Hexham Relief Roads Project: Test Excavation Report

Prepared by Australian Museum Business Services for KMH Environmental

Final Report

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AMBS
Australian Museum Business Services - *6 College Street, Sydney NSW 2010, Ph (02) 9320 6311, Fax (02) 9320 6428*
australianmuseum.net.au/AMBS *ambs@austmus.gov.au*

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Recipient:	Darren Green Environmental Co-ordinator Upper Hunter Valley Alliance
Approved by:	Jennie Lindbergh AMBS Senior Project Manager
Primary Author:	Jenna Weston AMBS Project Officer

Executive Summary

Australian Museum Business Services (AMBS) has been commissioned by KMH Environmental (KMH), on behalf of Upper Hunter Valley Alliance (UHVA), to undertake archaeological test excavations associated with the Hexham Relief Roads Project.

Previous archaeological survey of the study area identified Aboriginal site HS1 (AHIMS site #38-4-1478) on the alluvial plain. The extent of artefactual material in this location was not consistent with the predictive model for the local area, and test excavations were recommended to clarify the nature and extent of this site. An area of PAD was inferred around Purgatory Creek, based on the visible extent of HS1. A Cultural PAD had been identified by MCH, based on an apparent relative lack of disturbance, and the importance of the area to the registered Aboriginal stakeholders. The identification of HS1 in this area suggested that this Cultural PAD may have had some archaeological potential, and test excavations were also recommended for proposed impact areas within the Cultural PAD, to clarify any such archaeological potential.

A temporary construction access road from the Tarro Interchange to Woodlands Close has potential to impact upon an area of potential archaeological deposit (PAD) associated with Aboriginal heritage site HS1 (AHIMS site #38-4-1478), as well as an area of 'Cultural PAD' identified by McCardle Cultural Heritage (MCH) (see Figure 1.2). ARTC needs to undertake geotechnical investigations in order to progress the detailed design for the construction access road, and as such, test excavations have been undertaken to determine if any subsurface Aboriginal artefacts are present within the proposed impact area. A site compound area is also proposed in this area, and to the south an area within the Cultural PAD is included within the study area/project signalling area; these areas were also subject to test excavations (Figure 1.2). However, access to the southern area of Cultural PAD was unable to be obtained prior to test excavations, and so excavations in this area were postponed. The results of these excavations will be prepared as a supplementary report, to be appended to this report.

Archaeological test excavations were undertaken as per the OEH *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (Code of Practice). The test excavation methodology was prepared by AMBS and provided to the registered Aboriginal stakeholder organisations on 12 September 2012 (see Appendix A), and OEH was notified of AMBS' intent to undertake the archaeological test excavations, on 28 September 2012.

Aboriginal site HS1 (AHIMS site #38-4-1478) was found to extend along a constructed track within the disused Hunter Water easement transected by the proposed Hexham Relief Roads corridor. Based on this evidence, it appears that this site comprises 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 stone material identified in November 2011 as HS1 appears to have been spread across the low-lying alluvial plain, perhaps by vehicles crossing the disused track.

The shell material observed in November 2011 may be assessed as unlikely to be associated with the artefactual stone material of HS1. During the preparation of the 2012 Hexham Relief Roads Project AHIA, consultation with Hunter Water confirmed that some shells in the southern part of the Hexham Relief Roads Project area (similar in size and species to the shells seen in the northern part of HS1) were brought in with bedding sand dredged from the Swansea Channel, as fill material. As the shells were located at the northern end of HS1 near an area of introduced fill associated with the Hunter Water pipeline, they are considered likely to have been introduced into

the area in the same way, rather than being associated with the artefactual stone material of HS1. They are therefore not considered to be indicative of the local Aboriginal archaeology.

Subsurface Aboriginal archaeological deposits identified during the test excavations comprised three Aboriginal stone artefacts, located in two adjacent test pits along the access road, approximately 160-180m from Purgatory Creek. These artefacts were recovered from disturbed contexts, and are likely to represent the background archaeology of the local area, rather than long-term cultural activities that would result in extensive *in situ* archaeological sites. As this Aboriginal heritage material is not considered to be associated with the material comprising Aboriginal site HS1, it has been designated as Aboriginal site HS2.

These results conform to the established local archaeological predictive model, which generally considers that the low-lying land of Hexham Swamp would have been unfavourable for camping because of water saturation. Although a background scatter of stone artefacts may occur across this landscape (as in the case of HS2), long-term cultural activities that would result in extensive *in situ* archaeological sites are considered unlikely to occur in this landscape.

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1 Introduction

Australian Museum Business Services (AMBS) has been commissioned by KMH Environmental (KMH), on behalf of Upper Hunter Valley Alliance (UHVA), to undertake archaeological test excavations associated with the Hexham Relief Roads Project.

1.1 Study Area and Proposed Development

Australian Rail Track Corporation (ARTC) is proposing to develop five new railway lines (approximately 2km in length) with associated works at Hexham, adjacent to the Pacific Highway and Hexham Railway Station. The proposed Project is located approximately 16km north west of the town of Newcastle (Figure 1.1).

Key components of the proposed Project comprise:

- Five Up Relief Roads (train lines) to the west of the existing Up Main, Down Main and Up Coal including:
    - The removal of the existing Down Coal (located to the west of the Up Coal);
    - The construction of five new train lines (tracks) for the Relief Roads;
    - The construction of a new Down Coal to the west and outside of the proposed Relief Roads;
    - Each Relief Road to accommodate trains generally comprising two or three locomotives and up to 91 wagons (1,543m long) requiring a minimum standing room of 1,670m; and
    - New turnouts, return curves and associated track changes.
- Installation of new signal infrastructure for the five Relief Roads including signal location cases, huts and gantries.
- Earth and civil works of approximately 265,000 cubic metres, including cut to fill, track formation, drainage and minor structures.
- Ancillary infrastructure including vehicle access tracks, temporary construction compounds and stockpile sites.
- Land acquisition and the upgrading of existing rail infrastructure and public utilities as required.

The estimated cost of the Project is $90 million and it is expected to take approximately 18 months to construct. The study area (also referred to as the Project Area) is within the Newcastle Local Government Area (LGA).

1.2 Background and Methodology

The Environmental Impact Statement (EIS) for the Hexham Relief Roads Project has been prepared by KMH for ARTC under Part 5.1 of the *Environmental and Planning Assessment Act 1979* (EP&A Act). AMBS prepared the *Hexham Relief Roads Project: Aboriginal Heritage Impact Assessment* assessing the Aboriginal heritage of the study area report as part of the EIS in June 2012. The EIS is currently on exhibition.

A temporary construction access road from the Tarro Interchange to Woodlands Close has potential to impact upon an area of potential archaeological deposit (PAD) associated with Aboriginal heritage site HS1 (AHIMS site #38-4-1478), as well as an area of 'Cultural PAD' identified by McCardle Cultural Heritage (MCH) (see Figure 1.2). ARTC needs to undertake geotechnical investigations in order to progress the detailed design for the construction access road, and as such, test excavations have been undertaken to determine if any subsurface Aboriginal artefacts are present within the proposed impact area. A site compound area is also proposed in this area, and to the south an area

within the Cultural PAD is included within the study area/project signalling area; these areas were also subject to test excavations (Figure 1.2). However, access to the southern area of Cultural PAD was unable to be obtained prior to test excavations, and so excavations in this area were postponed. The results of these excavations will be prepared as a supplementary report, to be appended to this report.

The Aboriginal heritage investigations undertaken for the Project follow the requirements of the Office of Environment and Heritage, Department of Premier & Cabinet (OEH; comprising the former Department of Environment, Climate Change and Water [DECCW], formerly the Department of Environment and Conservation [DEC]) guidelines as specified in the *Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (DEC 2005), the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010) and the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010). This report is also consistent with the principles of the Burra Charter *(The Australia ICOMOS charter for the conservation of places of cultural significance).*

1.2.1 Excavation Objectives

Archaeological test excavations were undertaken as per the OEH *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (Code of Practice), in order to achieve the following project objectives:

- determine if subsurface Aboriginal artefacts are present within the proposed impact area;
- analyse any recovered archaeological materials to assess the study area within the wider regional archaeological context;
- assess the significance of any Aboriginal heritage sites identified;
- provide guidance for appropriate management of impacts to Aboriginal heritage arising from the project; and
- continue consultation with the registered Aboriginal stakeholders, and ensure they are provided with the opportunity to participate in the archaeological process.

The test excavation methodology was prepared by AMBS and provided to the registered Aboriginal stakeholder organisations on 12 September 2012 (see Appendix A), and OEH was notified of AMBS' intent to undertake the archaeological test excavations, on 28 September 2012.

1.3 Authorship & Personnel

Archaeological excavation was undertaken over 11 days, from 15-29 October 2012. All Aboriginal community stakeholder organisations previously involved in the Project were consulted, and relevant organisations invited to participate in the excavation (for a list of all organisations and representatives, see Section 3). The excavation was directed by AMBS Senior Aboriginal Heritage Project Manager Christopher Langeluddecke, assisted by AMBS Project Officers Jenna Weston and Beau Spry.

This report was written by Project Officer Jenna Weston, who also undertook and prepared the project artefact analysis. Project Manager, Christopher Langeluddecke, undertook technical review of the report. AMBS Senior Project Manager Jennie Lindbergh reviewed the report for quality and consistency.

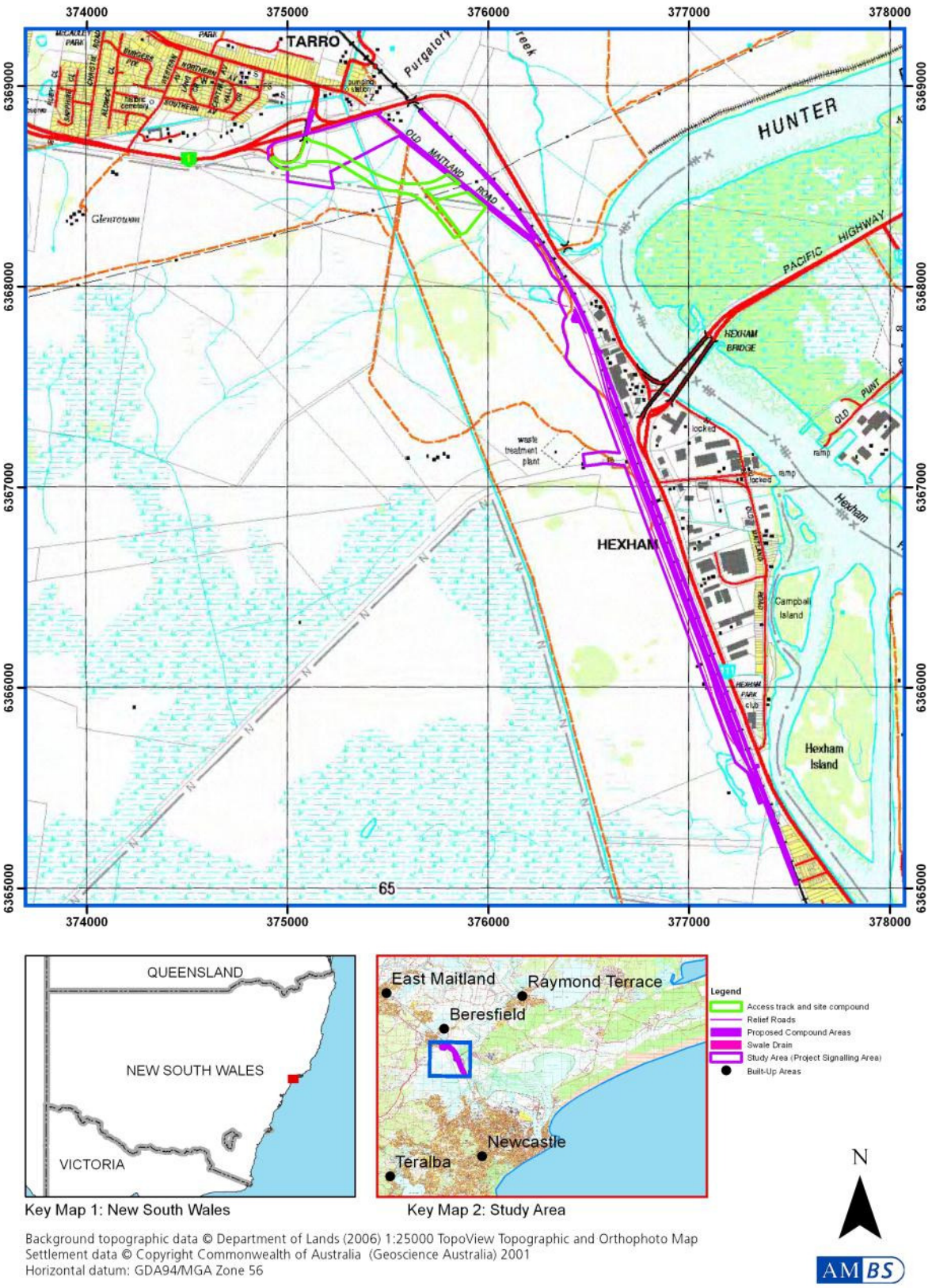

Figure 1.1 Location of the study area.

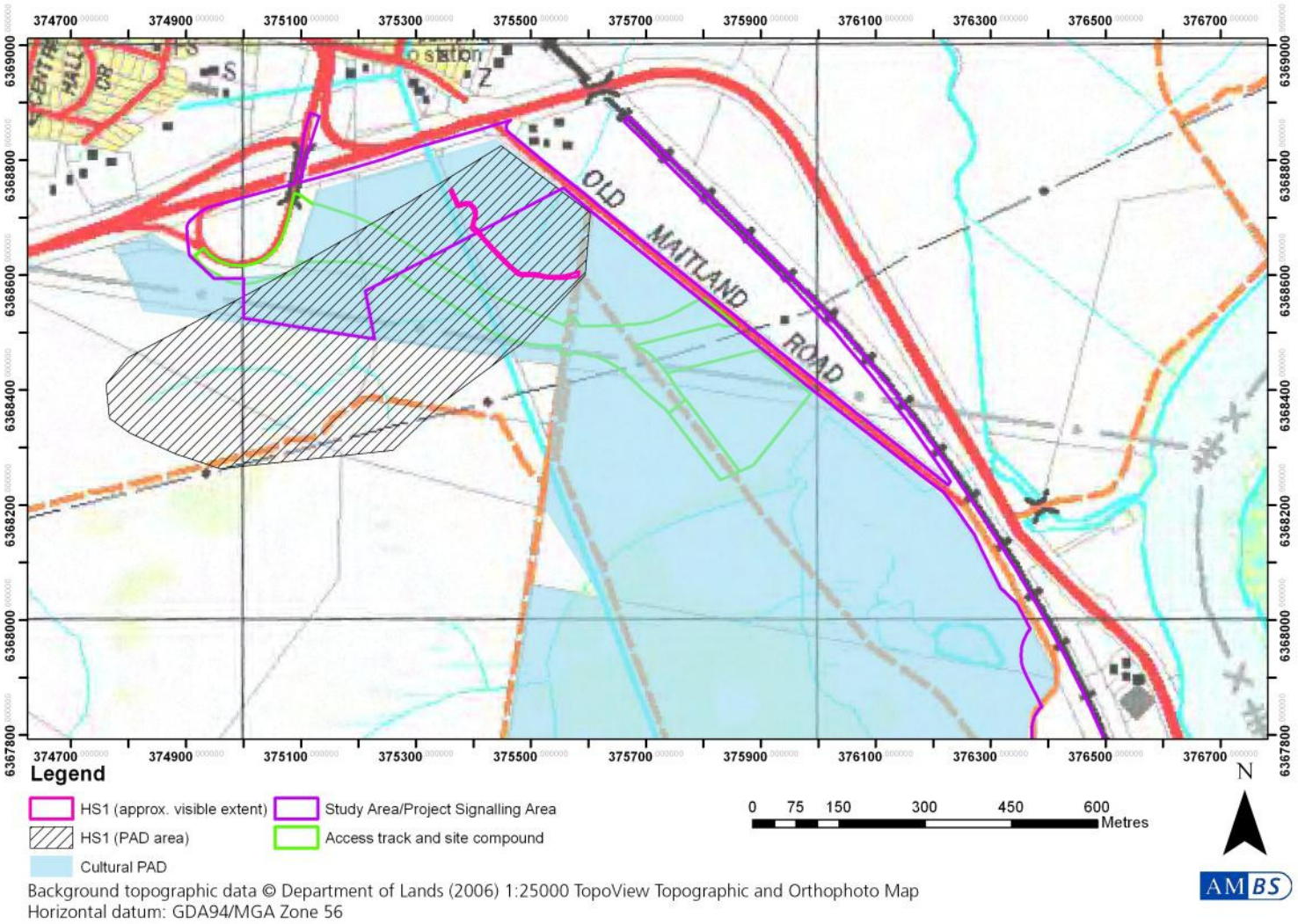

Figure 1.2 Hexham Aboriginal heritage site, PAD extents, and proposed access road, site compound and project signalling impacts.

2 Statutory Context

The conservation and management of heritage items, places, and archaeological sites takes place in accordance with relevant Commonwealth, State or local government legislation. Non-statutory heritage lists and registers, ethical charters, conservation policies, and community attitudes and expectations can also have an impact on the management, use, and development of heritage items. The relevant legislative context for the assessment, and statutory and non-statutory heritage listings for the study area, are discussed in detail in Section 10 of AMBS' 2012 AHIA of the area, and summarised herein.

This report details test excavations carried out under the *National Parks & Wildlife Amendment Regulation 2010*, which excludes activities carried out in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* from the definition of harm in the *National Parks & Wildlife Act 1974* (NPW Act). That is, test excavations such as those undertaken for the current project may be carried out in accordance with this Code of Practice, without requiring an AHIP. The Regulation also specifies Aboriginal community consultation requirements (*Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*). In addition, the Regulation adopts a Due Diligence Code of Practice which specifies activities that are low impact, providing a defence to the strict liability offence of harming an Aboriginal object.

Should the proposed development be approved as a major project under Part 5.1 of the EP&A Act the proponent will not be required to apply for future approvals or permits under the *National Parks and Wildlife Act* 1974 (Amended 2010) or the *Heritage Act* 1977. However, OEH is given the opportunity to review Part 5.1 applications, and as such, the following statutory requirements will require consideration.

2.1 *National Parks & Wildlife Act* 1974 (Amended 2010) and *National Parks & Wildlife Amendment Regulation* 2010

Under the provisions of the *National Parks & Wildlife Act* 1974 (NPW Act), all Aboriginal Objects are protected regardless of their significance or land tenure. Aboriginal Objects can include pre-contact features such as scarred trees, middens and open campsites, as well as physical evidence of post-contact use of the area such as Aboriginal built fencing and fringe camps. The NPW Act also protects Aboriginal Places, which are defined as "a place that is or was of special significance to Aboriginal culture. It may or may not contain Aboriginal objects", and may only be declared by the Minister administering the NPW Act.

Under Sections 86-87 and 90 of the NPW Act, a person must not harm or desecrate an Aboriginal place or object without the prior issue of an Aboriginal Heritage Impact Permit (AHIP). The Act requires a person to take reasonable precautions and due diligence to avoid impacts on Aboriginal objects. AHIPs may only be obtained from the Environmental Protection and Regulation Division (EPRD) of OEH. However if the project is approved under Part 5.1, Clause 115ZG(1)(d) of the EP&A Act, the project developer, ARTC, will not be required to apply for approvals or permits under the NPW Act, following the approval.

The *National Parks and Wildlife Amendment Regulation* 2010 commenced on 1 October 2010. This Regulation excludes activities carried out in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* from the definition of harm in the Act. That is, test excavations may be carried out in accordance with this Code of Practice, without requiring an AHIP. The Regulation also specifies Aboriginal community consultation requirements (*Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*).

2.2 *Environmental Planning and Assessment Act* 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) is the principal act regulating land use planning and development in NSW, and requires consideration to be given to the environment as part of the land use planning process. The EP&A Act also controls the making of environmental planning instruments (EPIs). Two types of EPIs can be made: Local Environmental Plans (LEPs), covering local government areas; and State Environment Planning Policies (SEPPs), regulate land use and development at the regional and State level and may, where relevant, include provisions for the protection of heritage items and conservation areas. LEPs can include provisions for the protection of Aboriginal objects and places.

The EP&A Act requires consideration to be given to environmental impacts as part of the land use planning process. In NSW, environmental impacts include cultural heritage impacts and as such any required Review of Environmental Factors (REF), Environmental Impact Statement (EIS) or Environmental Assessment (EA) should incorporate an assessment of Aboriginal cultural heritage. The consent authority is required to consider the impact on all Aboriginal heritage values, including natural resource uses or landscape features of spiritual importance, as well as the impact on Aboriginal Objects and Aboriginal Places.

Part 5.1, Division 1, Clause 115ZG of the Act lists the approvals and legislation that does not apply to Part 5.1 projects, which includes permits under Section 90 of the NPW Act. However, DP&I is required to fully assess the heritage impacts of any proposal under Part 5.1of the EP&A Act in accordance with established guidelines. To this end, DP&I generally provides the relevant statutory authorities the opportunity to review Part 5.1 applications for the appropriateness of the proposal to the heritage significance of items identified. The statutory authorities will advise the DP&I on the appropriate conditions of approval.

3 Aboriginal Consultation

Aboriginal community consultation is an integral part of the assessment of Aboriginal cultural heritage significance. Archaeological and heritage management best practice requires that representatives of the local Aboriginal community are included as stakeholders in decisions concerning any objects or places of significance within the study area. In addition, assessments of cultural significance, the values of a site to the Aboriginal community itself, can only be carried out by the relevant Aboriginal communities.

The aims of this consultation process are to:

- continue consultation with the Project's registered Aboriginal stakeholders;
- provide the local Aboriginal community with the opportunity to participate in the archaeological excavation;
- allow the Aboriginal community to comment on Aboriginal heritage in the study area; and
- integrate Aboriginal heritage values and management recommendations into the report.

Consultation for the Project has been undertaken in accordance with the OEH *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*. The test excavation follows on from consultation initiated by AMBS for the Project in 2011.

The registered Aboriginal community stakeholder organisations identified for the Project are:

- Awabakal Descendants Traditional Owners Aboriginal Corporation (ADTOAC);
- Awabakal Traditional Owners Aboriginal Corporation (ATOAC);
- Awabakal Local Aboriginal Land Council (ALALC);
- Awabakal Newcastle Aboriginal Co-op (ANAC);
- Arwarbukarl Cultural Resource Association (ACRA);
- Cacatua Cultural Consultants (CCC);
- Lower Hunter Wonnarua Council (LHWC);
- Mindaribba Local Aboriginal Land Council (MLALC); and
- Worimi Local Aboriginal Land Council (WLALC).

It should be noted that the test excavation areas are within the boundaries of MLALC, and that although ALALC and WLALC were consulted on the Project, they were not invited to participate in the test excavations. ADTOAC, ANAC and ACRA were also consulted, but were unable to provide community representatives to participate in the excavations.

Wonnarua Culture Heritage (WCH) registered to be involved in the consultation process during the test excavation period.

The test excavation methodology was prepared by AMBS and provided to the registered Aboriginal stakeholder organisations on 12 September 2012 (see Appendix A). The excavation was carried out over 11 days, between 15 and 29 October 2012, by AMBS archaeologists and representatives of the Aboriginal stakeholder organisations. Relevant Aboriginal stakeholder organisations were invited to provide one representative to participate over the course of the excavation. Not all of the relevant stakeholder organisations were able to participate on every day of the excavation. Some organisations also provided trainees for the excavation. Details of Aboriginal stakeholder representatives who participated in the excavation are presented in Table 3.1.

The draft report was provided to each registered Aboriginal community stakeholder organisation for review and comment, on 18 December 2012. No responses have been received by these organisations within the feedback period, as at 18 January 2013.

Table 3.1 Aboriginal community representatives participating in the test excavation

Aboriginal Organisation	Week 1				
	15/10/2012	**16/10/2012**	**17/10/2012**	**18/10/2012**	**19/10/2012**
ATOAC	Jodie Wilson	Jodie Wilson	-	Jodie Wilson	Jodie Wilson
CCC	Donna Sampson	Donna Sampson	-	Jenny-Lee Chambers, Justin Wilson	Jenny-Lee Chambers, Justin Wilson
LHWC	Lionel McGrady	Lionel McGrady	Lionel McGrady	Lionel McGrady, Tod Maley	Lionel McGrady, Tod Maley
MLALC	Jason Brown	Jason Brown	Jason Brown	Jason Brown	Jason Brown
Aboriginal Organisation	**Week 2**				
	22/10/2012	**23/10/2012**	**24/10/2012**	**25/10/2012**	**26/10/2012**
ATOAC	Jodie Wilson	Jodie Wilson	-	-	-
CCC	Jenny-Lee Chambers	Jenny-Lee Chambers	-	Jenny-Lee Chambers	Justin Wilson
LHWC	Linda Whitten	Linda Whitten	Linda Whitten	Linda Whitten	-
MLALC	Jason Brown, Peter O'Brien	Jason Brown, Peter O'Brien	Jason Brown, Peter O'Brien	Peter O'Brien	-
Aboriginal Organisation	**Week 3**				
	29/10/2012				
ATOAC	Jodie Wilson				
CCC	Justin Wilson				
LHWC	Tod Maley				
MLALC	Ricky-Jo Griffiths, Peter O'Brien				

4 Aboriginal Heritage Context

A comprehensive description of the nature of the known environment and Aboriginal archaeology of the study area is provided in Chapters 4 and 5 of the Hexham Relief Roads Project AHIA report (AMBS 2012). The following is a summary of environmental contact, and the regional Aboriginal heritage trends, which the current excavations have the potential to address.

4.1 Environmental Context

The test excavation area is underlain by deposits of gravel, sand, silt, clay, Waterloo Rock, marine and freshwater deposits from the Quaternary period (1:250,000 Geological Series Sheet S1 56-2 Newcastle). These geological formations do not tend to be sources for Aboriginal stone tool raw materials, or result in stone outcroppings suitable for art, tool-sharpening or shelters.

The Millers Forest Soil Landscape is located within the test excavation area. Millers Forest soils primarily consist of deep (>150cm), imperfectly to poorly drained Prairie Soils (Gn3.21, Gn3.23). This is an estuarine landscape comprising extensive alluvial plain on recent sediments, with elevation of 6-<3m and local relief and slopes <1m. Limitations of this soil landscape are flood hazard; permanently high watertables; seasonal waterlogging; foundation hazard; and low wet bearing strength soils (Matthei 1995:194).

4.2 Archaeological Context

Ethnographic evidence suggests that the Newcastle area was originally inhabited by the Awabakal people (Threlkeld 1892). The abundant resources of the coast, the Hunter River and Lake Macquarie indicate that the Newcastle area would have held great appeal for Aboriginal groups, and archaeological investigations have provided evidence for Aboriginal occupation throughout the region. However, investigations in the vicinity of the study area have generally concluded slightly elevated land on the margins of Hexham Swamp, with good outlook over the Swamp, seems to have been favoured by Aboriginal people for camping, rather than on the low-lying plains of the swamp. As distance from the swamp increased, Aboriginal occupation focussed more upon permanent water sources such as creeks, although such sites are not as extensive or dense as those on the Swamp margins (Brayshaw 1979, 1982, 1986, Kuskie 2007; MCH 2011; Mills 1998; Umwelt 2002).

On the basis of archaeological site locations, sites are expected to have the following distribution pattern:

- Sites are likely to be located within 200m of water sources, and on the margins of Hexham Swamp;
- Some sites are likely to have high numbers of artefacts, particularly if located on the margins of Hexham Swamp or the Hunter River; and
- Sites may occur within flat, open depression, simple slope and crest formations.

On the basis of previous archaeological information, sites are expected to contain:

- Flaked stone artefacts;
- Frequent artefact types would include flakes (including broken flakes);
- Cores and tools are less frequent within assemblages;
- Artefacts would be made predominantly from silcrete and Indurated Mudstone/Tuff/Chert (IMTC), with smaller amounts of quartz and other materials; and
- Sites could contain high numbers of stone artefacts, particularly on the margins of Hexham Swamp.

Artefact types identified in the Hunter region include eloueras, scrapers, backed artefacts, geometric microliths and pebble implements. Heat treatment has been associated with technological developments in the Holocene (Mulvaney & Kamminga 1999:233). Experiments on stone material from the Hunter region revealed that heat treatment of silcrete materials resulted in improvements in texture as well as a marked change in colour; whilst heat treatment of well silicified mudstone resulted in only a marginal improvement in texture, although it also produced a marked change in colour (Moore 2000:34).

4.2.1 Background to the Test Excavations

Archaeological test excavations were to be undertaken in an area of PAD associated with Aboriginal heritage site HS1 (AHIMS site #38-4-1478) identified by AMBS within the proposed Hexham Relief Roads Project area; and within an area of Cultural PAD identified through the Aboriginal community consultation process undertaken by MCH for proposed development adjoining the Hexham Relief Roads.

HS1 consists of a scatter of predominantly chert (also known as Indurated Mudstone/Tuff/Chert [IMTC]), quartz and volcanic artefacts exposed along an informal vehicle track on the margin of Hexham Swamp, which crosses Purgatory Creek. The area of PAD associated with HS1 has been defined as an area within 100m of the creek, and assumes that any associated sub-surface archaeological deposit would most likely be present in highest density within that distance. Additional information regarding the site, its environment, and the assessment of significance and archaeological potential is detailed in AMBS' 2012 *Hexham Relief Roads Project: Aboriginal Heritage Impact Assessment* report.

The Cultural PAD had been identified on the basis of the relative lack of disturbance, and the importance of the area to the registered Aboriginal stakeholders, who considered that the area was likely to contain evidence of Aboriginal occupation. While the Cultural PAD is located within low-lying land adjoining Hexham Swamp, and may have been unfavourable for camping due to water saturation, the presence of the HS1 site suggested that relatively intact archaeological deposit of some rarity and complexity had potential to survive within the wider Cultural PAD area.

5 Test Excavation Methodology

Archaeological test excavations within the Hexham Relief Roads Project area were undertaken in compliance with Section 3.1 of OEH's *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010). The detailed excavation sampling strategy provided to the registered Aboriginal stakeholders is presented in Appendix A, and is summarised in this section.

5.1 Test Excavation Sampling Strategy

As identified in Section 1.2, the archaeological test excavation sampled two areas within the Hexham Relief Roads Project area. These were the access road, sampling the alluvial plain associated with the HS1 PAD area and the Cultural PAD, and the site compound, sampling the alluvial plain associated with the Cultural PAD (see Figure 1.2).

The Hexham Relief Roads Project area is approximately 39 hectares (390,000m^2) in size. The PAD associated with HS1 is approximately 249,800m^2 in size, and the Cultural PAD is approximately 1,124,000m^2 in size. In line with the OEH Code of Practice, 34 50cm x 50cm test pits were manually excavated along one transect in the access road area, and 11 in one transect in the site compound area; a total of 45 test pits. The test excavation area did not exceed 0.5% of either PAD. The access road test excavation transect is approximately 700m long, and test pits were placed at 20m intervals; the transect in the site compound is approximately 200m long, and pits were placed at 20m intervals. Test pit locations were offset up to 5m along excavation transects where their location was obscured by standing water, or obviously disturbed by features such as infrastructure or pastoral trampling. Excavation transect locations are discussed in further detail in Section 5.3.

5.2 Excavation Methodology

All archaeological test pits were manually excavated using shovels, mattocks and trowels as appropriate. Dependant on the cultural material present and the nature of the deposit, excavation was to be undertaken in stratigraphic units or arbitrary spits (5cm or 10cm in depth). Each test pit was excavated until it was determined that a culturally sterile deposit was reached, or to a depth of 1m, or until the water table was reached, whichever occurred first. Due to OH&S restrictions and limitations with hand excavating 50cm x 50cm squares, test pits were not able to be dug more than a metre deep. Test pits were numbered sequentially as HRR01 through HRR45, and Geocentric Datum of Australia (GDA94) co-ordinates of each pit were taken using a Garmin Oregon 300 handheld GPS unit. Information was recorded on standard unit recording forms (see Appendix B).

Each test pit was photographically recorded using a Fuji Finepix HS 20 EXR digital SLR camera during excavation, and stratigraphic sections were to be drawn where distinct soil horizons or features were encountered. Soil and carbon samples were to be collected where appropriate and available, and measurements of the pH of soils were made within soil horizons where appropriate. All material excavated was wet sieved on-site through nested 8mm and 5mm hand sieves, and all pits were backfilled by UHVA on completion of the excavation.

5.2.1 Artefact Analysis

All excavated archaeological material was analysed on a comparable level with previous analyses of excavated assemblages from the region. Information derived from this analysis was to be used to formulate interpretations about site extent and integrity, Aboriginal site use, antiquity and settlement patterns of the study area, and to assess regional cultural heritage values, where appropriate. Analysis of the excavation results will allow a reassessment of the archaeological and cultural significance of the study area, in relation to the archaeological context of the surrounding lands.

A keeping place for any archaeological materials recovered from the Hexham Relief Roads Project area is to be determined during the preparation of an Aboriginal Heritage Management Plan (AHMP) for the Project (see AMBS 2012:Recommendation 1). Artefacts recovered during the test excavation will be deposited in this keeping place, once the location is finalised.

5.3 Test Excavation Areas

The test excavation areas are located on an alluvial plain, near the margins of Hexham Swamp and c.600m-1500m from the Hunter River. The proposed access road crosses a second order stream, Purgatory Creek. These represent reliable water sources in the local area. The area has been cleared and maintained for grazing, and also contains numerous access tracks, pipelines and electrical transmission lines.

The areas to be tested have no archaeological exposure or visibility, however they were determined to have archaeological potential based on their association with the visible exposure of HS1, the landforms in which they are located, their relationship to Purgatory Creek, and cultural information provided during the Aboriginal consultation process. Test excavation aimed to determine the presence or absence of Aboriginal cultural material within the proposed impact area, and allow development of appropriate management recommendations should archaeological material be present. The test excavations comprised 34 archaeological test pits along the proposed access road, and 11 archaeological test pits within the proposed site compound area, as detailed in Table 5.1, and shown in Figure 5.1-Figure 5.4.

Figure 5.1 Access road excavation area (view to south west).

Figure 5.2 Site compound excavation area (view to south west).

Table 5.1 Archaeological excavation test pit details

Excavation Test Pit	Area	Area excavated	Easting	Northing	Landform
HRR01	Access road	0.25m²	375788	6368538	Alluvial plain
HRR02	Access road	0.25m²	375771	6368526	Alluvial plain
HRR03	Access road	0.25m²	375752	6368517	Alluvial plain
HRR04	Access road	0.25m²	375734	6368508	Alluvial plain
HRR05	Access road	0.25m²	375713	6368501	Alluvial plain
HRR06	Access road	0.25m²	375697	6368494	Alluvial plain
HRR07	Access road	0.25m²	375676	6368494	Alluvial plain
HRR08	Access road	0.25m²	375656	6368493	Alluvial plain
HRR09	Access road	0.25m²	375670	6368470	Alluvial plain
HRR10	Access road	0.25m²	375651	6368477	Alluvial plain
HRR11	Access road	0.25m²	375636	6368491	Alluvial plain
HRR12	Access road	0.25m²	375616	6368492	Alluvial plain
HRR13	Access road	0.25m²	375597	6368494	Alluvial plain
HRR14	Access road	0.25m²	375577	6368495	Alluvial plain
HRR15	Access road	0.25m²	375553	6368494	Alluvial plain
HRR16	Access road	0.25m²	375533	6368498	Alluvial plain
HRR17	Access road	0.25m²	375518	6368500	Alluvial plain
HRR18	Access road	0.25m²	375500	6368504	Alluvial plain
HRR19	Access road	0.25m²	375474	6368510	Alluvial plain
HRR20	Access road	0.25m²	375424	6368534	Alluvial plain
HRR21	Access road	0.25m²	375390	6368557	Alluvial plain
HRR22	Access road	0.25m²	375372	6368568	Alluvial plain
HRR23	Access road	0.25m²	375360	6368577	Alluvial plain
HRR24	Access road	0.25m²	375344	6368589	Alluvial plain
HRR25	Access road	0.25m²	375324	6368601	Alluvial plain
HRR26	Access road	0.25m²	375309	6368610	Alluvial plain
HRR27	Access road	0.25m²	375290	6368623	Alluvial plain
HRR28	Access road	0.25m²	375271	6368630	Alluvial plain
HRR29	Access road	0.25m²	375255	6368641	Alluvial plain
HRR30	Access road	0.25m²	375237	6368647	Alluvial plain
HRR31	Access road	0.25m²	375175	6368666	Alluvial plain
HRR32	Access road	0.25m²	375157	6368668	Alluvial plain
HRR33	Access road	0.25m²	375138	6368670	Alluvial plain
HRR34	Access road	0.25m²	375222	6368653	Alluvial plain
HRR35	Site compound	0.25m²	375971	6368396	Alluvial plain
HRR36	Site compound	0.25m²	375950	6368398	Alluvial plain
HRR37	Site compound	0.25m²	375931	6368403	Alluvial plain
HRR38	Site compound	0.25m²	375912	6368405	Alluvial plain
HRR39	Site compound	0.25m²	375891	6368407	Alluvial plain
HRR40	Site compound	0.25m²	375871	6368409	Alluvial plain
HRR41	Site compound	0.25m²	375851	6368411	Alluvial plain
HRR42	Site compound	0.25m²	375834	6368412	Alluvial plain
HRR43	Site compound	0.25m²	375820	6368419	Alluvial plain
HRR44	Site compound	0.25m²	375799	6368420	Alluvial plain
HRR45	Site compound	0.25m²	375774	6368424	Alluvial plain

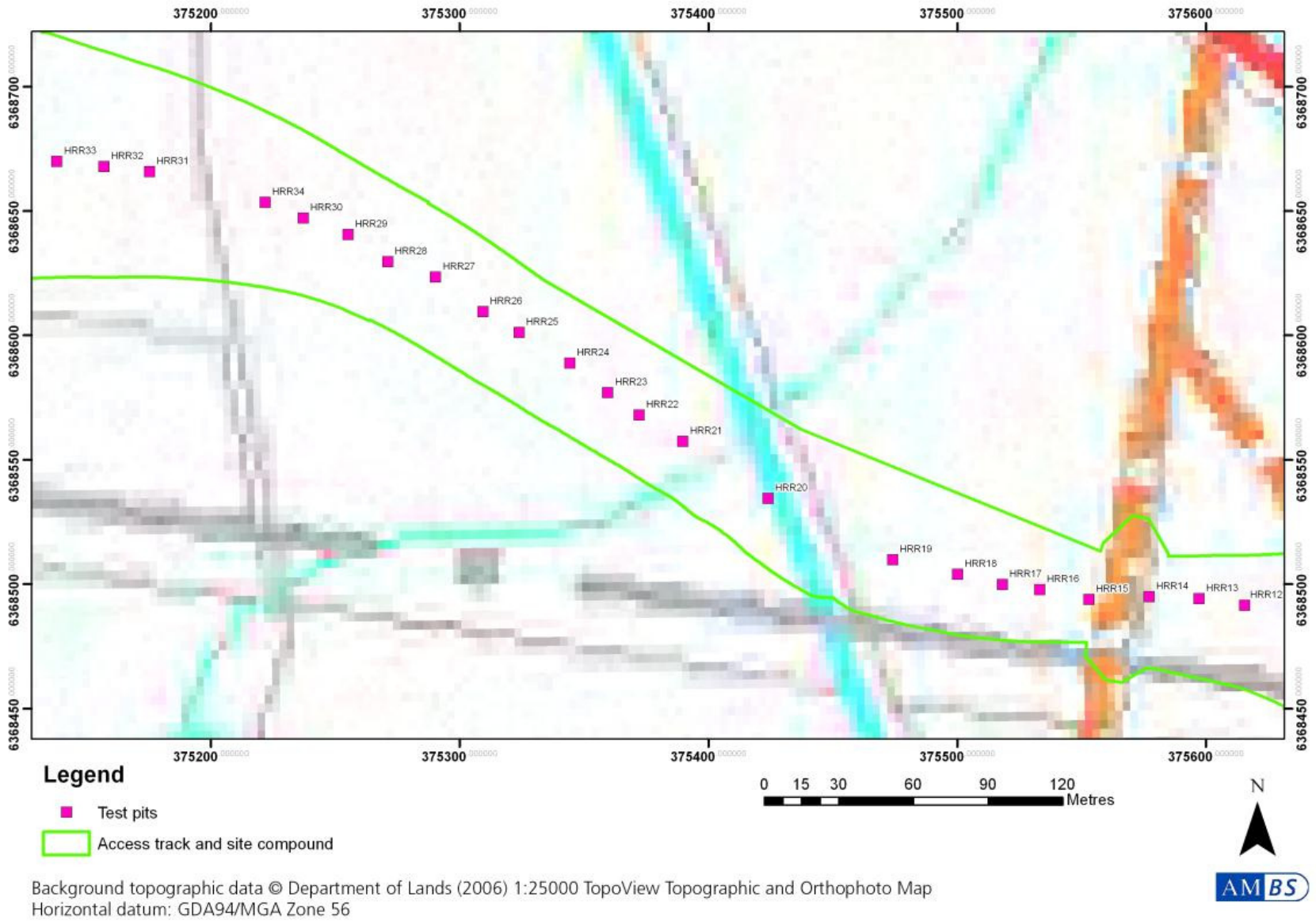

Figure 5.3 Archaeological test pit locations at western end of access road.

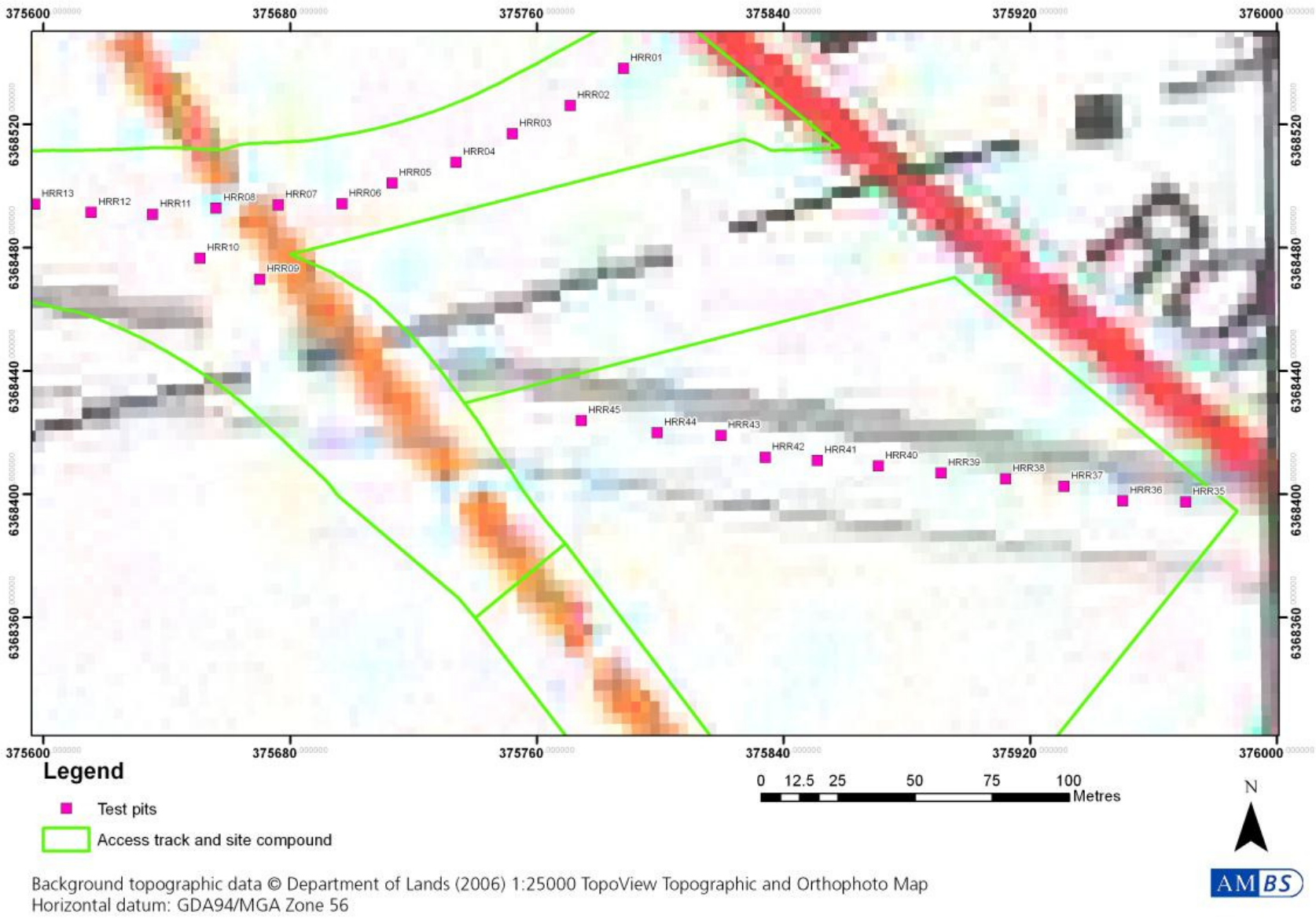

Figure 5.4 Archaeological test pit locations in site compound and eastern end of access road.

6 Results

6.1 Site HS1 (AHIMS site #38-4-1478)

During the course of the excavation, Aboriginal site HS1 (AHIMS site #38-4-1478) was identified as extending along a constructed track within the disused Hunter Water easement transected by the proposed Hexham Relief Roads corridor. The track has been constructed above the local ground level to prevent inundation, and comprises pale yellow sandy soils that are unlike any observed elsewhere in the study area, or throughout the archaeological test excavations.

Artefactual stone material was identified both on the track surface and as large flaked cobbles set into the verges (Figure 6.1-Figure 6.5). The artefactual stone material comprised grey/orange IMTC, with evidence of heat shatter, platform preparation, and flaking ripples; however, the majority of artefacts showed signs of extensive damage from vehicle use of the track (Figure 6.3, Figure 6.5-Figure 6.6). It is noted that there is an Aboriginal silcrete quarry located near the study area, but none of the artefactual material observed on the track was made of silcrete material. Further, no artefactual material was observed on other access tracks within the study area, suggesting that the material is confined to this particular disused track.

In order to allow confirmation that the HS1 artefacts were located only within the constructed track, test pits directly adjacent, HRR07 and HRR08, were excavated to the current water table, well into souls previously assessed as culturally sterile. No artefactual material was identified in these test pits, and soils observed were consistent with those from all other excavated pits, and completely unlike those observed in the track surface.

AMBS therefore concludes that the HS1 site comprises artefactual stone material that has been brought to the area during the construction of the track, and that the material is not indicative of the local Aboriginal archaeology. The artefactual stone material identified in November 2011 as HS1 appears to have been spread across the low-lying alluvial plain by vehicles crossing the disused track.

The shell material observed in November 2011 is now assessed as unlikely to be associated with the artefactual stone material of HS1. During the preparation of the 2012 Hexham Relief Roads Project AHIA, consultation with Hunter Water confirmed that some shells in the southern part of the Hexham Relief Roads Project area (similar in size and species to the shells seen in the northern part of HS1) were brought in with bedding sand dredged from the Swansea Channel, as fill material. As the shells were located at the northern end of HS1 near an area of introduced fill associated with the Hunter Water pipeline, they are considered likely to have been introduced into the area in the same way, rather than being associated with the artefactual stone material of HS1. They are therefore not considered to be indicative of the local Aboriginal archaeology.

Figure 6.1 View of disused access track where artefacts have been introduced (view to south-east).

Figure 6.2 View from middle of disused access track where artefacts have been introduced (view to north-west).

Figure 6.3 IMTC stone core showing old flaking scars (below), and recent damage (upper right corner).

Figure 6.4 IMTC stone core on edge of disused access track (view to south-east).