizon facility access road which extends east from the Maitland Road overpass at Tarro towards Woodlands Close. Permits associated with the site (#3761, #3888) indicate that this site has been impacted by test excavation, prior to construction of the Aurizon facility access road.

The site was not relocated during the site inspection, and is likely to have been wholly, or partially, destroyed. Further confirmation, including obtaining copies of relevant approvals for impact, will be required to determine the status of this site.

#### 6.1.2 Blue Gum Creek RTA IF 4 (AHIMS# 38-4-1348)

##### **Immediately outside the study area**

**Survey Unit:** 10

**Site Location:** 367872E 6361570N

**Site Description:** The site was originally identified on a gently inclined ridge approximately 60m to the west of Seahampton Road. The site was recorded as comprising a single silcrete broken flake on a high visibility access track. Due to the high degree of surface impacts and erosional damage on the access track, the original recording categorised the site as having low archaeological integrity and potential. The original recording identified the artefact in a deep, washed out exposure, with continued water and vehicle exposure likely to result in further movement of the artefact.

**Site Status:** Vehicle access tracks in the vicinity of Seahampton Road are highly eroded, heavily impacted ground surfaces. No Aboriginal objects were identified at AHIMS# 38-4-1348 during the current site survey. This is likely due to the heavily eroded condition of the track surface.

### 6.1.3 Blue Gum Creek 2 Artefact Scatter (AHIMS# 38-4-0761)

#### Immediately outside the study area

**Survey Unit:** 11

**Site Location:** 366942E 6361118N

**Site Description:** This site was originally identified on three converging tracks approximately 50m to the south of the Hunter Expressway. A total of 24 artefacts were identified on the highly eroded access tracks which converge on the Richmond Vale Railway, approximately 25m to the west of the western portal to Tunnel No. 1. The site was in poor condition when originally identified due to extensive erosion and vehicle damage on the track.

**Site Status:** The Richmond Vale Railway line has been used as a 4WD access track, and the intersection to the west of Tunnel No. 2 where the artefact scatter was located sees heavy and damaging traffic. The original site was in poor condition during its first identification, and displayed little archaeological integrity or potential. Further erosion, sediment deposition and vehicle damage have further impacted the site.

The listed location of the AHIMS listed site was inspected during the site inspection, and no artefacts could be relocated. The fact that the artefacts could not be relocated is likely due to the very high level of ground disturbance, both from high levels of deposited sediment (Figure 112), and in other places the high level of eroded out skeletal soils (Figure 113) at the recorded site location.

**Figure 112: View of access track intersection, east aspect**



**Figure 113: Context photo of eroded vehicle track near location of Blue Gum Creek 2 Artefact Scatter, north aspect**



#### 6.1.4 Blue Gum Creek Grinding Grooves (AHIMS# 38-4-0235)

##### Outside the study area

**Survey Unit:** 80m north of Survey Unit 11

**Site Location:** 366094E 6361239N

**Site Description:** This site is located outside the study area. The site consists of three grinding grooves on sandstone located in Blue Gum Creek.

**Site Status:** The grinding grooves were observed to be in good condition.

**Figure 114: Detail of sandstone grinding grooves**



**Figure 115: Context photo of Grinding Groove site, west aspect**



#### 6.1.5 Blue Gum Creek Grinding Grooves (AHIMS# 38-4-0236)

##### Outside the study area

**Survey Unit:** 50m north of Survey Unit 11

**Site Location:** 366144E 6361239N

**Site Description:** This site is located outside the study area. The site consists of six grinding grooves on sandstone in Blue Gum Creek.

**Site Status:** The grinding grooves were relocated and remain in good condition.

**Figure 116: Detail of sandstone grinding grooves**



**Figure 117: Context photo of Grinding Groove site, north aspect**



## 6.2 Richmond Vale Rail Trail Archaeological Complex 1 (RVRT AC1)

**Site Complex Location:** 377648E 6361534N to 377382E 6361974N

**Site Complex Description:** A series of sites (illustrated in Figure 122) were identified along the ridge crest in central Shortland, on the extended road verge next to King Street. Due to the proximity of these sites to each other (four sites along a linear corridor of 500m) and their co-location in the same landform context, they have been categorised as a site complex. Sites and artefacts were identified in this area due to erosional soil exposures caused by pedestrian traffic, water runoff, car and bus parking, and periodic vegetation clearance.

While there is significant ground disturbance in the local area, this ground disturbance is largely limited to linear corridors parallel to King Street. On the far eastern side, directly adjacent to King Street, a number of service utility trenches are located in that area (Figure 118). On the far western side of this linear area, a raised embankment is located which was where a former Hunter Water pipeline had been installed (Figure 119). In the margin between these two areas, however, the landform does not appear to have been subject to extensive or deep ground-disturbance (Figure 120). Surface disturbance has removed the grass cover in some places, and allowed for increased erosion, however the wider landform in this medial area is largely intact (Figure 121).

**Figure 118: Exposed stormwater service adjacent to King Street, north-east aspect**



**Figure 119: View of embankment of former Hunter Water pipeline and wooden fence, west aspect**



**Figure 120: Area of ground surface exposure adjacent to King Street, south-east aspect**

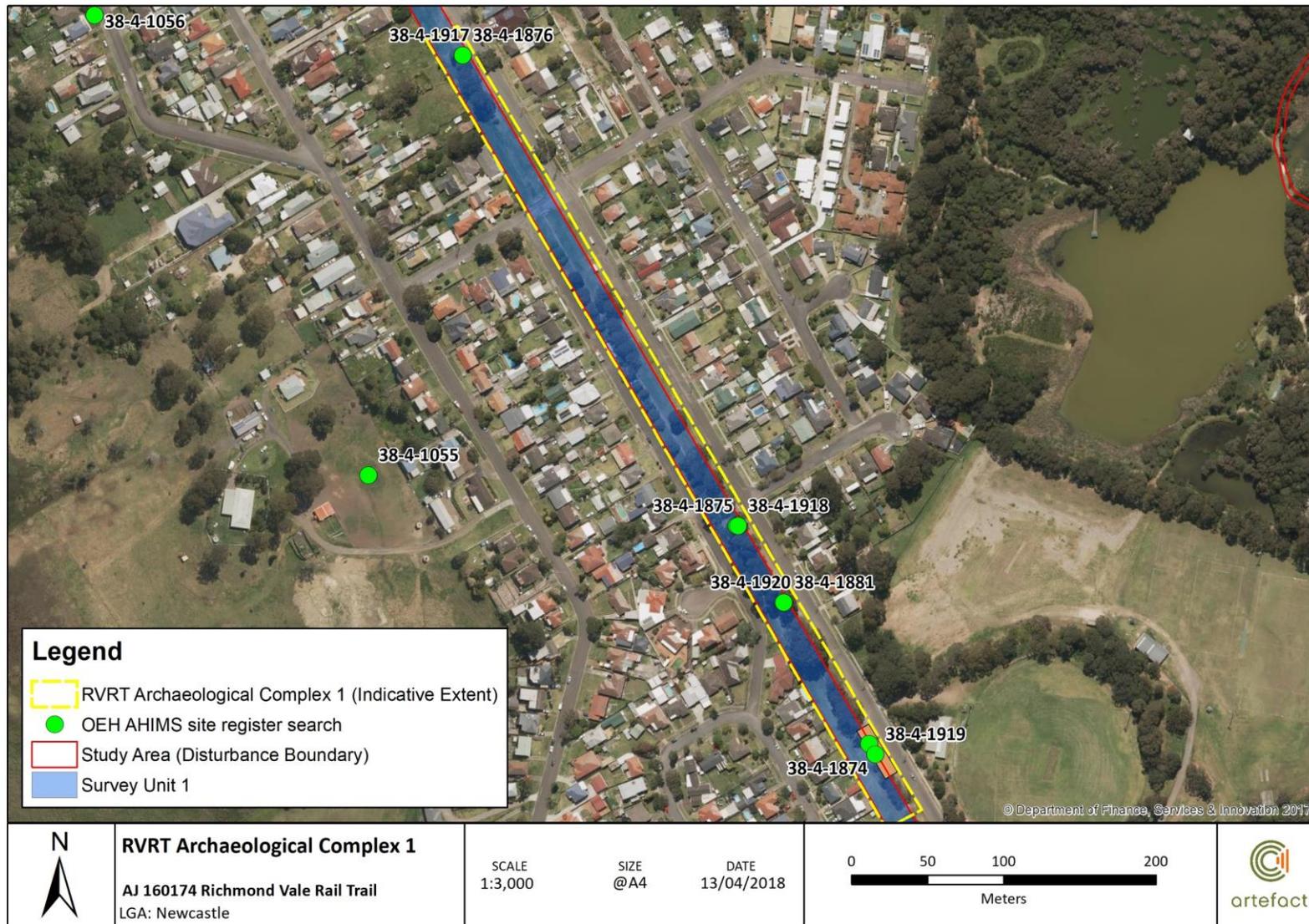


**Figure 121: Intact landform between King Street and embankment of former pipeline**



Sections 6.2.1 to 6.2.4 discuss sites identified as part of the RVRT AC 1 in detail.

Figure 122: Map of the RVRT Archaeological Complex 1



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## 6.2.1 Richmond Vale Rail Trail Artefact Scatter 1 (RVRT AS1)

**AHIMS ID:** AHIMS ID 38-4-1874/ 38-4-1919)

**Site Location:** Northern extent: 377648E 6361534N, southern extent: 377650E 6361516N

**Site Extent:** 36m by 7m (extent to be clarified by archaeological test excavation)

**Site Description:** the site was identified on the edge of the Shortland hill crest, immediately to the west of the utility service corridor adjacent to King Street (Figure 123). The ground was exposed from surface disturbance caused by vehicle driving and parking on the road verge (Figure 124). The site is located directly opposite Tuxford Park in Shortland, which is located further down the slope of the Shortland hillcrest, bordering Hexham Swamp.

Six Aboriginal artefacts were identified, including a red-white indurated mudstone / tuff (IMT) core (Figure 125). The remainder of the artefacts recovered were red-white IMT and grey and red silcrete stone tools (flake fragments) (Figure 126).

**Figure 123: View of RVRT AS 1 landscape, utility service corridor on left, south-east aspect**



**Figure 124: View of RVRT AS 1 landscape, north aspect**



**Figure 125: IMT core with negative flake scars from RVRT AS 1**



**Figure 126: Recovered artefacts from RVRT AS 1**



### 6.2.2 Richmond Vale Rail Trail Isolated Find 1 (RVRT IF1)

**AHIMS ID:** AHIMS ID 38-4-1881/ 38-4-1920

**Site Location:** 377593E 6361617N

**Site Description:** the site was identified in an exposure near the base of a tree, directly west of the King Street road verge and parallel ground disturbance caused by the adjacent service utility corridors (Figure 127). The site was located in ground which did not appear to have been heavily disturbed. The site consisted of a single quartzite flake (Figure 128).

**Figure 127: Exposure around base of tree where site was identified, north-east aspect**



**Figure 128: Quartzite artefact, RVRT IF 1**



### 6.2.3 Richmond Vale Rail Trail Artefact Scatter 2 (RVRT AS2)

**AHIMS ID:** AHIMS ID 38-4-1875/ 38-4-1918

**Site Location:** Northern extent 377561E 6361672N to southern extent 377564E 6361663N

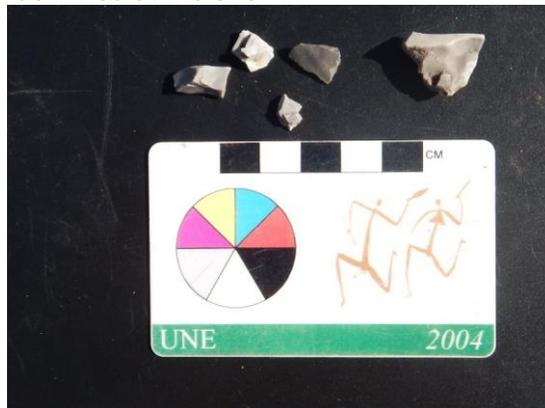
**Site Extent:** 9m by 5m (extent to be clarified by archaeological test excavation)

**Site Description:** the site was identified in surface exposures around the base of several trees, directly to the west of the King Street service utility corridor (Figure 127). A total of 13 artefacts were identified, consisting of red banded silcrete and grey IMT (Figure 128). Recovered artefacts were flake fragments less than 30mm in size.

**Figure 129: Exposure where RVRT AS 2 was identified**



**Figure 130: Silcrete and IMT artefacts identified at the site**



#### 6.2.4 Richmond Vale Rail Trail Artefact Scatter 3 (RVRT AS3)

**AHIMS ID:** AHIMS ID 38-4-1876/ 38-4-1917

**Site Location:** Central point - 377382E 6361974N

**Site Extent:** 4m by 3m (extent to be clarified by archaeological test excavation)

**Site Description:** the site consisted of five artefacts identified in an exposure on the road verge of King Street, to the west of the area of identified service utility corridors and to the east of the excised cutting where the former Hunter Water pipeline was located. The soil exposure showed a high quantity of natural angular gravels (Figure 131). Two artefacts, one of grey IMT and one of red silcrete, were identified in the exposure (Figure 132).

**Figure 131: Exposure where RVRT AS 3 was identified.**



**Figure 132: Silcrete and IMT artefacts identified at the site**



### 6.3 Seahampton Road Archaeological Sites (RVRT IF 4, RVRT AS 4, RVRT AS 5 and RVRT IF 6)

**Location of Seahampton Road Sites:** 369122E 6363174N to 368695E 6362819N

**Description of Seahampton Road Sites:** A series of sites (illustrated in Figure 147) were identified along the road shoulder and exposed unsealed vehicle access route of Seahampton Road, approximately 320m west of the Dog Trap Road intersection. Due to the proximity of these sites to each other in succession (separated by a maximum distance of 250m) and their identification in the same landscape context, these sites are discussed in relation to each other.

These sites were identified in gravels and sand which has been deposited as road base along Seahampton Road and the adjacent road shoulder. Gravels which had been deposited consisted of a mix of angular and sub-rounded pebbles in a light brown sandy matrix (Figure 133). The identified Aboriginal objects were mixed indiscriminately with this road base. The road is predominantly unsealed with small remnant bitumen areas from a former sealed surface (Figure 134). Much of the road in this area is located at a lower elevation to the adjacent hills, which have been incised and cut for the creation of the level railway track (Figure 135). As such, the road represents a non-natural ground surface, at sufficient depth for much of it that Aboriginal objects would not be naturally located in this area.

The distribution of artefacts in the road base strongly suggests that these artefacts have been imported with the gravel and sand for the laying down of the road base. Furthermore, non-worked natural indurated mudstone / tuff cobbles, which have been fractured from machine crushing and vehicle damage, are apparent in the mixed deposit (Figure 136). This further implies that stone material has been indiscriminately collected from a modern quarrying site. As such, Aboriginal objects identified in the Seahampton Road sites are likely to have been imported or moved to their current locations with introduced fill.

While all identified Aboriginal objects in this area were archaeologically recorded, it is possible that due to the small size of the gravel road base, further smaller artefactual materials may be present at, and between, the individual Seahampton Road Sites.

**Figure 133: Imported road base and gravels on Seahampton Road and adjacent road shoulder, east aspect**



**Figure 134: Remnant bitumen from former Seahampton Road sealed road surface, west aspect**



**Figure 135: Railway cutting of nearby hill to**

**Figure 136: Machine / vehicle damaged IMT**

route, south aspect



cobble in imported road base at RVRT AC 2



### 6.3.1 Richmond Vale Rail Trail Isolated Find 4 (RVRT IF4)

**AHIMS ID:** AHIMS ID 38-4-1884/ 38-4-1913

**Site Location:** 369122E 6363174N

**Site Description:** the site consisted of an orange-white IMT whole flake with minor retouch scars (Figure 137). The site was located on the road verge of Seahampton Road, less than 1m to the north of the bitumen road and approximately 1m south of the edge of the project study area. The road verge consisted of imported gravels and road base which forms the subgrade to Seahampton Road (Figure 138). This artefact is likely to have been imported into the area as part of the road base.

Figure 137: Orange-white IMT flake



Figure 138: Context photo of the RVRT IF 4 site



### 6.3.2 Richmond Vale Rail Trail Artefact Scatter 4 (RVRT AS 4)

**AHIMS ID:** 38-4-1877/ 38-4-1915

**Site Location:** Northern extent 369012E 6363092N to southern extent 368958E 6363042N

**Site Extent:** 82m by 9m

**Site Description:** The site is located on the unsealed portion of Seahampton Road, approximately 450m south-west of the intersection of Seahampton Road and Dog Hole Road. The site consists of 16 artefacts, composed of grey, white and orange-white IMT (Figure 139), and consisted of a core fragment (Figure 140), complete flakes, cortical fragments and partial flakes.

The site extends over a section of road up to 82m long, and spans the length of the exposed road up to 9m wide (Figure 141). The southern side of the road is located directly below the embankment of a former rail cutting (Figure 142), while the northern side of the road is located on a built-up embankment of the former rail line. As such, the ground surface below the deposited road base does not consist of a natural former ground surface and would be considered archaeologically sterile due to the depth of the cutting in this location (up to 3m). Artefacts in this location are considered imported materials which were gathered during sand and gravel dredging for the importation of road base into the area.

**Figure 139: Selection of artefacts recovered from RVRT AS 4**



**Figure 140: Orange-white IMT core fragment at RVRT AS 4**



**Figure 141: Imported road base and gravel where artefacts were identified in RVRT AS 4, north east aspect**



**Figure 142: Context photo of RVRT AS 4, with cut embankment in background. South-east aspect.**



### 6.3.3 Richmond Vale Rail Trail Artefact Scatter 5 (RVRT AS 5)

**AHIMS ID:** AHIMS ID 38-4-1878/ 38-4-1912

**Site Location:** 368897E 6362975N (centre of artefact scatter)

**Site Extent:** 3m by 3m

**Site Description:** This site is located on an unsealed portion of Seahampton Road, approximately 620m south-west of the intersection of Seahampton Road and Dog Hole Road. The site consists of seven orange-white and grey IMT complete and partial flakes (Figure 143).

Like the other sites of the Seahampton Road Sites, these artefacts were identified in deposited road gravel on an artificial ground surface which had been excised for the construction of the Richmond Vale Railway (Figure 144). Artefacts located at this site are considered to be imported materials which were deposited in the gravel road base to stabilise the Seahampton Road vehicle access track.

**Figure 143: IMT artefacts identified at RVRT AS 5**



**Figure 144: Context image of RVRT AS 5 on vehicle access track, embankment in background, south aspect**



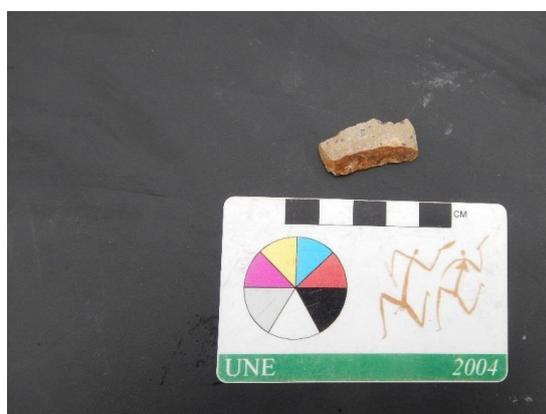
#### 6.3.4 Richmond Vale Rail Trail Isolated Find 6 (RVRT IF 6)

**AHIMS ID:** AHIMS ID 38-4-1886/ 38-4-1911

**Site Location:** 368695 6362819N

**Site Description:** The site was identified on the Seahampton Road vehicle access track, and designates the furthest south-westerly extent of artefacts identified in the Seahampton Road Sites. The site consisted of a single coarse grained orange silcrete complete flake (Figure 144). The site was identified in deposited road base above the artificial ground surface of Seahampton Road. Like other sites of the RVRT AC 2, this site was identified as consisting of imported artefactual material within deposited road base gravels (Figure 146).

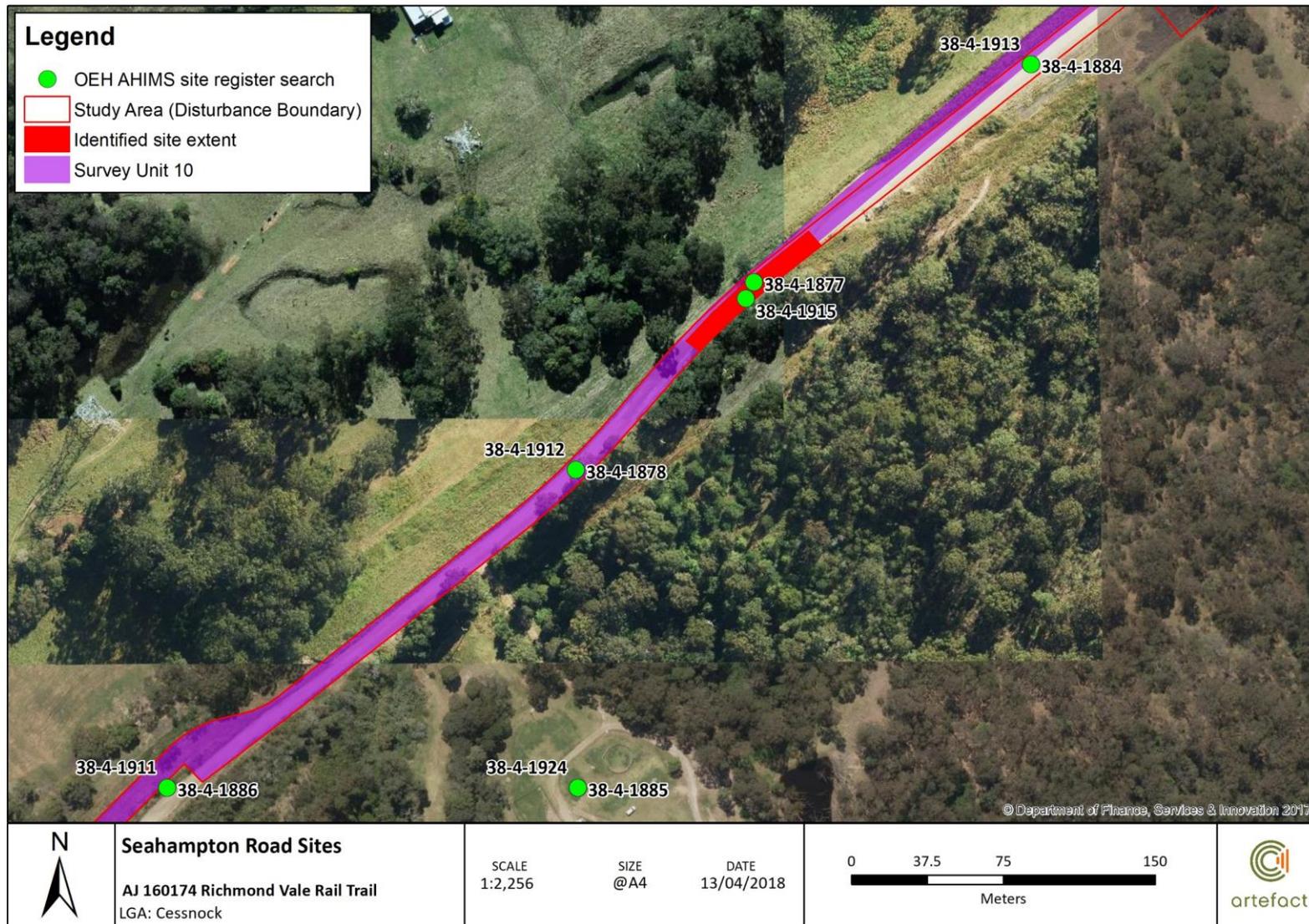
**Figure 145: Coarse grained silcrete artefact identified at RVRT IF 6**



**Figure 146: Context image of RVRT IF 6 showing imported gravels and modified landscape in background, south aspect**



Figure 147: Map of Seahampton Road Sites



Document Path: C:\Users\GIS\Desktop\GIS\GIS\_Mapping\160174 Richmond Vale Rail Trail\MXD\Updated\_Maps\_20180412\Figure\_147\_RVRT\_AC\_2\_20180413.mxd

## 6.4 Individually Identified Aboriginal Sites

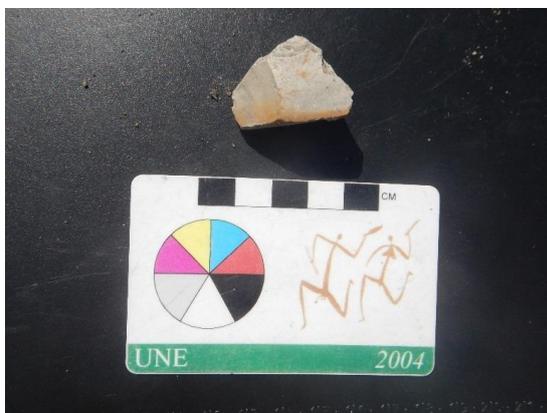
### 6.4.1 Richmond Vale Rail Trail Isolated Find 2 (RVRT IF2)

**AHIMS ID:** 38-4-1882/ 38-4-1910

**Site Location:** 375434E 6368558N

**Site Description:** the site consisted of a grey and red chert flake fragment identified on a vehicle access track (Figure 148), immediately to the north of the unnamed Aurizon facility access road. Shell material was identified in association with the identified artefact (Figure 149). This access track had been graded with fresh sand and gravels (Figure 150), and was located above a newly installed stormwater culvert (Figure 151). The artefactual material has been introduced to the area.

**Figure 148: Grey and red chert flake**



**Figure 149: Shell material identified in association with recovered chert flake**



**Figure 150: Introduced shell-bearing sand over access track**



**Figure 151: view of access track on right with stormwater pond in foreground**



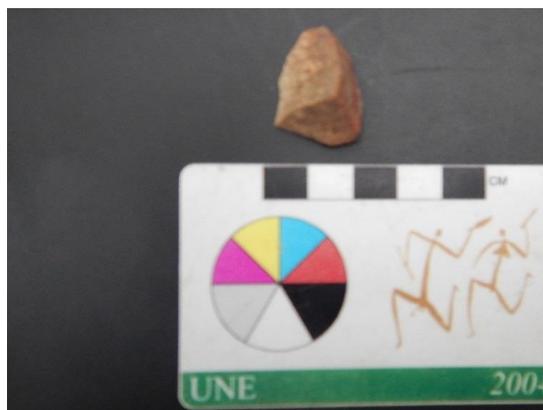
#### 6.4.2 Richmond Vale Rail Trail Isolated Find 3 (RVRT IF3)

**AHIMS ID:** AHIMS ID 38-4-1883/ 38-4-1922

**Site Location:** 375371E 6368912N

**Site Description:** the site consisted of a single red coarse-grained silcrete complete flake (Figure 152). The site was identified immediately adjacent to the concrete kerb at the eastern end of Anderson Drive (Figure 153). While the artefact was located on this immediate road verge with some evidence of introduced gravels, exposures indicated that the natural Beresfield topsoil was still largely intact.

**Figure 152: Red silcrete whole flake**



**Figure 153: Context photo of RVRT IF 3 site**



### 6.4.3 Richmond Vale Rail Trail Artefact Scatter 7 (RVRT AS 7)

**AHIMS ID:** AHIMS ID 38-4-1880/ 38-4-1923

**Site Location:** Northern extent 372644E 6362761N to southern extent 372605E 6362633N

The location and extent of this site is illustrated in Figure 160 (extent to be clarified by archaeological test excavation).

**Site Description:** the site consists of an open and level area of ground at the end of a spur crest landform context, on the outer edge of the Fletcher hill crest. The site extent is defined as an area between the newly constructed garden beds adjacent to Kural Crescent and the break in slope of the hill crest (Figure 154). The north-western portion of the site extends slightly further down the hill-slope due to the milder gradient in this area. There are significant ground exposures on the northern side of the site due to erosion and slippage on the break in slope of the hill crest (Figure 155).

A total of 13 stone artefacts were identified in the site, in several areas where erosion had caused ground exposures (Figure 156). These artefacts consisted of a mix of grey-white IMT and red silcrete, including core fragments, whole flakes and cortical fragments (Figure 157, Figure 158). Eroded exposures in these areas showed that the ground was natural Beresfield residual soil and did not represent imported material brought in during the construction of the estate.

The wide extent of the area was defined based on predictive statements from archaeological research in the area, which has repeatedly identified the spur crests that project into Hexham Swamp as areas of high archaeological sensitivity. As Hexham Swamp was an abundant source of food and material prior to European settlement, numerous AHIMS sites in the locality are located on spur crests on the fringes of Hexham Swamp, and these swamp-fringing spur crests have been identified from archaeological survey and excavation as areas of high archaeological sensitivity (Apex Archaeology, 2015; Mills Archaeological and Heritage Services, 2003).

The extent of this site was therefore defined by the extent of the relatively level edge to the hill crest, including grassed areas without exposures at the south-western extent of the spur crest within the project study area (Figure 159). There is a small extension in the north-west where the hill-slope gradient is lower than the nearby steeper edge of the spur crest.

The boundaries of this area of site have also been limited by the extent of the project study area. It is likely that the site extends further than the boundaries of the project area. However due to the limitation on the site survey, to inspect only those areas which are designated within the project area, this site has been delimited by the boundary of potential works. Should project works exceed the proposed limits of the study area on the Fletcher spur crest, it is likely that Aboriginal sites would be identified in those locations.

### 6.4.4 AHIMS Site #38-4-1519 Sanctuary – Estate Stage 4B Fletcher NSW

An AHIMS site (38-4-1519) is located in the centre of the suburb of Fletcher, situated approximately 90m north-east of the outer boundaries of the identified boundary of the RVRT AS 7. This site is listed as an 'Artefact, Non-Human Bone and Organic Material, Shell' site. The AHIMS database does not provide an extent for this site, and the site card for this site could not be accessed from the OEH. The current status of the site is presently uncertain.

It is possible that the site extent for the AHIMS Site #38-4-1519 extends into boundaries defined for the RVRT AS 7. Further information from the OEH is required to confirm the relative site extent and site status of the AHIMS site.

Figure 154: RVRT AS 7, planted garden beds at right of image, break in slope at left. North-east aspect



Figure 155: Erosional exposure at break in slope of RVRT AS 7, north-east aspect



Figure 156: RVRT AS 7. Red flags indicate location of surface artefacts, south-west aspect



Figure 157: Grey IMT core fragment, grid scale 2mm.



Figure 158: Red silcrete whole flake, grid scale 2mm.



Figure 159: Grassed south-western extent of site, west aspect



Figure 160: Location map and extent of RVRT AS 7



#### 6.4.5 Richmond Vale Rail Trail Isolated Find 5 (RVRT IF 5)

**AHIMS ID:** AHIMS ID 38-4-1885/ 38-4-1924

**Site Location:** 368898E 6362819N

**Site Description:** The site consists of a single orange IMT artefact which appears to have been damaged and broken by a vehicle or machine (Figure 161). The artefact is located in a vehicle access track located parallel to Seahampton Road, approximately 20m to the east. While Seahampton Road is predominately incised into the surrounding rolling terrain, the access track that RVRT IF5 is located on consists of a largely natural hillside, with the artefact being recovered from within the access road on a moderate slope (Figure 162). Unlike the nearby artefacts identified with RVRT AC 2 (approximately 30m to the north), the broken artefact identified at RVRT IF 5 was identified in a natural ground context, with only minimal disturbance from wheel rutting.

**Figure 161: Machine broken IMT artefact at RVRT IF 5**



**Figure 162: Context photo of RVRT IF 5, showing moderate hill slope. North-west aspect.**



#### 6.4.6 Richmond Vale Rail Trail Artefact Scatter 6 (RVRT AS 6)

**AHIMS ID:** AHIMS ID 38-4-1879/ 38-4-1916

**Site Location:** 368604E 6362742N

**Site Extent:** 4m by 2m

**Site Description:** The site consists of five orange IMT artefacts (Figure 163), located to the north of the Seahampton Road vehicle access track. The site was identified in an area of recent ground disturbance, likely caused by machine plant, which had removed the low grass at an area of approximately 4m by 2m (Figure 164). Soil exposed by the machine cut showed the material to be black-brown soil with rail ballast and ash deposits, and the exposed artefacts were located within 1m of residual Richmond Vale Railway rail line.

**Figure 163: Orange IMT complete flakes at RVRT AS 6**



**Figure 164: Context photo of RVRT AS 6, showing graded machine exposure and rail line. East aspect.**



#### 6.4.7 Richmond Vale Rail Trail Isolated Find 7 (RVRT IF7)

**AHIMS ID:** AHIMS ID 38-4-1887/ 38-4-1921

**Site Location:** 367812E 6361459N

**Site Description:** The site consists of a single grey IMT complete flake (Figure 165), located on exposed ground in the centre of the intersection of an access track. The area where this artefact was identified was located on the top of a vehicle rollover on the access road (Figure 166). The access track in general has been highly disturbed by vehicle tires, road levelling and grading, stormwater erosion and the construction of rollovers to control sediment flows on the access track. The site is located in a highly disturbed context.

**Figure 165: Grey IMT complete flake at RVRT IF 7**



**Figure 166: View of access track rollover, east aspect**



#### 6.4.8 Richmond Vale Rail Trail Potential Archaeological Deposit 1 (RVRT PAD 1)

**AHIMS ID:** AHIMS ID 38-4-1926

**Site Location:** Northern extent 360863E 6364244N to southern extent 360870E 6364198N.

The location and extent of the site are illustrated in Figure 171.

**Site Description:** The site consists of an area of PAD located on the western bank of Wallis Creek (Figure 167), directly to the north of the Richmond Vale Railway Wallis Creek bridge. The site is level creek terrace at a slightly higher elevation than the adjacent flood plain, consisting of sandy Wallis Creek soil landscape alluvial deposit. The southern boundary of the PAD is defined by the construction of the Richmond Vale Railway embankment (Figure 168). The eastern boundary of the PAD is defined by the edge of the embankment to Wallis Creek.

Ground visibility at the area of PAD is low due to the prevalence of grass cover at the site (Figure 169). However small areas of exposure have shown the underlying sandy alluvial soil formation (Figure 170). Aerial imagery shows that this sandy material is spread widely across the western bank of Wallis Creek, with a meander of the creek delineating the sandy deposit to the north and west.

The extent of this area of PAD is indicative, and likely extends further to the north and west along the level creek terrace. The area of PAD is constrained to the area surveyed during the site inspection. The majority of this area of PAD is located outside of the study area.

Areas of PAD were not identified on other portions of the creek banks at Wallis Creek. On the eastern creek bank, the creek terrace was less than 1m above the creek banks, and showed signs of frequent flooding. To the south of the railway embankment on the western side of Wallis Creek, a residual creek meander was present.

**Figure 167: RVRT PAD 1 with open grass area, Wallis Creek in background. South-east aspect**      **Figure 168: Southern edge of RVRT PAD 1, with rail embankment and Wallis Creek rail bridge in background. East aspect**



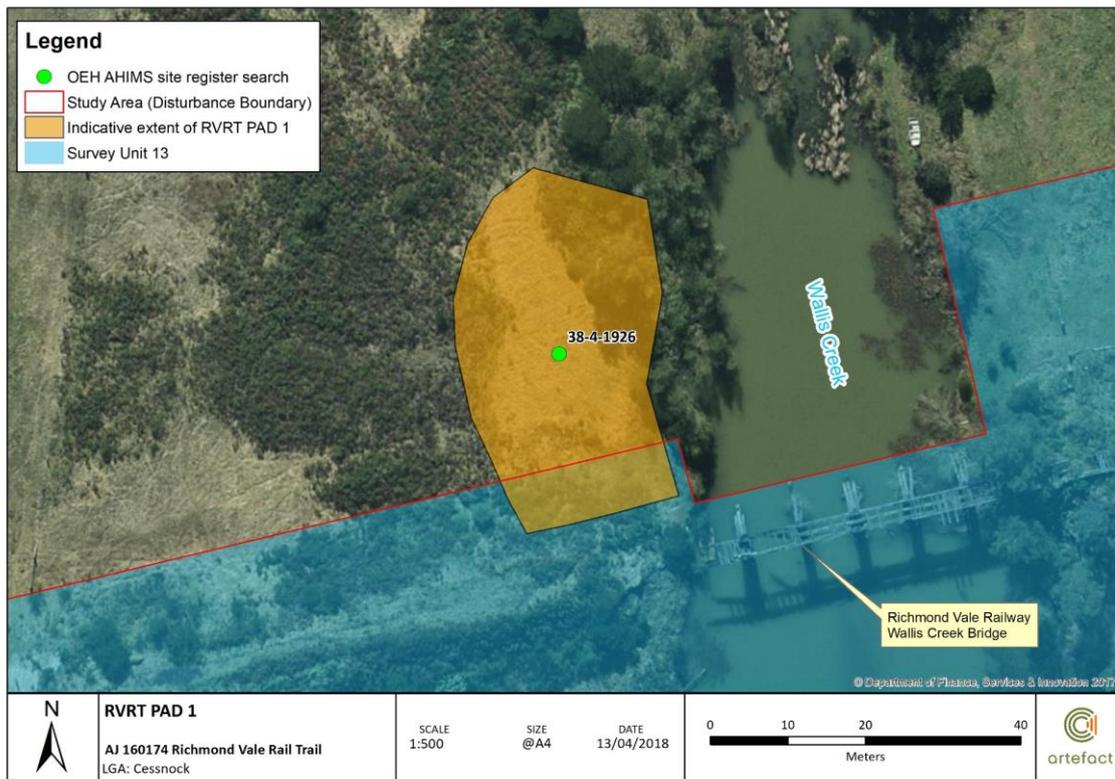
Figure 169: RVRT PAD 1 open grassed area. South aspect



Figure 170: Sandy soil located in erosional ground exposure near base of embankment. South aspect.



Figure 171: Location and extent of RVRT PAD 1



#### 6.4.9 Richmond Vale Rail Trail Isolated Find 8 (RVRT IF8)

**AHIMS ID:** AHIMS ID 37-6-3806/ 37-6-3834

**Site Location:** 359583E 6364824N

**Site Description:** The site consists of a single coarse-grained yellow-white silcrete complete flake (Figure 172), identified in the centre of the former Richmond Vale Railway route. The artefact was identified on the access track approximately 50m north-east of a freshwater tributary of Wallis Creek (Figure 173).

While the area in which the artefact was located had been previously heavily disturbed by machine grading and levelling, the sand deposit that the artefact was identified in was determined to be intact. The artefact was likely to be derived from underlying sub-surface sands and exposed when machine grading levelled the area. Previous archaeological investigations in the area showed that sub-surface artefacts in Kurri Kurri sand sheets are likely to contain only low density and isolated artefacts.

**Figure 172: RVRT PAD 1 open grassed area. South aspect**



**Figure 173: Sandy soil located in erosional ground exposure near base of embankment. South aspect.**



#### 6.4.10 Richmond Vale Rail Trail Isolated Find 9 (RVRT IF9)

**AHIMS ID:** AHIMS ID 37-6-3833/ 37-6-3807

**Site Location:** 359085E 6365592N

**Site Description:** The site consisted of a single coarse grained red silcrete flake fragment (Figure 174). The artefact was identified in a cleared area of natural sand, approximately 9m to the north of a vehicle access road which deviates from the main railway route alignment (Figure 175). The ground surface in this location was largely intact, although nearby access roads had showed signs of moderate ground disturbance from vehicle damage.

**Figure 174: Red silcrete artefact from RVRT IF 9** **Figure 175: Context photo of RVRT IF 9, south aspect.**



#### 6.4.11 Richmond Vale Rail Trail Isolated Find 10 (RVRT IF10)

**AHIMS ID:** AHIMS ID 37-6-3808/ 37-6-3832

**Site Location:** 359039E 6365545N

**Site Description:** The site consists of a yellow-white coarse grained silcrete complete flake (Figure 176). The artefact had negative flakes and the dorsal surface showed signs of weathering. The site was identified in an access track which diverges from the main Richmond Vale Railway route (Figure 177). The access track had been graded and levelled, with evidence of wheel rutting and erosion damage to the surface. An exposed vertical profile of the nearby soil showed that the vehicle track had been graded up to 20cm into the surrounding sand sheet.

**Figure 176: Red silcrete artefact from RVRT IF 9** **Figure 177: Context photo of RVRT IF 9, south aspect.**



#### 6.4.12 Richmond Vale Rail Trail Isolated Find 11 (RVRT IF11)

**AHIMS ID:** AHIMS ID 38-4-1925

**Site Location:** 377838E 6362231N

**Site Description:** The site consists of an orange fine-grained IMT complete flake, with maximum dimensions of 54 mm by 48 mm by 16 mm (Figure 178). The artefact had extensive cortical material on its ventral surface, indicative of an early lithic reduction phase of knapping (Figure 179). The isolated find was identified on the surface of an unsealed access track located within the Hunter Wetlands Centre, directly to the north of the gravel-graded Hunter Wetlands Centre pedestrian pathway (Figure 180).

The isolated artefact was identified within an area of redeposited and laid road gravels and top dressing. To the north and east of the isolated artefact, the ground has been extensively disturbed by vegetation clearance and road grading and maintenance work. The site is located on level ground which used to be located within the intertidal margin of Hexham Swamp, five metres from the edge of a spur crest which descends into the original plain. The pedestrian walkway to the south of the site has been cut into the edge of this spur crest (Figure 181). While it is likely that the artefact has been redeposited in its present location, it is uncertain whether it is indicative of nearby sites located on raised and less disturbed ground.

**Figure 178: Orange IMT complete flake, dorsal surface** **Figure 179: Orange IMT complete flake, ventral surface showing outer cortical material.**



**Figure 180: Context photo of site RVRT IF11, north aspect**



**Figure 181: Edge of spur crest to the south-west of RVRT IF11, showing where pedestrian pathway has been cut into the edge of the original landform. South-west aspect**



## 6.5 Summary of Results

Sites located within the study area are summarised in Table 21.

Sites which were identified during the survey which are located near, but not inside, the study area, are summarised in Table 22.

**Table 21: Aboriginal archaeological sites within the study area**

Name	AHIMS ID	Description of Site	Survey Unit	Easting	Northing	Site Condition
RVRT AS1 (Part of RVRT AC 1)	38-4-1874/ 38-4-1919	Artefact scatter on exposed ground near road verge on hillcrest in Shortland, extent: 7m x 36m. Ground shows minor erosional disturbance from vehicle and pedestrian tracks.	1	377648	6361534	Fair condition
RVRT IF1 (Part of RVRT AC 1)	38-4-1881/ 38-4-1920	Isolated artefact on exposed ground near road verge on hillcrest in Shortland. Ground shows minor erosional disturbance from vehicle and pedestrian tracks.	1	377593	6361617	Fair condition
RVRT AS2 (Part of RVRT AC 1)	38-4-1875/ 38-4-1918	Artefact scatter on exposed ground near road verge on hillcrest in Shortland, extent: 9m x 5m. Ground shows minor erosional disturbance from vehicle and pedestrian tracks.	1	377563	6361668	Fair condition
RVRT AS3 (Part of RVRT AC 1)	38-4-1876/ 38-4-1917	Artefact scatter on exposed ground near road verge on hillcrest in Shortland, extent: 3m x 4m. Ground shows minor erosional disturbance from vehicle and pedestrian tracks.	1	377382	6361974	Fair condition
RVRT IF2	38-4-1882/ 38-4-1910	Isolated artefact identified with shell material in sandy deposit, located in imported sandy material over newly constructed drainage culvert.	5	375434	6368558	Poor condition, disturbed context
RVRT IF3	38-4-1883/ 38-4-1922	Isolated artefact identified on road shoulder in ground exposure near concrete kerb. Located on end of spur crest in Tarro.	5	375371	6368912	Poor condition, disturbed context
Hexham Swamp 2A (HS2A)	38-4-1583	AHIMS artefact site, not relocated during survey. Site location presently below a newly constructed road.	5	375255	6368640	Site likely destroyed for road construction
RVRT AS 7	38-4-1880/ 38-4-1923	Archaeological site on edge of spur crest overlooking Hexham Swamp. Delineated by newly constructed concrete pedestrian footpath on one side and break of slope on other. Surface artefacts located in areas of shallow erosional ground disturbance, although wider landform largely intact. Extent: 160m x 10m.	7	372599	6362722	Good condition

Name	AHIMS ID	Description of Site	Survey Unit	Easting	Northing	Site Condition
RVRT IF4 (Seahampton Road Site)	38-4-1884/ 38-4-1913	Isolated artefact identified in deposited road base and gravel on Seahampton Road. Road level excised below level of surrounding hill terrain, indicating a non-natural ground surface.	10	369122	6363174	Poor condition, disturbed context
RVRT AS4 (Seahampton Road Site)	38-4-1877/ 38-4-1915	Artefact scatter identified in deposited road base and gravel on Seahampton Road. Road level excised below level of surrounding hill terrain, indicating a non-natural ground surface. Extent: 82m x 9m.	10	368985	6363063	Poor condition, disturbed context
RVRT AS5 (Seahampton Road Site)	38-4-1878/ 38-4-1912	Artefact scatter identified in deposited road base and gravel on Seahampton Road. Road level excised below level of surrounding hill terrain, indicating a non-natural ground surface. Extent: 3m x 3m.	10	368897	6362975	Poor condition, disturbed context
RVRT AS6	38-4-1879/ 38-4-1916	Artefact scatter identified in surface exposure in black ashy loam of former RVRT railway embankment. Likely redeposited in this area. Extent: 4m x 2m.	10	368604	6362742	Poor condition, disturbed context
Blue Gum Creek RTA IF4	38-4-1348	Isolated artefact located on heavily eroded and disturbed vehicle access track. Site was not relocated during the survey.	10	367872	6361569	Poor condition, disturbed context
RVRT IF7	38-4-1887/ 38-4-1921	Isolated artefact identified on an artificial rollover on a heavily eroded and disturbed vehicle access track.	11	367812	6361459	Poor condition, disturbed context
Blue Gum Creek Artefact Scatter 2	38-4-0761	Artefact scatter located on heavily eroded and disturbed vehicle access track. Site was not relocated during the survey.	11	366939	6361118	Poor condition, disturbed context
RVRT PAD 1	38-4-1926	Area of PAD identified on western bank of Wallis Creek, on sandy level creek terrace. PAD extent: 50m x 25m.	13	360868	6364221	Good condition
RVRT IF8	37-6-3806/ 37-6-3834	Isolated artefact identified in machine levelled centre of former RVRT route, in modern vehicle access track. Surface disturbance has exposed sandy sub-surface deposit including isolated artefact.	14	359583	6364824	Fair condition

Name	AHIMS ID	Description of Site	Survey Unit	Easting	Northing	Site Condition
RVRT IF10	37-6-3808/ 37-6-3832	Isolated artefact identified in vehicle access track to the south of the RVRT route. Moderate shallow ground disturbance from vehicle and erosional damage.	15	359039	6365545	Fair condition
RVRT IF11	38-4-1925	Isolated artefact identified on edge of regraded pedestrian pathway, in area of reclaimed vegetation and clear ground disturbance. Likely imported to its present location from nearby soil materials.	16	377838	6362231	Fair condition, disturbed context

**Table 22: Newly identified Aboriginal archaeological sites located near the study area**

Name	AHIMS# (if listed)	Description of Site	Survey Unit	Easting	Northing	Site Condition
RVRT IF5	38-4-1885/ 38-4-1921	Isolated artefact (machine broken) located in vehicle access track parallel to Seahampton Road. Minimal shallow ground disturbance from vehicle damage.	10	368898	6362943	Fair condition
RVRT IF6 (Seahampton Road Site)	38-4-1886/ 38-4-1911	Isolated artefact identified in deposited road base and gravel on Seahampton Road. Road level excised below level of surrounding hill terrain, indicating a non-natural ground surface.	10	368695	6362819	Poor condition, disturbed context
RVRT IF9	37-6-3833/ 37-6-3807	Isolated artefact site identified in exposure in regrowth vegetation, less than 10m from edge of study area. Minimal ground disturbance in natural sandy deposit.	15	359085	6365592	Good condition

## 7.0 ANALYSIS AND DISCUSSION

### 7.1 Distribution of Aboriginal Sites and Archaeologically Sensitive Landforms

The study area includes a number of identified Aboriginal sites and areas of archaeological potential. Overall, the natural landforms that the study area traverses are generally intact, a high degree of disturbance is associated with the study area due to its association with the former alignment of the Richmond Vale Railway and the Hunter Water pipeline through Hexham Swamp.

This section will provide a brief discussion on the distribution of Aboriginal sites identified during the survey, based on the landscape of each individual area.

#### 7.1.1 Margins of Hexham Swamp

Hexham Swamp was a source of abundant plant and animal resources for Aboriginal people, before the wetlands were partially drained and converted into pasturage for European animals. A large number of archaeological assessments, particularly based around the spur crests that descend into Hexham Swamp have revealed that the areas bordering the swamp are archaeologically highly sensitive. AHIMS data confirms this distribution of sites throughout these areas.

One large artefact scatter (RVRT AS 7) and a widespread archaeological complex (RVRT AC 1) were located on the hill crests on the land bordering Hexham Swamp. Site RVRT AS 7 was located at the break of slope directly above the edge of Hexham Swamp in the suburb of Fletcher. RVRT AC 1 was located further away from Hexham Swamp, however it was located on the central ridge crest of spur crest in Shortland, and was less than 150m distance from the margin of the wetland.

Isolated artefact find RVRT IF 3 was also located on a spur crest that was located close to Hexham Swamp, in the suburb of Tarro. It is likely that the isolated artefact was originally local to this spur crest above the swamp, however the construction of Anderson Drive and subsequent disturbance makes it difficult to ascertain the provenance of the artefact.

#### 7.1.2 Hexham Swamp

While the Hexham wetlands were an abundant plant and animal resource for Aboriginal people, the shifting estuarine clays and periodic inundation of the landscape mean that the preservation and identification of Aboriginal objects within the lower estuarine landscape is considered unlikely. The archaeological potential to identify Aboriginal objects in the swamp close to the study area is considered nil to low.

One site recovered from this landscape (RVRT IF 2) was considered an imported artefact (see Section 7.1.6 below). Few AHIMS sites were identified in the swamp itself, and even then, these sites were identified in the upper sloping margins to the north near Tarro which were less likely to be permanently inundated.

#### 7.1.3 Foothills of Mount Sugarloaf and Black Hill

A large number of artefact, grinding groove sites and areas of PAD have been previously identified in the moderate relief topography of the foothills of Mount Sugarloaf and Black Hill. Ridgelines and spur crests that ascend to the top of Mount Sugarloaf and Black Hill were used as pathways for Aboriginal people to travel across country, as well as routes to the important spiritual places on and near the

Mount Sugarloaf and Black Hill summits. Creek valleys to the north-west of the Mount Sugarloaf, particularly the Blue Gum Creek valley, are viewed as archaeologically sensitive.

The alignment of the former Richmond Vale Railway line largely adheres to the sides of these crests, running parallel to the ridge line at the approximate mid-slope for much of its traverse through these foothills. While the AHIMS data reflects the archaeological sensitivity of this region, the former railway line pathway has caused extensive ground disturbance across this portion of the study area.

Identified archaeological sites in relatively undisturbed contexts were infrequent, largely due to the confinement of the study area to the alignment of the former railway line. Two identified sites (IF 5 and IF 7) were located during the survey within these foothills.

Site RVRT IF 5 (20m east of Survey Unit 10) is located in a moderately shallow-disturbed ground context, in a ground exposure caused by vehicle traffic. The site was surrounded by thick and partially weedy regrowth vegetation on both sides of the vehicle track. The site was located at the mid-slope of a gentle ridge line.

Site RVRT IF 7 was located in the centre of an access track, within 10m of the footprint of the former Richmond Vale Railway. The site was located on an artificial rollover on the vehicle access track, in local soils. While it is likely that the artefact was deposited locally, due to the clear degree of artificial disturbance at the site, the exact provenance of the artefact is unclear.

AHIMS artefact sites within the study area (Blue Gum Creek RTA IF 4 and Blue Gum Creek Artefact Scatter 2) were not able to be re-identified, due to the heavy degree of erosion and ground disturbance in the locations of these sites. As the foothills of Mount Sugarloaf and Black Hill are relatively thickly vegetated (particularly with re-growth understory and weeds), the primary areas of visibility are on the numerous vehicle access tracks through the vicinity. These access tracks have been heavily damaged both by mining machinery (for the nearby collieries and quarries) as well as by four-wheel drive vehicles. Due to the moderate degree of the slope, the removal of vegetation and damage from vehicles, severe erosion has reduced the natural soil profiles in these areas to a skeletal, sometimes entirely absent, state. This is further compounded by infilled sediment, caused both by colluvial wash-ins as well as the importation of material to stabilise the road subgrade, both of which often obscure the natural ground surface.

#### 7.1.4 Surveyors Creek and Wallis Creek Valleys

AHIMS site distribution in the areas between the eastern end of the Surveyors Creek valley and the western end of the Wallis Creek valley, shows a small number of sites distributed on the higher elevation profiles that descend from the east. Only a small number of artefact sites were identified in close proximity to the lower courses of Wallis and Surveyors Creek from the AHIMS search.

The low-lying banks of Surveyors and Wallis Creeks are not expected to be of high or widespread archaeological sensitivity. The low-lying, courses of these creeks including billabongs, as well as the surrounding plain are likely to be susceptible to seasonal flooding, reducing the likelihood that Aboriginal sites could be archaeologically observed in these areas.

One area of PAD (the RVRT PAD 1) was identified on the banks of Wallis Creek, on a natural level embankment of slightly higher elevation to the creek than the surrounding floodplain. This area consists of a raised and relatively level intact sand sheet that extends between Wallis Creek and a former meander to the west of the main channel.

### 7.1.5 Kurri Kurri Sand Deposits

Natural sand deposits, located to the south-east of Kurri Kurri and Pelaw Main, stretch for several kilometres from the higher elevation of those towns towards the western edge of the Wallis Creek valley. Previous archaeological investigations in this Neath and Heddon Greta soil landscape to the west and south-west of Kurri Kurri have shown that these sand deposits can be over 1m in depth, and potentially artefact bearing throughout the vertical profile.

Three Aboriginal sites were identified within this sand sheet – RVRT IF 8, RVRT IF 9 and RVRT IF 10. Two of these sites, RVRT IF 8 and RVRT IF 10, were located at up to 20cm depth from the natural sand sheet ground surface. The sand deposits in this region are located close to several sources of fresh water. Archaeological investigations by ERM for the Hunter Economic Zone project (ERM 2003) showed that only a low quantity of artefacts were recovered from sand sheets near Kurri Kurri. To the result of these previous investigations, as well as the isolated finds' relatively widespread distribution over the study area, implies that the archaeological potential for higher density artefact deposits is low. Additionally, the ground surface of the former rail alignment has been significantly mixed.

### 7.1.6 Imported Aboriginal Objects

A number of Aboriginal sites identified during the site inspection were located in contexts that strongly implied the artificial importation of Aboriginal objects during landscaping activities during construction of railway or road easements. The most conspicuous of these sites – the Seahampton Road Sites – was located over a wide area of an unsealed and graded road, on relatively level ground which had been cut into and below the surrounding hills. Artefacts had been distributed across the road surface with non-artefactual gravels.

Another site, RVRT IF 2, was identified in imported sand, in association with shell material, which had been laid over a newly installed concrete drainage culvert on an access track. A further artefact scatter site (RVRT AS 6) was identified within an ashy soil context associated with fill materials used to construct the level embankment for the former Richmond Vale Railway.

The isolated find site RVRT IF11 was identified in imported sand and gravel materials, on the margins of Hexham Swamp within five metres of a partially intact spur crest. It is likely that the artefact has been imported from the immediate area, however this cannot be confirmed. Due to its likely imported location, the site does not demonstrate any further archaeological potential.

These sites do not show any meaningful relationship with Aboriginal site distribution in the wider Hunter area due to their location within imported fill.

## 7.2 Previous Ground Disturbance

The study area is largely confined to the footprint of former rail and water infrastructure. Survey Units 2, 3, 4 and 5 are largely co-incident with the footprint of the former Hunter Water pipeline through Hexham Swamp. Although Survey Unit 16 is located on the potentially archaeologically sensitive margin of Hexham Swamp, the survey unit is in an area which has been heavily modified and reclaimed from the swamp in historical times. Survey Units 6, 8 and 9 – 15 are almost entirely located within the former footprint of the Richmond Vale Railway. These alignments are mostly either constructed embankments or below ground level cuttings. In both situations, the ground surface in the study area is a non-natural ground surface.

Furthermore, since the decommissioning of the Hunter Water pipeline and Richmond Vale Railway, the level and straight alignment of these items of former infrastructure have been largely re-purposed

as vehicle access roads. Where rail beams have been removed from the alignment, often significant removal of the former sub-grade and sub-surface material has been involved, reducing the potential to recover natural and intact ground surfaces. In addition, these ground disturbances have heavily impacted the lower A horizons of many of the soil profiles, meaning that sub-surface artefact deposits would have also been altered or destroyed.

The study area is relatively narrow (between 5m and 10m) and largely adheres to these alignments. Areas which are located outside of these alignments include:

- The upper hill surfaces of excavated rail cuttings, adjacent to the rail cuttings themselves. While these areas do exhibit natural ground surfaces, in many places disturbance from the construction of drainage lines, fence posts and vehicle access tracks have reduced their archaeological potential.
- Spur crests in Shortland, Fletcher and Minmi. In those areas which had not been landscaped for the installation of the former railway line and Hunter Water pipeline, Aboriginal sites were identified.
- Wallis and Surveyor Creek banks and flood zones. While livestock on pastoral properties has caused some disturbance along the banks of these larger fresh water courses, their creek banks are predominantly disturbed by periodic flood events. Those areas above the flood zone would be considered to be only minimally ground disturbed.
- Secondary access tracks through the Kurri Kurri sandy landscape. While ground disturbance from vehicle traffic can be severe it is also not uniform throughout the landscape. Off the main rail alignment, the ground is only moderately disturbed to shallow depths (less than 20cm) from vehicle access roads.

### 7.3 Archaeological Potential

A number of natural landforms within the study area have been identified as potentially archaeologically sensitive, including:

- Spur crests and ridgelines of hills that border Hexham Swamp
- Margins of water courses which are above the flood zone
- Spur crests, ridge lines and hill saddles that are connected to Mount Sugarloaf and Black Hill
- Sand deposits which are located near freshwater courses (in the Werakata SCA)

Despite the potentially high archaeological sensitivity of these natural landforms throughout the study area, the level of ground disturbance caused by construction of the former Richmond Vale Railway, and the confinement of most of the study area to that area of disturbance, means that the level of archaeological potential across the whole of the study area is considered to be low.

As such, Aboriginal archaeological potential has been identified in only relatively undisturbed areas, or in areas of only shallow ground disturbance. These areas are located away from this original rail alignment. Areas of archaeological potential that require further investigation, such as test excavation, are identified in the following locations:

- Sections of RVRT Archaeological Complex 1
- RVRT AS 7
- RVRT PAD 1

## 8.0 SIGNIFICANCE ASSESSMENT

### 8.1 Significance Assessment Criteria

Archaeological significance refers to the archaeological or scientific importance of a landscape or area. This is characterised by using archaeological criteria such as archaeological research potential, representativeness and rarity of the archaeological resource and potential for educational values. These are outlined below:

- Research potential: does the evidence suggest any potential to contribute to an understanding of the area and/or region and/or state's natural and cultural history?
- Representativeness: how much variability (outside and/or inside the study area) exists, what is already conserved, how much connectivity is there?
- Rarity: is the subject area important in demonstrating a distinctive way of life, custom, process, land-use, function or design no longer practised? Is it in danger of being lost or of exceptional interest?
- Education potential: does the subject area contain teaching sites or sites that might have teaching potential?

### 8.2 Archaeological Significance Assessment

The archaeological significance of the sites recorded within the study area has been assessed by observations made during the site survey, previous investigations in the region as well as the landscape and archaeological context of the study area.

Sites which have been determined to have more than low archaeological significance are discussed in the following sections. A summary of the archaeological significance of all the sites in the study area is provided in Table 23.

#### 8.2.1 Richmond Vale Rail Trail Archaeological Complex 1 (RVRT AC 1)

A number of sites located in the only shallow-disturbed ground were identified along the road verge of King Street in Shortland. These sites were located a high hill crest, located less than 150m away from Hexham Swamp. Despite the moderate level of disturbance from the construction of King Street and from the parallel alignment of the former Hunter Water pipeline, a 6 to 8m wide portion of the ground surface appeared to be relatively undisturbed between these service and infrastructure corridors.

Spur crests that fringe Hexham Swamp are known to have yielded relatively high densities of Aboriginal artefactual material. Archaeological investigations for new housing estates have yielded relatively high volumes, although the majority of recent investigations have focussed on the surface collection of artefacts. The moderately deep (up to 30cm) soil profile in the area of the Shortland ridge crest could indicate intact and stratified archaeological deposits in this area, related to occupation areas associated with resource gathering in Hexham Swamp.

As further investigation of certain areas within RVRT Archaeological Complex 1 will be required to determine the nature and extent of archaeological material in this area, the site complex is indicatively assessed as demonstrating moderate archaeological significance.

### 8.2.2 Richmond Vale Rail Trail Artefact Scatter 7 (RVRT AS 7)

Site RVRT AS 7 was identified based on the presence of surface artefacts on the intact landform located directly on the edge of a spur crest in the suburb of Fletcher. A small number of exposures revealed surface artefacts in moderate densities. The area between the break of slope and the newly installed pedestrian pathway showed relatively minor ground disturbance. Any occupation area located along this ridge line would have been within easy access of resources from an upper freshwater portion of Hexham Swamp.

An AHIMS listed site is located less than 100m to the east of the RVRT AS 7 (Sanctuary – Estate Stage 4B Fletcher, AHIMS ID 38-4-1519). Due to the recent construction of the housing development in this area, and the listing of this site, it is possible that the newly identified RVRT AS 7 may be part of the originally recorded extent of AHIMS# 38-4-1519.

As further investigation of RVRT AS 7 will be required to determine the nature and extent of archaeological material in this area, the site is indicatively assessed as demonstrating moderate archaeological significance.

### 8.2.3 Richmond Vale Rail Trail Potential Archaeological Deposit 1 (RVRT PAD 1)

The area around Wallis Creek, prior to European settlement, was partially wetland surrounding slow moving freshwater creeks and meanders. A level and relatively high-elevation sand deposit is located between the western bank of Wallis Creek and a meander further to the west of the main channel. This location would have been elevated above the surrounding water courses except for during period of high flooding. Dense grass cover obscured the ground surface, however the proximity of fresh water to an intact sand body could indicate the presence of sub-surface Aboriginal objects.

The archaeological significance of the RVRT PAD 1 is uncertain, and this archaeological significance can only be ascertained through test excavation.

### 8.2.4 Sites with Low Overall Archaeological Significance

The remainder of the sites located within the study area were considered to be of nil or low archaeological significance. Sites which were classified as nil significance included the site that has demonstrably been destroyed (AHIMS ID 38-4-1583).

Sites classified as having low archaeological significance were those that were located in highly disturbed contexts, or that were shown to be artificially imported to their present location. Due to the displaced and disturbed contexts of these sites, it was determined that archaeological excavation for further sub-surface deposits would fail to yield artefacts in controlled archaeological contexts.

## 8.3 Cultural Significance

The Aboriginal cultural heritage values associated with the study area will be discussed by Aboriginal stakeholders in their written responses to this report.

**Table 23: Archaeological significance assessment for sites within the study area**

Site Type	Site Name	Condition	Survey Unit	Research Potential	Scientific Value	Representative Value	Rarity	Overall Archaeological Significance
Richmond Vale Rail Trail Archaeological Complex 1 <i>Indicative assessment of significance</i>	<b>RVRT AS1</b>	Fair condition	1	Moderate	Moderate	Low	Moderate	Moderate
	<b>RVRT IF1</b>	Fair condition	1	Moderate	Moderate	Low	Low	Moderate
	<b>RVRT AS2</b>	Fair condition	1	Moderate	Moderate	Low	Low	Moderate
	<b>RVRT AS3</b>	Fair condition	1	Moderate	Moderate	Low	Low	Moderate
Isolated Find	<b>RVRT IF2</b>	Poor condition, disturbed context	5	Nil	Low	Low	Low	Low
Isolated Find	<b>RVRT IF3</b>	Poor condition, disturbed context	5	Low	Low	Low	Low	Low
AHIMS Site	<b>Hexham Swamp 2A (HS2A)</b>	Removed for road construction	5	Nil	Nil	Nil	Low	Nil
Artefact Scatter <i>Indicative assessment of significance</i>	<b>RVRT AS 7</b>	Good condition	7	Moderate	Moderate	Low	Low	Moderate
	<b>RVRT IF4</b>	Poor condition, disturbed context	10	Low	Low	Low	Low	Low
Seahampton Road Sites (Artificially Imported Aboriginal Objects)	<b>RVRT AS4</b>	Poor condition, disturbed context	10	Low	Low	Low	Low	Low
	<b>RVRT AS5</b>	Poor condition, disturbed context	10	Low	Low	Low	Low	Low
	<b>RVRT IF6</b>	Poor condition, disturbed context	10	Low	Low	Low	Low	Low

Site Type	Site Name	Condition	Survey Unit	Research Potential	Scientific Value	Representative Value	Rarity	Overall Archaeological Significance
Isolated Find	<b>RVRT IF5</b>	Poor condition, disturbed context	10	Low	Low	Low	Low	Low
Artefact Scatter	<b>RVRT AS6</b>	Poor condition, disturbed context	10	Low	Low	Low	Low	Low
AHIMS Site	<b>Blue Gum Creek RTA IF4</b>	Poor condition, disturbed context	10	Low	Low	Low	Low	Low
Isolated Find	<b>RVRT IF7</b>	Poor condition, disturbed context	11	Low	Low	Low	Low	Low
AHIMS Site	<b>Blue Gum Creek Artefact Scatter 2</b>	Poor condition, disturbed context	11	Low	Low	Low	Low	Low
Potential Archaeological Deposit	<b>RVRT PAD 1</b>	Good condition	13	Moderate	Moderate	Low	Low	<i>Unknown</i>
Isolated Find	<b>RVRT IF8</b>	Fair condition	14	Low	Low	Low	Low	Low
Isolated Find	<b>RVRT IF9</b>	Fair condition	15	Low	Low	Low	Low	Low
Isolated Find	<b>RVRT IF10</b>	Fair condition	15	Low	Low	Low	Low	Low
Isolated Find	<b>RVRT IF11</b>	Poor condition, disturbed context	16	Low	Low	Low	Low	Low

## 9.0 IMPACT ASSESSMENT

The Proposal involves the construction of a 3m wide shared pathway that generally follows the alignment of the former Richmond Vale Railway. Sites that are located directly within the footprint of the new shared pathway, or 'clearance boundary', would be considered to suffer direct impacts, due to ground disturbing works and excavation associated with the installation of the new pathway.

Examples of activities within the clearance boundary include:

- construction of the shared pathway
- grading and levelling of unsafe cuttings
- machine removal of vegetation
- general levelling and clearing of terrain
- installation of ancillary structures such as benches, lighting and bathroom amenities
- preparation of creek banks for the construction of new or repaired bridges
- construction of stormwater drainage utilities.

Any portion of an identified Aboriginal site or area of archaeological potential within the clearance boundary will be impacted.

A wider 'disturbance boundary' has been delineated, within which a number of activities associated with works in the clearance boundary will occur. These activities include laydown and stockpiling areas, as well as vehicular and machine access. Although these activities will not result in direct impacts to the ground surface throughout the entirety of the disturbance boundary, there is potential for impacts associated with metal tracked machinery, vehicular movements in wet weather, and increased erosion/ compaction of archaeological sites from compound and stockpile areas.

Due to the ancillary nature of the activities within the disturbance footprint, there is the potential for avoiding impact to Aboriginal sites in those areas. As such, the impact assessment for those sites within the disturbance boundary is subject to confirmation once the nature and location of ancillary activities in those areas is known.

No indirect impacts are anticipated from the proposed works.

A summary of impacts to Aboriginal sites in the study area is provided in Table 24.

**Table 24: Impact assessment of sites within the study area**

Site Type	Site Name	Survey Unit	Disturbance/ Clearance Boundary	Type of Harm	Degree of Harm	Consequence of Harm
Richmond Vale Rail Trail Archaeological Complex 1  (test excavation require to confirm level of impacts)	<b>RVRT AS1</b>	1	Disturbance	Direct	Partial	Partial Loss of Value
	<b>RVRT IF1</b>	1	Disturbance	Direct	Total	Total Loss of Value
	<b>RVRT AS2</b>	1	Disturbance	Direct	Total	Total Loss of Value
	<b>RVRT AS3</b>	1	Clearance/ Disturbance	Direct	Total	Total Loss of Value
Isolated Find	<b>RVRT IF2</b>	5	Disturbance	Direct	Total	Total Loss of Value
Isolated Find	<b>RVRT IF3</b>	5	No longer in study area	None	None	No Loss of Value
AHIMS Site	<b>Hexham Swamp 2A (HS2A)</b>	5		Direct	None (site already destroyed)	No loss of value (site already destroyed)
Artefact Scatter	<b>RVRT AS 7</b>	7	Clearance/ Disturbance	Direct	Partial	Partial Loss of Value (test excavation required to confirm level of impacts)
Seahampton Road Sites (Artificially Imported Aboriginal Objects)	<b>RVRT IF4</b>	10	Clearance	Direct	Total	Total Loss of Value
	<b>RVRT AS4</b>	10	Clearance/ Disturbance	Direct	Total	Total Loss of Value
	<b>RVRT AS5</b>	10	Clearance	Direct	Total	Total Loss of Value
	<b>RVRT IF6</b>	10	Not located in study area	None	None	No Loss of Value
Isolated Find	<b>RVRT IF5</b>	10	Not located in study area	None	None	No Loss of Value
Artefact Scatter	<b>RVRT AS6</b>	10	Not located in study area	None	None	No Loss of Value
Isolated Find	<b>RVRT IF7</b>	11	Not located in study area	None	None	No Loss of Value

Site Type	Site Name	Survey Unit	Disturbance/ Clearance Boundary	Type of Harm	Degree of Harm	Consequence of Harm
Potential Archaeological Deposit	<b>RVRT PAD 1</b>	13	Disturbance	Direct	Partial	Partial Loss of Value (test excavation required to confirm level of impacts)
Isolated Find	<b>RVRT IF8</b>	14	Clearance	Direct	Total	Total Loss of Value
Isolated Find	<b>RVRT IF9</b>	15	Not located in study area	None	None	No Loss of Value
Isolated Find	<b>RVRT IF10</b>	15	Disturbance	Direct	Total	Total Loss of Value
Isolated Find	<b>RVRT IF11</b>	16	Disturbance	Direct	Total	Total Loss of Value

## 10.0 MANAGEMENT AND MITIGATION MEASURES

### 10.1 Guiding principles

The overall guiding principle for cultural heritage management is that where possible Aboriginal sites should be conserved. If conservation is not practicable, measures should be taken to mitigate against impacts to Aboriginal sites.

The nature of the mitigation measures recommended is based on the assessed significance of the site or sites and the assessed archaeological sensitivity for areas in which the sites are located. The final recommendations would also be informed by cultural significance, which will be discussed by the Aboriginal stakeholders in their report on the results of the field survey.

### 10.2 Avoiding Impacts to Sites

Based on current designs, the proposal would cause ground-disturbing impacts to the following identified Aboriginal sites:

- RVRT AS1 (AHIMS ID 38-4-1874/ 38-4-1919)
- RVRT IF1 (AHIMS ID 38-4-1881/ 38-4-1920)
- RVRT AS2 (AHIMS ID 38-4-1875/ 38-4-1918)
- RVRT AS3 (AHIMS ID 38-4-1876/ 38-4-1917)
- RVRT IF2 (AHIMS ID 38-4-1882/ 38-4-1910)
- RVRT IF3 (AHIMS ID 38-4-1883/ 38-4-1922)
- RVRT AS 7 (AHIMS ID 38-4-1880/ 38-4-1923)
- RVRT IF4 (AHIMS ID 38-4-1884/ 38-4-1913)
- RVRT AS4 (AHIMS ID 38-4-1877/ 38-4-1915)
- RVRT AS5 (AHIMS ID 38-4-1878/ 38-4-1912)
- RVRT AS6 (AHIMS ID 38-4-1879/ 38-4-1916)
- RVRT PAD 1 (AHIMS ID 38-4-1926)
- RVRT IF8 (AHIMS ID 37-6-3806/ 37-6-3834)
- RVRT IF10 (AHIMS ID 37-6-3808/ 37-6-3832)
- RVRT IF11 (38-4-1925)
- HS2A (AHIMS ID 38-4-1583)

The following sites are immediately outside the study area and will not be impacted:

- RVRT IF5 (38-4-1885/ 38-4-1921)
- RVRT IF6 (AHIMS ID 38-4-1886/ 38-4-1911)
- RVRT IF7 (38-4-1887/ 38-4-1921)
- RVRT IF9 (37-6-3833/ 37-6-3807)

The study area boundary has been modified since the archaeological survey was conducted, resulting in removal of impacts to RVRT IF 3.

### 10.2.1 Clarification of impacts within the disturbance boundary

The location and extent of potential impacts to identified sites within the disturbance boundary should be determined through detailed design and finalisation of constructability documentation. There is the potential to avoid impact to recorded Aboriginal sites within the disturbance boundary by relocating the location of vehicle access and ancillary facilities, for example.

## 10.3 Aboriginal Stakeholder Consultation

Comprehensive Aboriginal stakeholder consultation, carried out in accordance with the OEH 'Aboriginal cultural heritage consultation requirements for proponents 2010', should commence for the project.

This process will include a process prescribed in the OEH guidelines for identifying and inviting Aboriginal stakeholders to register for consultation, including placing an advertisement in a local newspaper(s), writing to certain government agencies, and inviting stakeholders to register.

## 10.4 Archaeological Test Excavation

Three areas have been identified with moderate archaeological potential and archaeological significance. Should these sites be impacted by the proposed works, archaeological test excavation, under OEH code of practice, would be required. Areas where archaeological test excavation is recommended include:

- RVRT Archaeological Complex 1
- RVRT AS 7
- RVRT PAD 1

The scope of archaeological test excavation at each location, particularly RVRT Archaeological Complex 1, and RVRT PAD 1, would require clarification once the extent of proposed works in those areas is known. Test excavation at RVRT Archaeological Complex 1 would focus on undisturbed areas within the site complex that will be impacted.

Test excavation would require comprehensive consultation with Aboriginal stakeholders in accordance with the OEH consultation requirements (see Section 10.3). The preparation of a test excavation methodology would be required, which would then be submitted to registered Aboriginal stakeholders for a period of 28 days for comment. Following this 28 day period, the excavation methodology would be submitted to OEH no less than 14 days prior to the commencement of test excavation. Following test excavation, a report to assess the finds and archaeological significance of the above sites would be prepared. That report would be appended to the ACHAR and AHIP application, where required. The location of test pits would include placement of pits around, and outside, the identified boundaries site/ PAD boundaries to determine the sub-surface extent of the site.

## 10.5 Impact to Aboriginal Sites

Should it not be feasible to avoid sites listed in Section 10.2 during works, an Aboriginal Heritage Impact Permit (AHIP) would be required prior to the commencement of any ground disturbing works. This would involve the preparation of an Aboriginal Cultural Heritage Assessment Report (ACHAR) in accordance with the relevant OEH guidelines. In order to prepare this ACHAR, full consultation with Aboriginal stakeholders would need to occur (see Section 10.3), in order to ascertain the cultural heritage values of the identified sites and study area as a whole. Consultation with Aboriginal

stakeholder groups would occur under provisions outlined in the relevant OEH guidelines, and would involve mandated periods for stakeholders to review and provide input into the ACHAR.

## 10.6 Further Archaeological Survey

The study area boundary has been adjusted since archaeological survey was conducted for this assessment. As such, any portion of the clearance and/ or disturbance boundary outside the original investigation area should be subject to further archaeological survey. Where there are no impacts proposed within the additional areas, a heritage consultant will advise if further field survey is required.

A review of the survey maps and current project area boundary, as well as clarification of impacts, should be undertaken to determine where further archaeological survey will be required.

## 10.7 Changes to the Study Area Boundary

The study area is predominantly limited to areas defined by the alignment of the former Richmond Vale Railway Line and the former Hunter Water pipeline through Hexham Swamp. Both of these items are resting on relatively wide (between 8 and 12m) artificial embankments or through artificial cuts through the landscape.

Due to the archaeologically sensitive nature of many areas bordering the study area, further archaeological investigation would be required should any aspect of the proposal go outside the area investigated for the archaeological survey.

## 10.8 Protection of Aboriginal Sites During Works and Unexpected Finds

An Aboriginal Heritage Management Plan (AHMP) should be prepared prior to commencement of works to delineate the location of Aboriginal sites, or portions of Aboriginal sites, within the study area. Where Aboriginal sites, or portions of Aboriginal sites, are located outside the proposed extent of impacts, those areas should be clearly identified as no-harm areas in order to remove the possibility of inadvertent impact.

Several Aboriginal sites are located in close proximity to the study area boundary. As those sites were identified using a hand-held GPS, a surveyor may be required to clearly indicate the location of the study area on the ground in relation to the recorded site location. This will assist with determining impacts and establishing no-harm areas.

The AHMP should include an unexpected finds procedure for the proposed works, including details of required Aboriginal stakeholder consultation, identification of the nature and extent of unexpected finds, and any reporting or permits that may be required prior to works recommencing.

## 11.0 RECOMMENDATIONS

### 11.1 Conclusion

Based on current designs, the proposal would cause ground-disturbing impacts to the following identified Aboriginal sites:

- RVRT AS1 (AHIMS ID 38-4-1874/ 38-4-1919)
- RVRT IF1 (AHIMS ID 38-4-1881/ 38-4-1920)
- RVRT AS2 (AHIMS ID 38-4-1875/ 38-4-1918)
- RVRT AS3 (AHIMS ID 38-4-1876/ 38-4-1917)
- RVRT IF2 (AHIMS ID 38-4-1882/ 38-4-1910)
- RVRT IF3 (AHIMS ID 38-4-1883/ 38-4-1922)
- RVRT AS 7 (AHIMS ID 38-4-1880/ 38-4-1923)
- RVRT IF4 (AHIMS ID 38-4-1884/ 38-4-1913)
- RVRT AS4 (AHIMS ID 38-4-1877/ 38-4-1915)
- RVRT AS5 (AHIMS ID 38-4-1878/ 38-4-1912)
- RVRT AS6 (AHIMS ID 38-4-1879/ 38-4-1916)
- RVRT PAD 1 (AHIMS ID 38-4-1926)
- RVRT IF8 (AHIMS ID 37-6-3806/ 37-6-3834)
- RVRT IF10 (AHIMS ID 37-6-3808/ 37-6-3832)
- RVRT IF11 (38-4-1925)
- HS2A (AHIMS ID 38-4-1583)

The following sites are immediately outside the study area and will not be impacted:

- RVRT IF5 (38-4-1885/ 38-4-1921)
- RVRT IF6 (AHIMS ID 38-4-1886/ 38-4-1911)
- RVRT IF7 (38-4-1887/ 38-4-1921)
- RVRT IF9 (37-6-3833/ 37-6-3807)

The study area boundary has been modified since the archaeological survey was conducted, resulting in removal of impacts to RVRT IF 3.

## 11.2 Recommendations and Mitigation Measures

**Table 25: Overview of recommendations and mitigation measures**

Development	Discussion
<b>Approvals</b>	<p>Should it not be possible to avoid impacting Aboriginal sites during design and construction works, an AHIP is required prior to impacts. This AHIP application must be submitted to OEH with an Aboriginal Cultural Heritage Assessment Report (ACHAR). Full consultation with Aboriginal stakeholders in accordance with the OEH consultation requirements would need to be conducted.</p> <p>Archaeological test excavation, where required, would need to take place prior to the AHIP application being submitted.</p> <p>An impact assessment would need to be prepared for any early works that result in ground disturbance, such as geotechnical investigation, to determine if an AHIP would be required prior to early works commencing.</p>
<b>Avoidance of impact</b>	<p>Detailed design for the proposal should avoid impacting identified Aboriginal sites.</p>
<b>Clarification of impacts</b>	<p>The location and extent of potential impacts to identified sites within the disturbance boundary should be determined through detailed design and finalisation of constructability documentation. There is the potential to avoid impact to recorded Aboriginal sites within the disturbance boundary by relocating the location of vehicle access and ancillary facilities, for example.</p> <p>A number of recorded Aboriginal sites are located in close proximity to the study area. Following clarification of the location and extent of impacts within the study area, a consistency check, or update to this report, must be undertaken that identifies all recorded Aboriginal sites in close proximity to the study area and whether they will be impacted by the proposed works. There is potential for an increase, or decrease, in impacts to recorded Aboriginal sites.</p>
<b>Aboriginal stakeholder consultation</b>	<p>Comprehensive Aboriginal stakeholder consultation, carried out in accordance with the OEH 'Aboriginal cultural heritage consultation requirements for proponents 2010', must be conducted for the project.</p>
<b>Archaeological test excavation</b>	<p>Three areas have been identified with moderate archaeological potential and archaeological significance. Should these sites be impacted by the proposed works, archaeological test excavation, under OEH code of practice, must take place. Areas where archaeological test excavation is recommended include:</p> <ul style="list-style-type: none"> <li>• RVRT Archaeological Complex 1</li> <li>• RVRT AS 7</li> <li>• RVRT PAD 1</li> </ul> <p>The scope of archaeological test excavation at each location, particularly RVRT Archaeological Complex 1, and RVRT PAD 1, would require</p>

Development	Discussion
	<p>clarification once the extent of proposed works in those areas is known. Test excavation at RVRT Archaeological Complex 1 would focus on undisturbed areas within the site complex that will be impacted.</p>
<p><b>Further archaeological survey</b></p>	<p>The study area boundary has been adjusted since archaeological survey was conducted for this assessment. As such, any portion of the clearance and/ or disturbance boundary outside the original investigation area must be subject to further archaeological survey. Where there are no impacts proposed within the additional areas, a heritage consultant will advise if further field survey is required.</p>
<p><b>Future changes to the study area boundary</b></p>	<p>Due to the archaeologically sensitive nature of many areas bordering the study area, further archaeological investigation must take place should any aspect of the proposal go outside the area investigated for the archaeological survey.</p>
<p><b>Aboriginal Heritage Management Plan</b></p>	<p>An Aboriginal Heritage Management Plan (AHMP) should be prepared prior to commencement of works to delineate the location of Aboriginal sites, or portions of Aboriginal sites, within the study area. Where Aboriginal sites, or portions of Aboriginal sites, are located outside the proposed extent of impacts, those areas should be clearly identified as no-harm areas in order to remove the possibility of inadvertent impact.</p> <p>Several Aboriginal sites are located in close proximity to the study area boundary. As those sites were identified using a hand-held GPS, a surveyor may be required to clearly indicate the location of the study area on the ground in relation to the recorded site location. This will assist with determining impacts and establishing no-harm areas.</p> <p>The AHMP should include an unexpected finds procedure for the proposed works, including details of required Aboriginal stakeholder consultation, identification of the nature and extent of unexpected finds, and any reporting or permits that may be required prior to works recommencing.</p> <p>In addition to identified sites within the study area, an updated AHIMS search must be conducted for the AHMP that identifies Aboriginal sites in the vicinity of the study area for the AHMP. This would identify if Aboriginal sites are located on proposed access tracks, for example.</p>
<p><b>Identification of existing AHIPs</b></p>	<p>There is potential for existing AHIPs to overlap with the study area. Further liaison with OEH should be conducted to identify where existing AHIPs overlap with the study area.</p> <p>Where existing AHIPs overlap with the study area, the proponent must liaise with the AHIP holder to ensure that all proposed works are conducted in accordance with the AHIP conditions.</p> <p>As part of this process, it must be clarified whether recorded Aboriginal site HS2A (AHIMS ID 38-4-1583) has been impacted by recent road construction works.</p>
<p><b>Review of this report</b></p>	<p>This report must be forwarded to ALALC, MLALC, and Native Title Claimants for review and comment.</p>

## 12.0 REFERENCES

- AMBS 2012. 'Hexham Relief Roads Project: Aboriginal Heritage Impact Assessment'. Report to KMH Environmental
- Cessnock City Council, 2016. 'History – our rich heritage'. Accessed online 19 October 2016  
<http://www.cessnock.nsw.gov.au/community/about-our-region/history>
- Environmental Resources Management Australia, 2003. 'Aboriginal Archaeology Retrieval Excavation – Hunter Employment Zone, Cessnock, NSW Test Excavation Report'. Report to Cessnock City Council
- Gunson, N., 'Thelkeld, Lancelot Edward (1788-1859)'. Australia Dictionary of Biography, National Centre of Biography, Australian National University. Accessed online 19 October 2016.  
<http://adb.anu.edu.au/biography/thelkeld-lancelot-edward-2734>
- JCIS Consulting, 2014. 'Report on Archaeological Monitoring of Vegetation Clearing and Geotechnical Testing – Hexham Relief Roads Project'. Report to Artefact Heritage and Upper Hunter Valley Alliance
- Maynard, J. 2000. Whose Traditional Land? Paper for the University of Newcastle (Callaghan). Accessed online 19 October 2016  
[http://www.newcastle.edu.au/\\_data/assets/pdf\\_file/0009/41868/Research-document\\_John-Maynard\\_whose-land.pdf](http://www.newcastle.edu.au/_data/assets/pdf_file/0009/41868/Research-document_John-Maynard_whose-land.pdf)
- Maynard, J., 2014. 'An Indigenous Perspective of Joseph Lycett's Art – Casting True Light and Shade on Aboriginal Life in the Newcastle Region'. National Library of Australia. Accessed online 20 October 2016.  
<https://www.nla.gov.au/blogs/behind-the-scenes/2014/12/19/an-indigenous-perspective-of-joseph-lycetts-art>
- Mills Archaeological and Heritage Services Pty Ltd, 2003. 'An assessment of Indigenous Heritage items within the proposed Northwest Residential Pty Ltd Development Area 290 and 302 Minmi Road, Fletcher near Newcastle'. Report to Monteath and Powys
- NSW National Parks and Wildlife Service, Part of the Department of Environment and Conservation (NSW), 2005. 'Lake Macquarie State Conservation Area, Pulbah Island Nature Reserve and Mood Island Nature Reserve – Plan of Management.' Accessed online 20 October 2016.  
<http://www.environment.nsw.gov.au/resources/parks/PoMLakeMacquarieSCAPulbahIslandNRMoonIslandNR.pdf>
- Potter, C., 1896. Exerpts from Historical Records of New South Wales. Vol. IV. Hunter and King. 1800, 1801, 1802. Edited by F.M. Bladen. Accessed online 20 October 2016.  
[https://downloads.newcastle.edu.au/library/cultural%20collections/pdf/1801\\_14thjune.pdf](https://downloads.newcastle.edu.au/library/cultural%20collections/pdf/1801_14thjune.pdf)
- Threlkeld, L. E., 1850. 'A key to the structure of the Aboriginal language: being an analysis of the particles used as affixes, to form the various modifications of the verbs: shewing the essential powers, abstract roots, and other peculiarities of the language spoken by the Aborigines in the vicinity of Hunter River, Lake Macquarie, etc., New South Wales: together with comparisons of Polynesian and other dialects'. National Library of Australia. Accessed online 19 October 2016  
<http://catalogue.nla.gov.au/Record/1027282>
- Umwelt, 2011. 'Sustainable Management of Aboriginal Cultural Heritage in the Lake Macquarie Local Government Area: Lake Macquarie Aboriginal Heritage Management Strategy'. Report to Lake Macquarie City Council



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