EVERICK
Heritage Consultants Pty Ltd

ABN 78102206682

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ABORIGINAL

CULTURAL HERITAGE ASSESSMENT

FOR THE PROPOSED COMMUNITY
RESIDENTIAL DEVELOPMENT OF

COBAKI LAKES, TWEED HEADS, NSW

Prepared for Leda Manorstead

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Innovative Heritage Solutions

EXECUTIVE SUMMARY

The following report presents the results of an Aboriginal Cultural Heritage Assessment at the proposed Cobaki Lakes Development (the 'Subject Lands'), Tweed Heads in northern coastal New South Wales (Figures 1 and 2). It proposes a number of recommendations that will facilitate the immediate protection of areas identified as containing, or are highly likely to contain, items of cultural heritage significance. The recommendations in this report are supported by a Cultural Heritage Management Plan ('CHMP'), which will be submitted to the NSW Department of Planning with this report. The CHMP provides the commitments Leda Manorstead Pty Ltd ('the Developer') intends to adopt over the management of Aboriginal cultural heritage within the Subject Lands. This report provides the theoretic basis for those management practises.

Everick Heritage Consultants ('Everick') understands that application is being made by Leda Manorstead Pty Ltd ('the Developer') to the Director General, Department of Planning for consideration of a Concept Plan comprising residential development, town centre, schools and open space. As part of fulfilling its obligations to identify and protect Aboriginal cultural heritage within the site, the Developer has engaged Everick to undertake archaeological investigations and community consultation over the cultural values of the Subject Lands.

Prior to surveying the Subject Lands, Everick undertook background research on relevant previous studies in the region, aerial photography and records of past land use. A search of the Department of Environment, Climate Change and Water's ('DECCW') Aboriginal Heritage Information Management System ('AHIMS') register found no known cultural heritage sites located on the Subject Lands. The Bundjalung Mapping Project database was also consulted. There were no records of archaeological sites on the Subject Lands, although a number of sites have been identified in adjoining lands to the northeast and west. The Subject Lands were surveyed for archaeological sites twice previously (Hall 1990a and Lilley 1981). In both cases no Aboriginal cultural heritage was found. In his report, Hall noted the highly disturbed nature of the site.

Also informing this assessment have been the results of recent assessments on nearby properties. An extensive survey and excavation program was undertaken by OzArk (2007) on the nearby Tugun Bypass, revealing extensive subsurface deposits of cultural material. A survey by EYL (2006) on adjacent lands to the west indicated that archaeological material might be found in the hills and ridges of the Subject Lands. The results of these surveys were an important guide as to the likely pattern of site distribution within parts of the Subject Lands.

Everick has been informed that the Cobaki Lakes Development has been in the planning stages for nearly 20 years. During this time, and through the past land uses, the Subject Lands have been highly disturbed. Initial earthworks have been conducted in preparation for the development, and little of the original native vegetation exists due to extensive clearing (Figure 3). Because of this high level of disturbance, Everick undertook an archaeological survey focusing on undisturbed lands identified for development where there was a reasonable likelihood of making cultural heritage finds. The survey was undertaken as a precursor to Aboriginal community consultation, to be used to inform discussions on likely site distribution. It concentrated on the area of sand rises on the western side of the Cobaki Broadwater, the cleared pastureland in the north and southwest of the Subject Lands and on a ridgeline in the centre of the Subject Lands (Figures 15 - 17). This survey identified a number of isolated finds within the pastureland, and some sites with shell and artefacts within the eastern and southern portions of the central Sand Ridge.

Additionally, there are other heritage values besides archaeological ones contained within the site. Consultation with the Aboriginal community has been an important part of this assessment. Everick has undertaken extensive consultation with the Aboriginal people of the Tweed and surrounding regions. This consultation has been undertaken in accordance with the DECCW's *Draft Interim Community Consultation Guidelines for Applicants* (2005). This involved the identification of Aboriginal persons who had an interest in the cultural heritage values of the Subject Lands. The registered Aboriginal Stakeholders for the project informed Everick that the Subject Lands are situated within an important cultural landscape. A statement of significance is provided in Section 8 of this report. The Aboriginal Stakeholders view the Subject Lands as part of a highly significant cultural landscape. The Subject Lands were known to be a favourite campsite and area of trade prior to European settlement. While no secret or sacred sites were identified by the Aboriginal Stakeholders within the Subject Lands, there are known to be many within just a few kilometres. The Aboriginal Stakeholders have expressed the importance of retaining as many sites as possible within the Subject Lands. They demonstrate the traditional lifeways of Aboriginal people over the region, and represent a tangible connection for the Aboriginal people of the Tweed to the lives of their ancestors.

In consultation with the Aboriginal Stakeholders, a test excavation strategy was developed that targeted two areas considered likely to contain significant subsurface deposits of cultural material. These have been termed the Sand Ridge and the Mid-Lower Back Slopes (Figure 5). Excavations were undertaken over a period of seven weeks from 17 August 2009. Detailed discussion on the results of the excavations is contained in Section 6.

A total of 3,871 artefacts were recovered from surface collection and subsequent excavation of these sites. Additionally over 17kg of shell was recovered from the Sand Ridge, representing at least 10 species from coastal and estuarine environments. The excavations uncovered significant cultural deposits in the south eastern portion of the Sand Ridge. Another potential find of high cultural and archaeological significance was made further north along the Sand Ridge at a depth of approximately 1.8 m. Both of these areas have been recommended for preservation as Cultural Heritage Parks. Thermoluminescence (TL) dates for the sands associated with artefacts are being processed at the time of publishing this report.

The Mid-Lower Back Slopes also contained significant cultural deposits, although generally less so than the Sand Ridge, owing predominately to poor site preservation. One area that contained a high concentration of backed blades has been identified as being of high cultural significance and will be preserved as a Cultural Heritage Park. Five other Cultural Heritage Parks will be placed across the Mid-Lower Back Slopes to ensure a representative sample of cultural material is conserved.

RECOMMENDATIONS

It is intended that these recommendations provide the founding principles on which the Cultural Heritage Management Plan submitted with this document is based.

The following recommendations are based upon:

- the desktop study (Sections 4.1,4.2)
- assessment of aerial photography (Figure 2)
- field inspection (Section 4.5)
- Aboriginal Stakeholder consultation

It is intended that these recommendations provide the key management practises on which the Cultural Heritage Management Plan submitted with this assessment is based.

Recommendation 1: Cultural Heritage Parks

It is recommended that a series of Cultural Heritage Parks ('CHP's') be established around the Subject Lands in areas which will ensure that a representative sample of the cultural material will be retained.

All CHP's within the Back Paddock (CHP's 1 – 7) will each be a minimum of 400 m^2. The plan in Figure A identifies the areas within which the CHP's will be located ('CHP General Area'). All CHP's within the Back Paddock require adherence to the following procedures:

(a) The CHP General Areas will be marked on all working plans as areas where Construction works are not to be undertaken.
(b) The CHP's will be fenced with temporary fencing around their boundaries as shown in Figure A. At such time as final boundaries are known they fencing may be altered to reflect this.
(c) The CHP's will not be impacted by any Construction works and the temporary fencing will remain in place until:
    a. where CHP's will be covered in soil to a depth greater than 50cm, the Cultural Heritage Consultant and a Monitor is present to supervise the initial deposit and compacting of the fill; or
    b. where the CHP's will be left uncovered or covered in soil to a depth of less than 50cm, at such times as the Signage and Landscaping procedures (Concept Plan CHMP Paragraph 14) have been implemented.

All CHP's within on the Sand Ridge (CHP's 8 – 10) are of a fixed minimum size. The plan in Figure B identifies the boundaries of CHP's 8 - 10. All CHP's on the Sand Ridge require adherence to the following procedures:

(a) The CHP's will be marked on all working plans as areas where Construction works are not to be undertaken.
(b) The CHP's will be fenced with temporary fencing around their boundaries as shown in Figure B.
(c) The CHP's will not be impacted by any Construction works and the temporary fencing will remain in place until such times as the Signage and Landscaping procedures (Concept Plan CHMP Section 14) have been implemented.

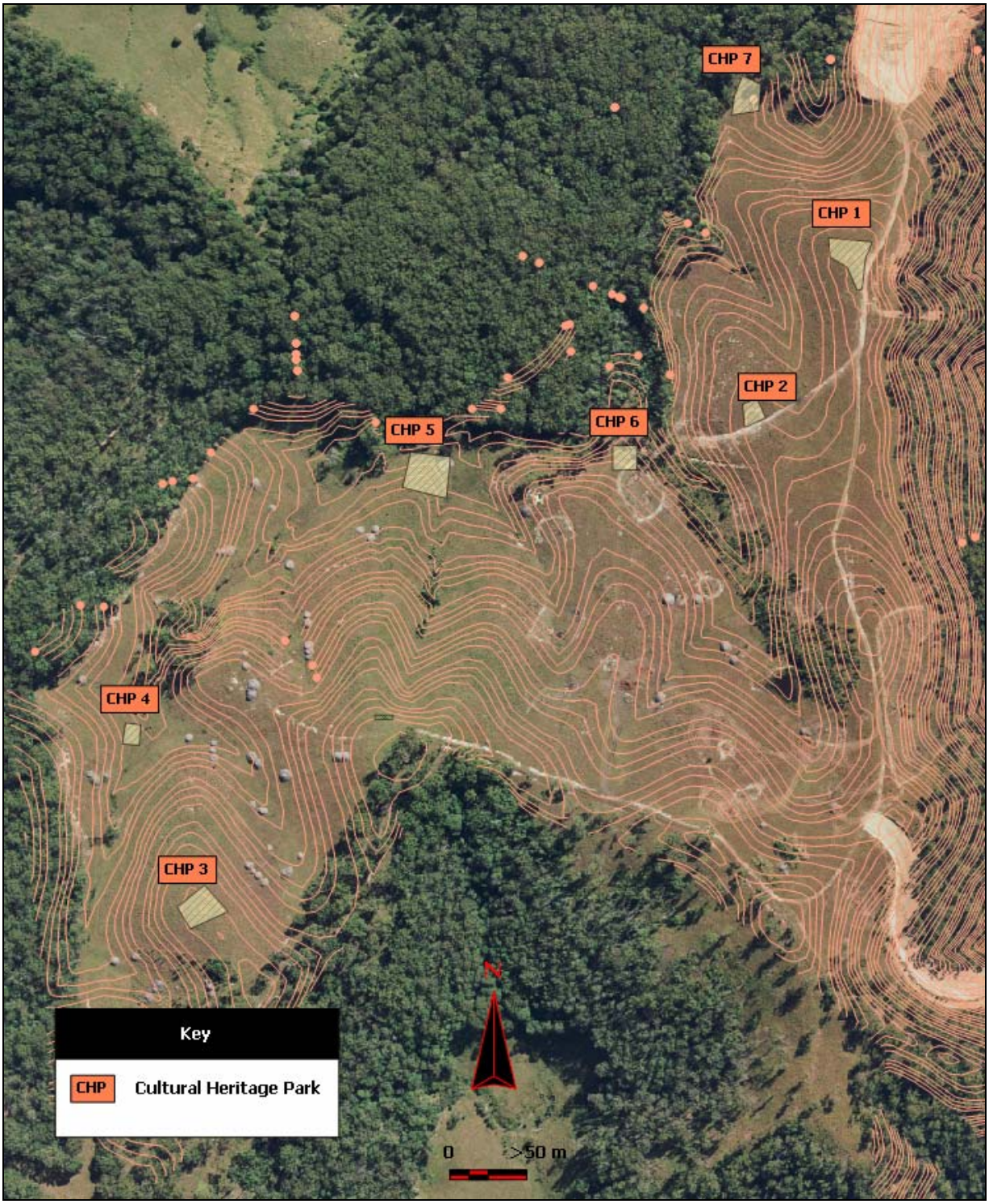

Figure A: Back Paddock Cultural Heritage Parks – General Locations

Figure B: Sand Ridge Cultural Heritage Parks – Fixed Locations

Recommendation 2: Cultural Heritage Protection Area

Archaeological modeling for the Subject Lands confirms that the areas identified in this assessment as Cultural Heritage Protection Areas (Figure C) will contain a representative sample of the type and distribution of artefacts within the Back Ridge. Because many Aboriginal Objects within the Back Ridge will be lost during Construction, it is appropriate that particular care be taken when undertaking activities within the Cultural Heritage Protection Areas.

It is recommended that the following activity response hierarchy be adopted for minor development activities with the Cultural Heritage Protection Areas:

Disturbance	***Examples***	***Monitoring Activity***
No/Minimal Ground Surface Disturbance	• Noxious weed control using poisons • bushfire hazard reduction • professional surveys or site investigation activities	None Required
Minimal Ground Surface Disturbance	• Pathways and walking tracks not requiring excavation • Erection of signage • Landfill (not Cut)	Pre-Construction survey by one monitor
Ground Surface Disturbance and Minimal Subsurface Disturbance	• Fencing • Paths and Walking Tracks requiring excavation • Construction of public amenities such as toilets and shelters. • Minor drainage or sewage works	Pre-Construction survey by one Monitor. Monitoring of initial subsurface disturbance by two Monitors.
Significant Subsurface Ground disturbance	• Roads • Clearing using a bulldozer • Ground surface modification involving removal of topsoil for the purposes constructing parks or building pads. • Large stormwater or sewage works.	Pre-Construction survey by one Monitor. Hand Test Pits by three Monitors and a qualified archaeologist, in accordance with the Test Pit Procedure. Monitoring of initial subsurface disturbance by two Monitors.

Figure C: Cultural Heritage Protection Areas

Recommendation 3: Signage and Landscaping

It is recommended that the Registered Aboriginal Stakeholders and the broader Aboriginal community of the Tweed Valley will be invited to participate in the design of open space/public park landscaping and interpretative cultural signage for locations near any known Aboriginal Sites and areas of cultural significance. This is viewed by the Registered Aboriginal Stakeholders as an important part of maintaining connections to Country.

Recommendation 4: Cautionary Principle

It is recommended that all effort must be taken to avoid any impacts on Aboriginal cultural heritage values at all stages during the development works. If impacts are unavoidable, mitigation measures should be negotiated between the Developer and the Aboriginal Community.

Recommendation 5: Inductions on Aboriginal Culture and Tradition

It is recommended that contractors or employees of the Developer who are engaged in earthworks or subsurface disturbance on the Subject Lands should be given induction training on how to identify Aboriginal cultural material and why it is important that it is preserved.

Recommendation 6: Care and Control of Cultural Material

It is recommended that any Aboriginal cultural material removed from the Subject Lands be catalogued and handed into the care and control of the Tweed Byron LALC.

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DEFINITIONS

The following definitions apply to the terms used in this report:

AHIMS means the DECCW Cultural Heritage Unit Aboriginal Heritage Information Management System.

Back Paddock means the area identified as the Back Paddock in Figure 28.

Burra Charter means the International Council of Monuments and Sites ('ICOMOS') *Burra Charter* (1999).

Cultural Material means Aboriginal Objects, as defined in the NPW Act.

DECCW means the New South Wales Department of Environment, Climate Change and Water.

Developer means Leda Manorstead Pty Ltd and all employees and contractors of the Developer.

Development means all activities associated with the proposed subdivision within the Subject Lands, including activities undertaken by subsequent landholders.

DOP means the New South Wales Department of Planning.

EPA Act means the *Environmental Planning and Assessment Act 1979* (NSW).

Front Paddock means the area identified as the Front Paddock in Figure 28.

LGA means Local Government Area.

ICCR Guidelines means the DECCW *Interim Community Consultation Requirements for Applicants* (2005).

Mid – Lower Back Slopes means the area identified as the Mid to Lower Back Slopes in Figure 5.

NPW Act means the *National Parks and Wildlife Act 1974* (NSW).

Sand Ridge means the area identified as the Sand Ridge in Figure 5.

Subject Lands means the area identified in Figure 2, described as: Lot 228 on DP 755740; Lot 305 on DP 755740; Lot 1 on DP 570076; Lot 205 on DP 755740; Lot 206 on DP 755740; Lot 209 on DP 755740; Lot 199 on DP 755740; Lot 54 on DP 755740; Lot 55 on DP 755740; Lot 46 on DP 755740; Lot 200 on DP 755740; Lot 201 on DP 755740; Lot 202 on DP 755740; Lot 2 on DP 566529; Lot 1 on DP 562222; Lot 1 on DP 570077 and Lot 1 on DP 823679.

The Consultant means qualified archaeological staff and/or contractors of Everick Heritage Consultants Pty Ltd.

Tweed Byron LALC means the Tweed Byron Local Aboriginal Land Council.

GLOSSARY OF ARCHAEOLOGICAL TERMS:

The following archaeological terms which are used in this report come from Hiscock and Attenbrow (1997) and Burke and Smith (2004):

Aboriginal Object means any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains.

Amorphous: Non-crystalline, without definite structural parts.

Artefact: Any object which is physically modified by humans.

Attribute: A physical characteristic of an artefact.

Axe: A stone-headed axe or hatchet or the stone head alone. Characteristically contains two ground surfaces which meet at a bevelled edge.

Backed: When one margin of a flake is retouched at a steep angle, and that margin is opposite to a sharp edge, both the margin and the artefact are said to be backed.

Backed Artefact: Retouched backed flake. For issues of nomenclature in Australia see “Backed into a corner”.

Behaviour: The observable actions of an organism.

Bevelled Edge: An edge which has had its angle altered. Often a result of Turning the Edge.

Bifacial Flake: A chipped stone artefact which has flake scars on both surfaces. Such artefacts generally have lenticular cross-sections and platforms which are edges between the flaked surfaces.

Bipolar: Technique of knapping where a core is rested on an anvil and force applied into the core at an angle close to 90^{o} in the direction of the core's contact with the anvil.

Bulbar Scar: The negative scar that results from the bulb of force.

Bulb Of Force: The bulb of force is a convex protuberance located at the proximal end of the ventral surface of a flake, immediately below the ring crack. Also called the Positive Bulb of Force or simply 'the bulb'.

Chalcedony: Transclucent, clear to dusky microcrystalline/cryptocrystalline quartz with conchoidal to subconchoidal fracture capable of holding a sharp edge.

Chert: 1. Rock: A siliceous sedimentary rock composed of micro-organisms or precipitated silica grains. Occurs as nodules, lenses or layers in limestone and shale. Grey-coloured lithics with softer exterior and inferior subconchoidal fracturing.

Conjoin: A physical link between artefacts broken in antiquity.

Core: A stone which has had flakes removed and demonstrates one or more negative flake scars but no positive flake scars.

Cortex: Weathered outer surface of rock, usually chemically altered.

Crazing: Production of visible surface cracks by uncontrolled heating of rock.

Dorsal Surface: The face of a flake which was the outside core surface prior to flake removal and may therefore retain negative flake scars or cortex.

Edge: The junction of two surfaces of a body.

Edge Damage: The removal of small flakes from the edge of an artefact.

Face: One of the surfaces an artefact may possess - see Dorsal and Ventral

Flake: 1. Any piece of stone fractured from a larger mass by the application of an external force. 2. The piece of stone struck off a core. It has a series of characteristics showing that it has been struck off. The most indicative of these features are ringcracks, showing where the hammer hit the core. Also the ventral surface may be deformed in characteristic fashion, for example having a bulb or eraillure.

Flaked Piece: A chipped artefact which cannot be classified as a flake, core, or retouched flake but is clearly an artefact.

Flaking: The process of fracturing stone by the application of an external force.

Greywacke: Hard fine-grained rock of variable composition containing some quartz and felspar but mostly very fine particles of rock fragments.

Grinding: The manual abrasion of an artefact accomplished by rubbing it with an abrasive stone and / or grit.

Grindstone: 1. Any artefact which has been ground. 2. The abrasive stone used to abrade another artefact or to processes food. Unlike flakes which are generally made from fine-grained raw materials, grinding stones are made from coarse-grained materials such as sandstone.

Hammer: A fabricator used to apply a dynamic load.

Highly Disturbed means land that has been the subject of extensive surface and subsurface disturbance to a depth of greater than 30 cm, caused by post Aboriginal occupational activities such as clearing, levelling, grazing and farming and erosional event associated with these activities.

Inclusion: An impurity or foreign body in the stone that reduces the homogeneity of the rock.

Morphology: The topographical characteristics of the exterior of an artefact.

Number of Identified Specimens ('NISP'): A count measure used in archaeology when counting bone or shell to estimate the number of individuals at that location. A NISP counts each whole piece or fragment as one unit.

Minimum Number of Individuals ('MNI'): A count measure used in archaeology when counting bone or shell to estimate the fewest possible number of people or animals in a skeletal assemblage. MNI counts the total amount present of only one diagnostic element for each species.

Platform: The top surface of a flake that the knapper hit to remove it from the core.

Platform Preparation: Alteration by grinding, polishing or flaking of the portion of the platform which is intended to be struck.

Procurement: Method(s) of obtaining raw materials.

Quarry: A place where humans obtained stone or ochre for artefact manufacture.

Quartz: A form of silica. White, grey and clear crystalline quartz has a glassy lustre with extant crystal faces.

Quartzite: A sandstone in which the quartz sand grains are completely cemented together by secondary quartz deposited from solution.

Retouched Flake: A flake that has subsequently been re-flaked.

Residue: material remaining on an artefact after distillation or evaporation of a larger molecule has occurred. Can include trace amounts of starch, blood or woody tissue still adhering to the artefact.

Sand: Quartz grains with only a small content of other materials. Grain size 2.00 mm to 0.05 mm.

Silcrete: A silicified sediment. Cream, yellow and brown lithics with distinctive diagenic fabric of a pre-existing sedimentary rock or soil replaced by silica.

Siliceous: Having a high silica content.

Site: A concentration of cultural material.

Taphonomic Processes: The collective name given to activities that can disturb an archaeological site over time e.g. human activity (ploughing), animal activity (trampling), plant activity (roots). Also Events such as erosion or scouring can disturb a site's integrity.

Unifacial Flake: Artefact flaked on only one side.

Use-Wear: Physical changes to the edges or working surfaces of tools sustained in use including damage or polish.

Ventral Surface: The surface of a flake created when it is removed from the core, identified mainly by the presence of a ring crack.

XU means Excavation Unit.

1. INTRODUCTION

Everick Heritage Consultants ('Everick') have been engaged by Leda Manorstead Pty Ltd ('the Developer') and their planners, Landpartners, to prepare a Cultural Heritage Assessment and accompanying Cultural Heritage Management Plan for the proposed Residential Community Development at Cobaki Lakes, north-eastern NSW (Figures 1 and 2).

The assessment of the Subject Lands has been undertaken over the course of several years as planning for the Development has progressed. It has involved a desktop study, site inspections, extensive consultation with the Aboriginal community and archaeological excavations. This report outlines the results of each stage of this assessment process. It provides the theoretical basis for adopting the management recommendations outlined in the Cultural Heritage Management Plan submitted with this report.

1.1 Property Description

The Cobaki Lakes Development contains seventeen separate parcels of land with a total area of 593 hectares (Figure 2). The Subject Lands are Lot 228 on DP 755740; Lot 305 on DP 755740; Lot 1 on DP 570076; Lot 205 on DP 755740; Lot 206 on DP 755740; Lot 209 on DP 755740; Lot 199 on DP 755740; Lot 54 on DP 755740; Lot 55 on DP 755740; Lot 46 on DP 755740; Lot 200 on DP 755740; Lot 201 on DP 755740; Lot 202 on DP 755740; Lot 2 on DP 566529; Lot 1 on DP 562222; Lot 1 on DP 570077 and Lot 1 on DP 823679.

1.2 Location

The Subject Lands are located south of the Gold Coast within the Tweed Shire Council Local Government Area (LGA) in north-eastern coastal New South Wales. It is approximately 3.5 km from the present coastline, and extends from the Queensland border in the north to Piggabeen Road in the south and from the Cobaki Broadwater in the east to the McPherson Ranges in the west and north-west (Figure 1).

The mouth of the Tweed River lies 6.5 km southeast of the Subject Lands, and the Terranora Broadwater is 3 km to the south. An extensive network of creeks, lakes and swamps linked to the Tweed River, lie directly to the south and south-east of the Subject Lands. Reedy Swamp and the Cobaki Broadwater form the eastern boundary of the Subject Lands. The Macpherson Ranges, extending up to 100m in elevation in places, form a broad arc to the north and northwest (Figures 1 and 2).

Figure 1: General Location of Subject Lands (Google 2008)

Figure 2: Aerial view of the Subject Lands (Michel Group Services 2008)

1.3 Proposed Development

Under the Concept Plan for the Subject Lands it is proposed to construct a residential development that will house up to 5,000 residents (Figure 3). The development will contain a range of residential types, as well as a wide range of facilities including shops and offices, schools, retirement communities and car parks. Extensive areas will be dedicated to passive and active open space, environmental protection areas and lakes.

1.4 Legislative and Planning Context

1.4.1 Prior Development

Development consents have been approved and construction has commenced for three residential subdivisions, associated works and infrastructure. These consents, listed in Table 1, were approved between 1993 and 2002.

Table 1: Development Consents issued (Leda Manorstead 2008)

TABLE 1 – DEVELOPMENT CONSENTS ISSUED			
DEVELOPMENT CONSENT NO.	**DESCRIPTION**	**DATE OF CONSENT**	**COMMENT**
92/315	Boyd Street Extension	5 January 1993	The development has been commenced and the Development Consent is preserved.
94/438	Bulk Earthworks	27 January 1995	The development has been commenced and the Development Consent is preserved.
S94/194	730 Lot Urban Subdivision – Parcels 1 to 5 + 13 Englobo Parcels (The Entrance, The Sand Ridge)	19 September 1995	The development has been commenced and the Development Consent is preserved.
96/271	Bridge over Cobaki Creek (Tweed Shire Council)	8 April 1997	It is understood from Council that the development has been commenced and therefore the consent remains in force.
S97/54	430 Lot Residential Subdivision – Parcel 7 to 10 (The Knoll, Piggabeen)	21 October 1997	It is understood that the development was commenced before 21 October 2002.
K99/1124	560 Lot Urban Subdivision (The Foothills, The Plateau, Valley East, Valley West, East Ridge)	21 July 2000	It is understood that the development was commenced prior to 21 July 2005.
1162/2001 DA	8 Management Lots and Bulk Earthworks (Town Centre)	8 October 2002	It is understood that the development was commenced prior to 8 October 2007.

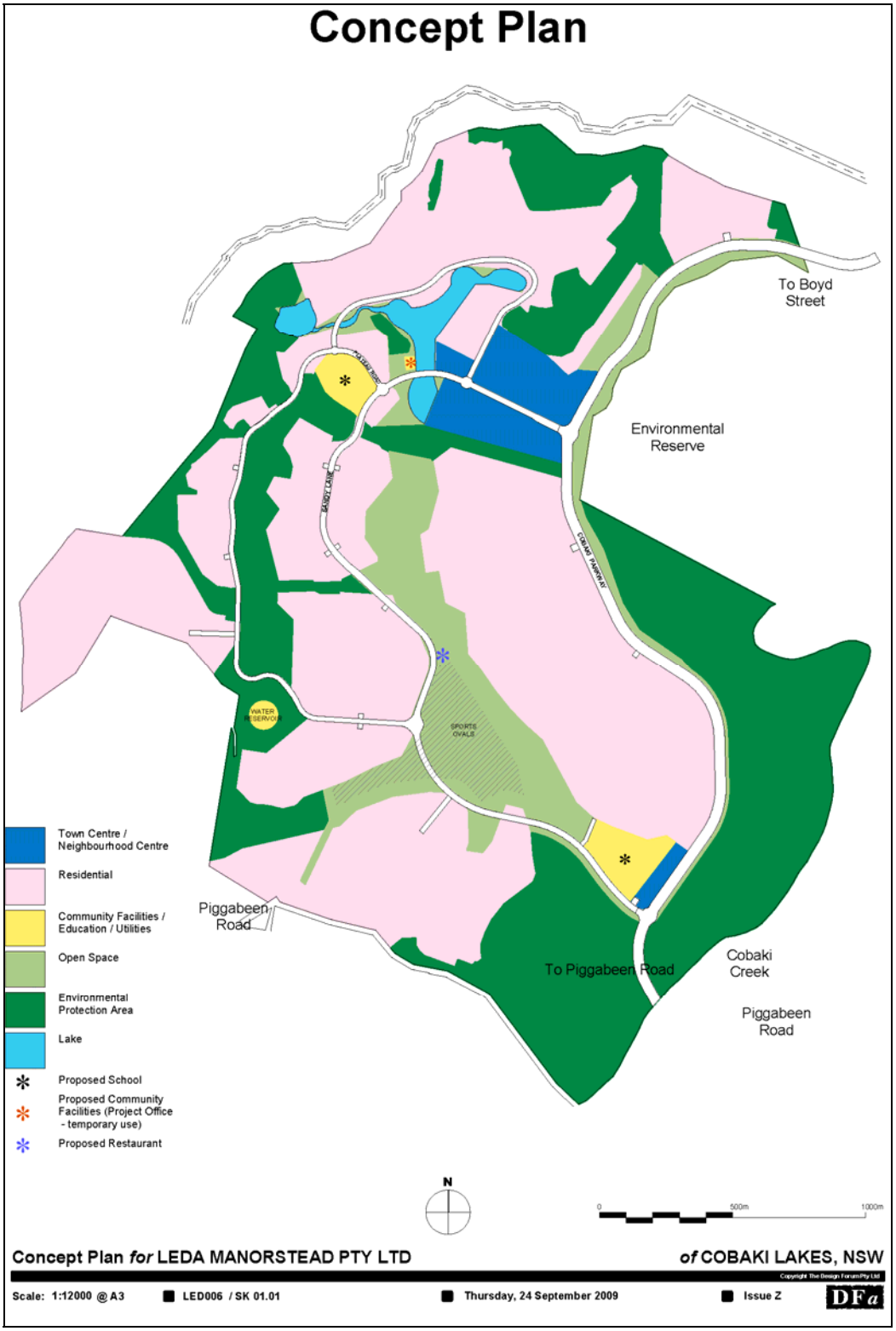

Figure 3: Development Concept Plan, Cobaki Lakes (DFa 2009)

In addition, twenty earthworks approvals have been issued (Figure 4), and extensive earthworks have commenced (Figure 2). Following the Everick survey of the Subject Lands in 2008 (Section 5), two areas of potential archaeological and cultural sensitivity were identified. These have been termed the Sand Ridge and the Mid-Lower Back Slopes (Figure 5). These areas have been protected from development works until such time as the Developer can negotiate appropriate mitigating strategies with the Aboriginal community, the Department of Planning, the NSW Department of Environment and Climate Change ('DECCW') and/or the Tweed Shire Council (as required).

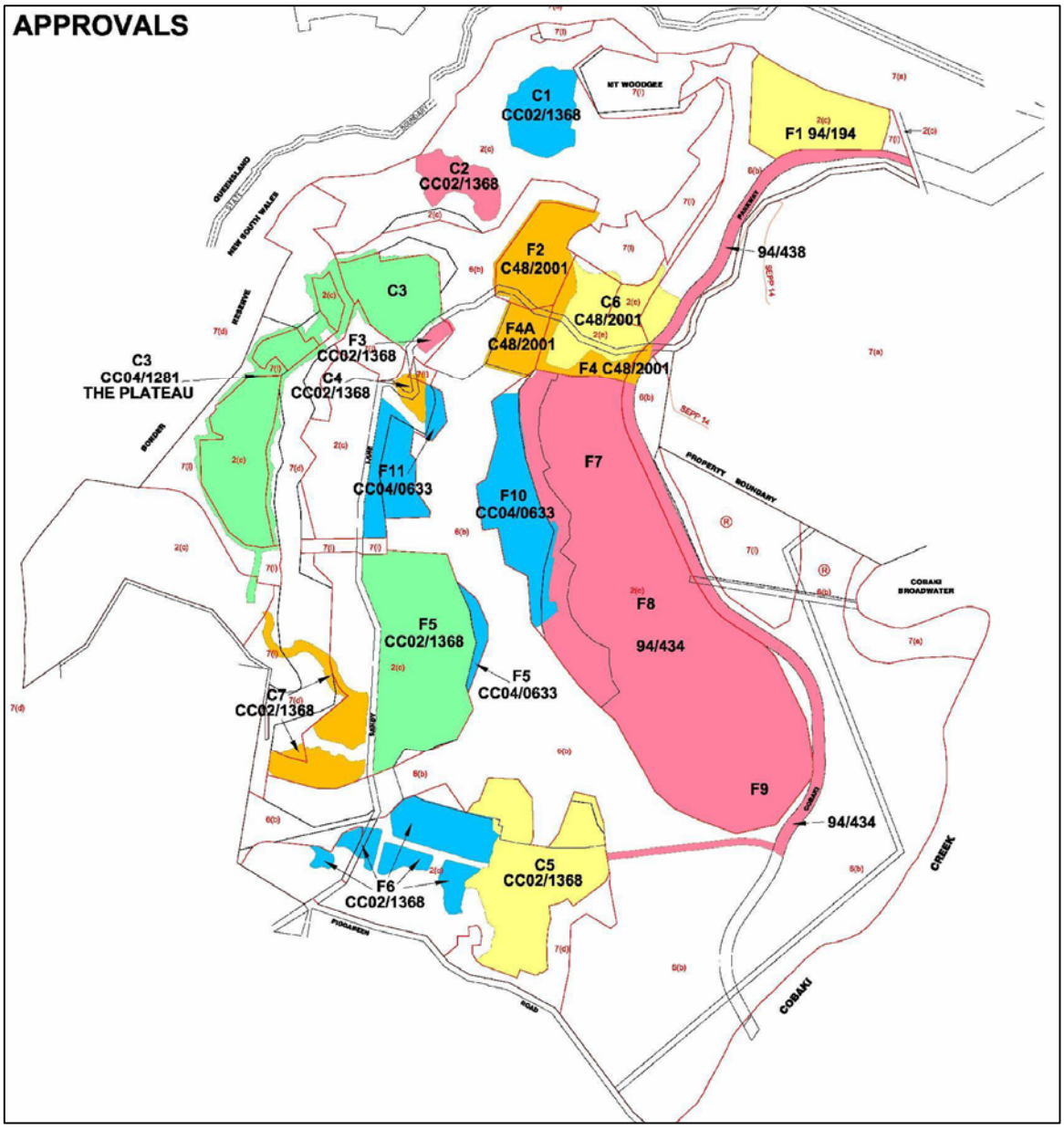

Figure 4: Earthworks approvals (Michel Group 2008)

1.4.2 Environmental Planning and Assessment Act 1979 (NSW)

The Cobaki Lakes Development has been given the status of a Part 3A Major Project under the *Environmental Planning and Assessment Act 1979* (NSW) ('EPA Act'). The Developer is required to prepare a Concept Plan for the project, where the consenting authority is the New South Wales Department of Planning. The Concept Plan stage is intended to allow the Developer to outline the scope of the project, any development options, any proposal to conduct the development in stages, and any other matters as required by the Director General. A finely detailed description of the project is not required at this stage.

Approval of the Concept Plan may be granted on the proviso that certain conditions are fulfilled, given as a statement of commitments by the Developer. It is then up to the discretion of the Minister what further assessment or management actions are required. This process provides the opportunity for the implementation of a flexible strategy of cultural heritage management for the site. Incorporated into the methodology of this assessment are the best practise cultural heritage frameworks provided by the ICOMOS *Burra Charter* (1999) and the National Parks and Wildlife Service's *Aboriginal Cultural Heritage: Standards and Guidelines Kit* (1997).

As a Part 3A project, the provisions of the *National Parks and Wildlife Act 1974* (NSW) (NPW Act) that affect dealings with Aboriginal cultural heritage will not apply at this stage of the planning process (pursuant to section 75U of the EPA Act). However, the DECCW remains a referral agency for the project, and has been consulted throughout this assessment. It should also be noted that (excluding those parts of the central open space systems shown in Figure 3) the detailed design and construction works on the Subject Lands, including the residential precincts, town centre, and community/education facilities, are proposed to be the subject of future Project Applications to the Department of Planning. However, they may instead be the subject of future Development Applications to the Tweed Shire Council under Part 4 of the EPA Act. Where not previously dealt with under the Part 3A consents, future cultural heritage issues will be subject to the provisions of the NPW Act.

1.4.3 DECCW Consultation Requirements

As part of the Director General's Requirements, the Department of Planning requires that a heritage assessment be undertaken in accordance with the DECCW *Guidelines for Aboriginal Cultural Heritage Impact Assessment (2005)* and *Interim Community Consultation Requirements for Applicants* (2005) ('the ICCR Guidelines'). This assessment has been structured to conform to these standards.

The ICCR Guidelines provide an acceptable framework for conducting the Aboriginal community consultation process. It requires public notice of the assessment, preparation of a proposed methodology, undertaking site meetings and excavations where required, the production of a draft report that is distributed to the registered Aboriginal groups, and the production of a final report. Although not strictly required, a thorough consultation process will treat the ICCR Guidelines as a minimum standard of community consultation. Generally, consultants must go to further effort to identify the significance of a given site to the Aboriginal community. This will likely include undertaking additional site inspections, fully resourcing the community by providing copies of past archaeological and environmental assessments in the region, and meeting with community members to ascertain their opinions of the site.

1.4.4 ICOMOS Burra Charter

Australia ICOMOS (International Council on Monuments and Sites) - the peak body of professionals working in heritage conservation - has adopted the Burra Charter as a guide to acceptable standards for the assessment and management of items of cultural heritage significance in Australia. The Burra Charter has no effect at New South Wales or Commonwealth Law. However, it is regarded amongst Australia's heritage professionals as a best practise guide to assessing and managing heritage places, and as such has been followed in this assessment.

Under the Burra Charter, *cultural significance* means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. The central principle of the Burra Charter is that assessment of the significance of any potential heritage items must come before any management decisions are made (Article 6). Article 6.1 recommends that the cultural significance of a place is best understood by a sequence of collecting and analysing information prior to making any decisions. Everick has been particularly rigorous in this regard, insisting that test excavations were undertaken prior to any attempts to finalise the CHMP for the Project's Concept Plan.

Under the principles of the Burra Charter, in assessing a given place or objects significance, it requires not just an assessment of the item itself, but the items setting (Article 8), location (Article 9) and an understanding of how it may be linked to any related items (Article 11). This should all be documented in a written statement on the item's significance (see Section 8 of this report). Once the significance of an item has been established, the Burra Charter process provides for acceptable standards on the conservation, preservation, maintenance, change, restoration, reconstruction and/or alteration of an item based on this significance.

Importantly, those to whom the item is significant should be involved in the decision making process. In this respect, Everick has adopted an inclusive policy of adding interested Aboriginal persons to the

stakeholders register and involving them in the decision making process, even after the formal registration process had ceased.

1.5 Aims of this Report

The aims of this Report are to:

- assess previous documentation including published and unpublished reports, the NSW Aboriginal Heritage Information Management System ('AHIMS') and the Bundjalung Mapping Project ('BMP') database;
- assess the environment and past land use within the Subject Lands;
- assess the potential of the Subject Lands to contain Aboriginal archaeological sites and areas identified as having cultural heritage values, including identifying areas of particular cultural sensitivity;
- provide a discussion on the results of archaeological test excavations within the Subject Lands;
- provide recommendations on the management of the cultural heritage of the Subject Lands; and
- detail the cultural significance of the Subject Lands to the Aboriginal people of the Tweed and surrounding regions.

1.6 Report Authorship

The site survey was undertaken by qualified archaeologists Adrian Piper and Richard Robins, assisted by Cyril Scott, Sites Officer for the Tweed Byron LALC. The desktop study and community consultation was overseen by Tim Robins. This report was written by Dr Richard Robins assisted by Tim Robins, Helene Tomkins and Bernadette Allen.

2. ABORIGINAL COMMUNITY CONSULTATION

2.1 The Register of Aboriginal Stakeholders

A consultation process with the Aboriginal community has been undertaken in accordance with the DECCW ICCR Guidelines. A copy of the 'Index of the Community Consultation File,' provided to the DOP and DECCW, is provided in Appendix A.
On the 26, 27 and 28 July 2007 notice was placed in the Tweed Daily News newspaper inviting Aboriginal persons/organisations with cultural heritage interests in the Cobaki Development Area to advise Everick Heritage Consultants in writing.

From these responses a Stakeholders Register has been compiled. The stakeholders register continues to grow as more people express an interest in being consulted over this project.

Responses have been received from the following:
Kyle Slabb
Thomas Hayes - The Gittabal
Debbie Munday - Ngarakwal Nganduwal Aboriginal Moiety
Jackie McDonald and on behalf of Jason McDonald, Jamie McDonald, Levi McDonald, Adam Mazzarella, Peter Buxton and Paul Buxton
Auntie Joyce Summers
Maxwell Ford, David Ford and John Ford
Marcia Browning
Christine Morgan
Kathleen Lena and Garth Lena
Lesley Mye (Tweed Shire Council)
Deidre Currie
Kym Yuke – Gold Coast Native Title Group
Doug Williams and Allen Williams
John Bartie (Cavanaugh)
Bo Lourey, on behalf of the Boyd, Williams and Cavanaugh families
Des Sandy
Desrae Rotumah – Tweed Aboriginal Housing Co-op / Minjungbal Cultural Centre

The following authorities have been notified and responded to the proposal to produce a cultural heritage assessment for cultural heritage of the Subject Lands:

Tweed Byron Local Aboriginal Land Council
New South Wales Native Title Services
Cultural Heritage Unit of the DECCW
The Tweed Shire Council

2.2 Methodology for Assessment and Initial Consultation

Everick used the results of background research and survey conducted in April of 2008 to formulate a proposed methodology for investigating and managing cultural heritage within the Subject Lands. This methodology was sent to all registered Aboriginal community participants on 12 May 2008.

An initial off-site background information meeting was held on 12 June 2008. All registered Aboriginal participants were invited to this meeting. Attendees at the meeting were Minjungbal descendent Jackie McDonald, Tim Nott of the DECCW, Reg van Rij of Leda Manorstead and Dr Richard Robins and Tim Robins of Everick Heritage Consultants. During this meeting it was resolved to endeavour to provide the Aboriginal community with as much information as was reasonably practicable so that they could make informed decisions on managing cultural heritage within the Subject Lands. Accordingly, copies of past archaeological assessments, land use histories and environmental reports were distributed to the registered participants on 17 and 18 June 2008. Offers to facilitate broader community involvement have been made such as to develop a mailing list or community newsletter. Through valuable assistance from Aboriginal community leaders Everick is expanding its mailing list and is in the process of seeking new ways to engage the Aboriginal community.

In conversations on 16 and 17 of June 2008, Kym Yuke of the Gold Coast Native Title Group questioned the appropriateness of using Monitors, as is suggested in the preliminary CHMP. Correspondence from Everick addressing this issue is contained Appendix B. Generally, Everick agrees with Ms Yuke's opinion that Monitors are ineffective in many situations. However, there are some situations, such as in sandy soils, where monitoring can be of value. The final decision, regarding if and where monitoring is to be used, will only be made following the test excavations and after further consultation with the Aboriginal community.

All registered Aboriginal community participants were invited to a site inspection on 6 August 2008. In attendance were Jackie McDonald (Traditional Owner), Levi McDonald, Lesley Mye (Traditional Owner/Tweed Shire Council), Kyle Slabb (Acting CEO of the Tweed Byron LALC) Cyril Scott (Tweed Byron LALC Sites Officer), Dr Richard Robins and Tim Robins of Everick Heritage Consultants. The attendees were given a tour of the Subject Lands and provided the opportunity to inspect areas that they

felt to be of particular or potential cultural sensitivity. Dr Robins discussed the results of the preliminary survey and sought opinions on appropriate excavation methods for archaeologically sensitive areas. No sites of particular cultural significance, other than those identified in the Everick 2008 survey, were identified as a result of this meeting. The Aboriginal participants expressed confidence in the survey methods and the proposed excavation methods during this meeting.

From the results of the on-site meeting, Everick developed an Excavation Strategy and distributed it to the registered Aboriginal participants on 21 October 2008. An additional 40 copies were available in printed and electronic form at a related community meeting on 8 November 2008. The Excavation Strategy was tabled with the Tweed Shire Council Aboriginal Advisory Group on 7 November 2008. Hard copies and electronic copies of the Everick Cultural Heritage Assessment, the Preliminary CHMP and the Excavation Strategy were provided to all registered stakeholders on 8 November 2008 and 11 November 2008.

2.3 Excavations

A meeting was held at the Banora Point Community Centre on 22 July 2009 to discuss the proposed excavation strategy. The meeting was scheduled for 6pm to allow those with work commitments to attend, and all registered stakeholders were invited. Jackie McDonald, Cyril Scott, and Leweena Williams (CEO Tweed Byron LALC) attended the meeting. Support for the excavation methods was expressed, while no concerns about the assessment process thus far were raised during this meeting.

The Department of Planning consented to Everick undertaking archaeological test excavations in July 2009. Excavations commenced on 17 August 2009 and ran for seven weeks. A review of the excavation results is provided in Section 6 of this report. Aboriginal Stakeholders representing the Gold Coast Native Title Group; Ngarakwal/Githabul Nation people, the Tweed Byron Local Aboriginal Land Council and the Minjungbal descendents were all invited to participate. The following Aboriginal Stakeholders worked on excavations with Everick's archaeologists:

(a) Jackie McDonald;
(b) Levi McDonald;
(c) John Bartie (Cavanaugh);
(d) Mark Cora;
(e) Lyle Cora;
(f) Cyril Scott;
(g) Dillon Scott; and
(h) Trevor Smith.

The excavations identified several areas that are of high archaeological significance. The Aboriginal Stakeholders who participated in the excavations confirmed that these sites are of high cultural significance as well. During the course of the excavations, Everick's archaeologists were afforded the opportunity to discuss the general significance of the region to the Aboriginal people of the Tweed. The discussions, along with many others undertaken during the course of community consultation, have provided the basis for the assessment of cultural significance provided in Section 8 of this report.

2.4 Ongoing Consultation: Updated ACHA and CHMP

An on-site meeting of all Registered Stakeholders was proposed for Saturday, 12 December 2009. The purpose of the meeting was to provide all registered Stakeholders with the opportunity to inspect the Development Area, discuss the excavations and discuss the management practises that would form the basis of the CHMP for the Development. Following phone calls to the Registered Stakeholders in the week leading up to the meeting, it was apparent only the Ngarakwal representatives were available to attend. It was decided to postpone the meeting until after the Christmas period in the anticipation that more Stakeholders would be available to attend.

A Summary Excavation Report and draft CHMP were provided to the Aboriginal Stakeholders on 18 December 2009. The Summary Excavation Report contained a full list of the data from the excavations, as well as 'plain English' descriptions of the excavation methods, results and archaeological significance. The Draft CHMP contained the management practises in ostensibly the same form as the final document. The Stakeholders were asked to contact Everick should they have any comments or wish to raise any concerns. Bo Lourey, raised concerns over the proposed keeping place. These concerns are discussed in further detail below. No other comments were received at this time.

An on-site community meeting was arranged for 18 January 2010. All Registered Stakeholders were asked to attend and invitations were also extended to any other person(s) they knew who may have an interest in the cultural values of the Development Area. Jackie McDonald, Levi McDonald and Aunty Joyce Summers attended the meeting. Bo Lourey, Harry Boyd and John Bartie sent their apologies for not being able to attend as they had business elsewhere. Marcia Browning and Christine Morgan also advised Everick that they would be unable to attend, and advised that Jackie McDonald would be speaking on their behalf. The meeting participants were taken on a tour of the excavation locations. The management options for each of the areas containing cultural material were discussed.

Jackie McDonald raised concerns that the CHMP did not reference archaeological studies undertaken in the region. She requested that such studies be referenced in that document lest future researchers view

the CHMP without consulting this report. Ms McDonald also requested that the CHMP contain stronger wording as to the significance of the cultural landscape within which the Development is situated. These concerns have both been addressed in the final versions of the CHMP and this ACHA (see Section 8). On a more general note, Ms McDonald also expressed her disappointment that the Development would invariably result in the destruction of Aboriginal sites. However, she stated that she believed the mitigating strategies proposed in the CHMP were reasonable. All participants supported the creation of cultural parks as a way of preserving a representative sample of their heritage. They supported the future involvement of the Aboriginal Stakeholders in the design and construction of these areas.

The Developer received engineering advice in early March to the affect that the proposed location of Cultural Heritage Parks 1 and 3 placed major constraints on the development of the surrounding areas. The Developer called a community meeting on 17 March 2010 to discuss the proposal to remove those parks, potentially through salvage excavations. All registered Stakeholders and their families were invited. In attendance were Aboriginal Stakeholders Garth Lena, Cyril Scott, Jackie McDonald, Auntie Joyce Summers and Levi McDonald. The Stakeholders expressed concerns over the plan. They noted that as a minimum there should be salvage of 100% of the artefacts within the parks. While the Stakeholders were willing to recognise the rights of the Developer to develop their land, they requested that reasonable mitigating strategies were implemented that would benefit their cultural heritage. Following further discussions, the Developer subsequently decided that it was most appropriate to retain the Cultural Heritage Parks for at least the time being, and leave the CHMP unaltered.

2.5 Summary of Consultation Process

In all, seven community meetings - including five on-site meetings - were held in preparation for the Concept Plan. Everick has taken over 50 file notes of key conversations with Stakeholders, although many hundreds more administrative and informal conversations were had over the course of the Project.

Everick has received very little written feedback from the Aboriginal community over this project. The verbal responses, which have been documented in file notes and provided to the NSW Department of Planning, have been generally positive. The exceptions have been some members of the Gold Coast Native Title Group (who, after registering their interest, advised Everick that they did not wish to participate further in the assessment process) and Thomas Hayes (who has stated on behalf of Barbara Oliver that the Subject Lands have no cultural value to the Githabul People).

2.5.1 Keeping Place

Lesley Mye of the Tweed Shire Council has written to Everick discussing the need for identifying an appropriate 'keeping place' for cultural material. Desrae Rotumah of the Tweed Aboriginal Co-op proposed that the artefacts be housed in the Minjungbal Museum. Concerns were also raised by Ngarakwal representative Bo Lourey over the location of a keeping place off site. He expressed the view of the Ngarakwal Stakeholders that the artefacts should remain 'on country'. This is quite a common concern of Aboriginal people in Australia when dealing with their cultural heritage. Our staff explained to Mr Lourey that other Registered Stakeholders had raised concerns previously about a keeping place on site. While Everick sympathised with his concerns, because agreement could not be reached amongst all Registered Stakeholders, there was little choice but to abide by the initial care and control consent of the Department of Planning and hand the artefacts over the Tweed Byron LALC. Everick will ensure they are fully catalogued and stored appropriately. It will be up to the Aboriginal community to negotiate with the Tweed Byron LALC to find an alternative keeping place should they wish to do so.

2.5.2 Survey of Environmental Protection Areas

Jackie McDonald has written to Everick about concerns over the Environmental Protection Areas (Figure 3) within the Subject Lands not having been surveyed. However, the results of the excavations demonstrate that survey is a particularly ineffective means of identifying Aboriginal sites in Podsolic soils. While surveying the mid-lower back slopes, Everick identified an average of one archaeological find approximately every 3,157 m^2 (this figure includes surface collections undertaken in preparation for excavations). Conversely, during excavations in these areas one artefact was identified approximately every 0.4 m^2. While these are very crude estimations of artefact distribution, they demonstrate the importance of determining strategies other than surveys to identify important cultural sites. It is proposed that a far more effective means of doing this would be to have Aboriginal Stakeholders monitoring the ground during initial surface disturbance.

2.5.3 Statement of Cultural Significance

Initial comments during Stakeholder consultation focused on a lack of clear statements about the cultural significance of the Subject Land and surrounds. Section 8 of this report and the recitals in paragraph 2 of the CHMP address this issue.

2.5.4 Ongoing destruction of Aboriginal cultural sites

Concerns have been raised by a number of Stakeholders about the ongoing destruction of cultural sites, not just within the Development Area, but on the Tweed as a whole. The results of the archaeological test excavations confirmed that many parts of the Development Area contain scatters of Aboriginal artefacts. While the Aboriginal Stakeholders recognised the rights of the Developer to use their land, they consistently stated that the Developer should ensure that as many sites as possible were preserved. The system of Cultural Heritage Parks and Cultural Heritage Protection Areas incorporated into the CHMP has been designed to address this issue. It implements strict land use requirements that, properly adhered to, will ensure that the artefacts within these lands are preserved for future generations.

3. ENVIRONMENT

3.1 General Description

The Subject Lands have three distinct landforms. From north to south they are the mid and lower slopes of the Macpherson Range, a central low Sand Ridge extending towards Cobaki Broadwater and the bordering salt marshes of Cobaki Broadwater (Figures 5-12).

The Subject Lands contain a ridgeline running along the northern and western edges, as well as a small hill on the north-eastern boundary. These hills slope down towards the south and east of the Subject Lands on to marine plains located in the central and south-eastern parts of the of the Subject Lands. The local relief ranges from <1 m on the marine plains to 80 m on the hill slopes. Elevations range from c. 20 m AHD to 90 m AHD. The marine plains contain two topographic features: a SEPP 14- Wetland in the centre, south and south east. In the centre of the Subject Lands a low Sand Ridge projects south from the lower slopes into drained salt marshes.

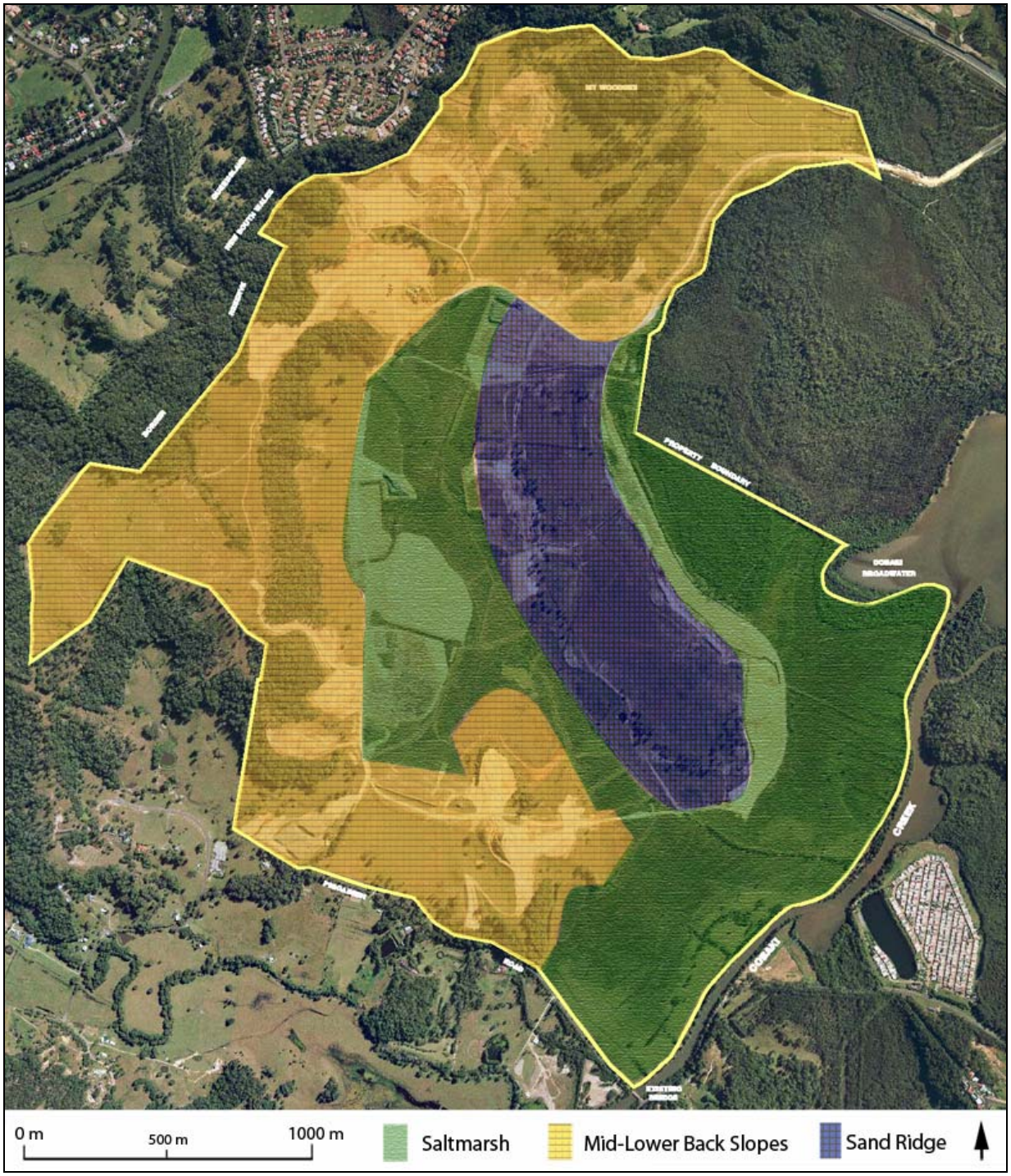

Figure 5: Physiographic Units of the Subject Lands

Figure 6: View from the northern ridge looking south

Figure 7: View from the northern ridge looking east

Figure 8: View from the northern ridge looking south-east over the Sand Ridge

Figure 9: Undulating hills in the south-west, looking north

Figure 10: View from the ridge in the south-west looking east to Cobaki Broadwater

Figure 11: Southern section of the Sand Ridge

Figure 12: Central portion of the Sand Ridge

3.2 Past Land Use History

Past European land use and development activities have had a significant impact on much of the cultural heritage of the site. Identification of the nature and degree of impact over the site has been an important consideration in the management process. However, it should be noted that significant ground disturbance alone does not prevent cultural material being located in some areas, as the results of the archaeological test excavations demonstrate. The disturbance analysis detailed below has been compared to the ethnographic and scientific records to develop a predictive model for potential Aboriginal site locations.

Extensive areas of the Subject Lands have had significant surface and sub-surface ground disturbance, in some cases more than once (Figure 13). Much of this disturbance was caused by past farming and grazing practises. Currently, up to 400 head of cattle are grazed on the property and this has been the case since approximately the late 1980s (Anderson 2007). Disturbance includes tree clearing, the excavation of numerous drainage ditches, dam construction, ploughing and cropping, grazing, and sand

mining or quarrying. Erosion has occurred on cleared hill slopes. In some cases more than one type of disturbance has occurred on the land, and sometimes more than on one occasion.

Since 1992 and subsequent to re-zoning and development consents, major earthworks and land reforming have been undertaken on the site. Few of the pre-clearing eco-communities still exist within the Subject Lands. The most intact ones occur near the top of the ridgelines and adjacent slopes and in parts of the salt marsh areas (Figure 13).

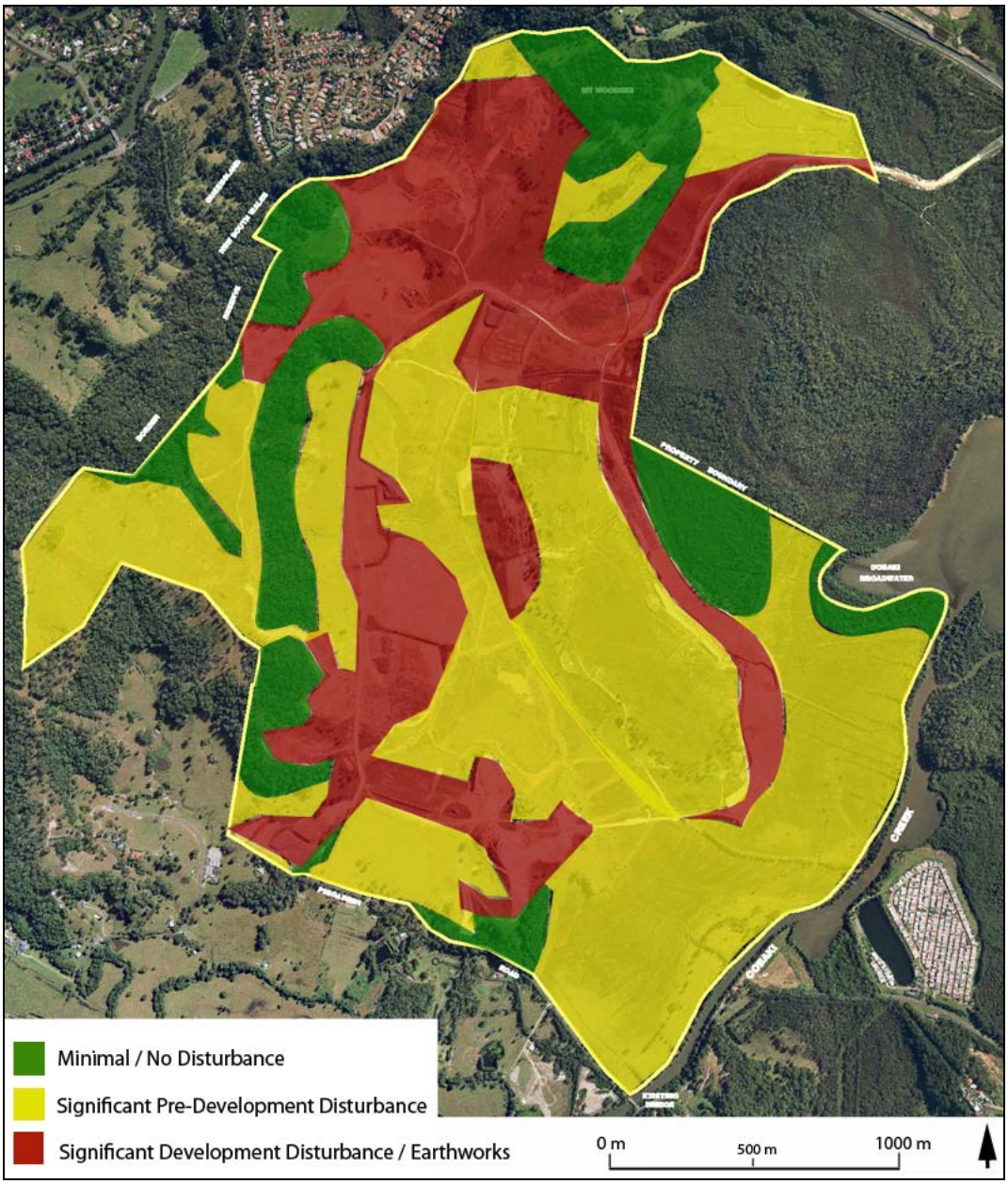

Figure 13: Ground surface disturbance history

4. PREVIOUS ARCHAEOLOGICAL STUDIES

4.1 Previous Studies within the Subject Lands

The Subject Lands have been surveyed twice previously in preparation for Development Applications to the Tweed Shire Council. On both occasions, no Aboriginal cultural heritage was identified.

Lilley conducted an archaeological survey of the Subject Lands in 1981. He found no sites of Aboriginal cultural heritage during his survey. However, he did note that this may have been due in part to poor surface visibility owing to dense vegetation in many areas (Lilley 1981:5). Since 1981 there has been extensive clearing and earthworks in preparation for use of the land for agriculture and then as a residential development.

In 1990 the University of Queensland Archaeological Services Unit carried out a survey and prepared an Archaeological Report in respect of the Cobaki Lakes Development site (Hall 1990a). Hall (1990a:8-9) made the following observations about the disturbance of the Subject Lands:

> The general study area bears the scars of clearing and development of the land into terrain suitable for European pursuits including farming, accompanying outbuildings and supporting roadways. Sand mining has reworked much of the sandy zone and land reforming has been extensive. Thus, even if artefacts were found in the disturbed areas, their provenance could not be trusted. In sum, few places within the study area have been unaffected by European cultural impact of some kind.

Hall recorded that due to recent clearing and mowing of the grass cover on the lower hill slopes that surface visibility was high. The report states that nothing relating to past Aboriginal cultural heritage was found during the survey (Hall 1990a:11).

Since the Hall and Lilley reports, extensive additional earthworks and land reforming has been undertaken in accordance with subsequent development approvals.

4.2 Other Regional Studies

The results of previous studies within proximity of the Subject Lands provide insights into locations where sites are most likely to be found as well as the variety and contents of those sites. For the purpose of this desk top review of relevant literary sources the review is confined to assessments conducted north of the Tweed River. These include Appleton (1993), Barz (1980), Ozark (2007, 2006a, b, c), Bonhomme and Craib (2000), Collins (1999, 2005), Hall (1990a, 1990b), Lamb (2004), Lilley (1981) and Piper (1976, 1980,

1991, 1994, 1996, 2000). All of these assessments with the exception of the Collins (2005) assessment in the Bilambil/Terranora hills have concentrated on estuarine waterways, old coastal dune formations and the Tweed River floodplain. Recent studies in relation to the extension of the Coolangatta Airport and the Tugun to Tweed Heads Bypass route, east of the Cobaki Broadwater include Collins (1999), Bonhomme and Craib (2000), Eastern Yugambeh Limited (2005), Ozark P/L (2006a, 2006b, 2007) and Navin and Officer (2007).

4.2.1 Cobaki Broadwater

Studies in the vicinity of Cobaki Broadwater have included Lilley (1981), Hall (1990a, 1990b) and Collins (1999). These studies were undertaken in relation to proposed residential development, planning proposals at Coolangatta Airport and road route options for the Pacific Highway. These studies inspected large parcels of land to the north of Cobaki Broadwater and its south western banks (Lilley 1981, Hall 1990b). An archaeological area on higher dune plain was found to extend between the eastern margins of Cobaki Broadwater and the runway at Coolangatta Airport. A midden (# 04-02-0039) described by Hall (1990b:11) contained dense concentrations of surface and subsurface shell, mainly estuarine (oyster, cockle and whelk) with a small proportion of beach pipi. Stone artefactual material consisted of cores, flakes and flaked pieces on chert, quartz, silcrete and pebbles of volcanic origin. Bevel edged pounders used in the preparation of fern root were described as common. This midden site is considered to have high archaeological significance as well as a high cultural social significance to Traditional Owners north and south of the State border.

A study by Collins (1999) reassessed the area in relation to a Route Selection Study for a proposed Pacific Highway deviation. In addition to the archaeological material recorded by Hall, three open campsites and an isolated artefact were recorded on the elevated dune plain between Cobaki Broadwater and the Coolangatta Airport runway. The sites are low-density scatters of stone artefacts, fragments of oyster shell and a nodule of ochre. Raw materials were chert, silcrete and sandstone (Collins 1999:34-35).

The archaeological content and Aboriginal cultural heritage significance of the Coolangatta Airport lands, northern shores of Cobaki Broadwater and areas of Tweed Heads west have recently been reviewed by Bonhomme and Craib (2000), Eastern Yugambeh Limited (2005), Ozark P/L (2006a, 2006b, 2007). The most recent cultural heritage assessment and archaeological investigation undertaken by Ozark P/L centred on the route of the Tugun Bypass. Their May 2006 report recommended that test excavations and possibly salvage excavations should be conducted in two zones (7 & 10) of the proposed route. Monitoring

of vegetation clearance and ground disturbing works should take place in five zones (5, 7, 10, 11, 13) of the proposed route (Ozark 2006a, b, 2007).

An archaeological test excavation at a site in Zone 7 produced an assemblage of 388 stone artefacts and 132 manuports or otherwise unidentifiable fragments from 28 excavation squares. These comprised 26 assemblage elements (different categories of stone artefacts) and 12 varieties of raw material (Ozark 2006b:28). The site was considered to possess a number of unusual features: the richness of the assemblage was high; the site was intact and showed patterning that could indicate an intact cultural stratigraphy; the number of backed blades point to areas of the site likely used as knapping floors for backed artefacts (an extremely rare find in the region), the preponderance of large red, yellow and black ochre crayons with abundant signs of use suggest decorative activities were an important part of the use of the site (ibid:52-53). A radiocarbon determination of a charcoal sample returned a relatively modern age for the site at 298 BP (Before the Present) (or c. 1600AD) (ibid:50).

A subsequent salvage excavation programme at pier construction impact points across the Zone 7 site produced 389 stone artefacts from 24 excavation squares, which comprised 12 classes of artefacts on nine types of raw materials. From the mean artefact density of the 1x1 m excavated squares it was estimated that 76,418 artefacts and ochre fragments were contained in the pier cluster areas (Ozark 2007:29,30). A radiocarbon determination of 7,258 BP was obtained from a charcoal sample. However the authors urged caution in accepting the date as one that necessarily related to Aboriginal occupation as there were no intact archaeological features from which a date could be obtained. Early dates (9kya-15kya) are referenced in the report as providing a possible context for the Tugun sites if the date can be accepted (Ozark 2007:37).

4.2.2 Terranora Creek- Terranora Broadwater

The study of the foreshores of Terranora Creek and Terranora Broadwater (Piper 1991) recorded nine midden sites between Barneys Point Bridge and Tommys Island in Terranora Broadwater, a distance of approximately 5.0 km. These sites ranged in content from thin bands of estuarine shell eroding into the river to compacted (20–50 cm) deposits of shell and stone artefacts many metres in extent. The shell contents of these sites were estuarine shell species: oyster, cockle and whelk. A small number of stone artefacts including a retouched flake were observed at Site 5 (# 04-02-79); and a bevelled pounder and stone axe were recorded at Site 10 (# 04-02-83). Poor visibility due to dense vegetation bordering the waterways hampered the effectiveness of the survey. However, 14 estuarine shell middens were located. The cluster of midden sites (Sites 6–13) on the eastern shore of Terranora Broadwater was considered to be of high archaeological and Aboriginal cultural significance because of there being few sites of

concentrated deposits remaining (Piper 1991:16-18). Four other middens (Sites 1, 2, 3 and 5) were assessed as being of low to moderate archaeological significance. A shell midden on Ukerebagh Island (Site 14) in the Tweed River was also considered to have a high archaeological and Aboriginal cultural significance.

4.3 The DECCW Aboriginal Heritage Information Management System (AHIMS)

4.3.1 Tweed River and Terranora Lakes System

A search of the New South Wales DECCW AHIMS register found that there were thirty-eight sites listed in the area included on the Tweed Heads 1:25,000 mapsheet. Midden sites make up 75% (n=28) of the total number, open campsites 10.5% (n=4), burial sites 5.2% (n=2), ceremonial bora ground 2.6% (n=1), natural mythological site 2.6% (n=1) and an open campsite/midden (n=1). The results of the site search include the possibility of omission and do not indicate whether the site is still in existence. Sites recorded as single artefact finds, for example a single stone axe, are not listed in the results of the search.

The majority of recorded sites are middens clustered along the shores of Terranora Creek, the eastern banks of the Terranora Broadwater and the lower slopes of the Terranora ridge adjoining the northern banks of the Tweed River. The main concentration of sites is along the margins of the waterways of the Tweed River, Terranora Creek and Terranora Broadwater. Two of these sites (# 04-02-0006 and # 04-02-00071) have been excavated and produced dates of occupation of c. 600 BP (Barz 1980) and c. 4700 BP (Appleton 1993) respectively. Both were salvage excavations and both sites are now under residential developments.

The predominant site type in this area are shell middens comprised largely of shellfish refuse but may also include fish and other animal bone, stone artefacts and ochre, and charcoal. These may take the form of thin linear bands of shell to large mounds of concentrated shell. Middens may contain human burials as was the case at a large midden deposit on the north bank of the Tweed River (# 04-02-006).

Few of the sites recorded on the northern bank of the Tweed River are still in existence. Residential developments on river foreshores have eliminated numbers of registered sites. The largest midden sites were mounds on low spurs projecting from the eastern base of Terranora ridge. One of these sites, Terranora 12 (# 04-02-0024) survives. The only group of sites not heavily disturbed by development is the midden sites on the eastern bank of Terranora Broadwater and Terranora Creek (# 04-02-0080 to # 04-02-0085). These are middens of estuarine shell species on the foreshores of extensive shellfish gathering areas, immediately below high basalt soil ridges. It would appear that the occupants of all the estuarine

sites on the lower Tweed River waterways had immediate access to extensive tracts of rainforests. However, no occupation sites have been found on the higher elevations which supported sub-tropical rainforests.

4.3.2 Cobaki Broadwater System

A search (25-10-08) over 30 km^2 centered on the Subject Lands indicates 23 sites in the search area. No recorded sites were located in the Subject Lands. The surrounding site landscape contains four middens, seven BMP sites described as shell but not termed middens, six artefact sites, one resource gathering/burial/hearth, one resource gathering/habitation site, one scarred tree at West Tweed Heads and one ceremonial/dreaming site at Campbell Hill. Historical sites include one resource gathering/habitation site at Bingham Bay, a potential archaeological deposit at West Tweed Heads and the Boyd Memorial (burials) at Tweed Heads South. Thirteen of the 23 sites are concentrated in the fringes of the Cobaki Broadwater and a short distance to the east in Coolangatta Airport lands. Sites in the immediate vicinity of the Subject Lands are indicated in Figure 14.

4.4 Bundjalung Mapping Project Database (BMP)

A Search of the BMP database for sites in, or near the vicinity of the Cobaki Lakes Development was conducted in April 2008. In addition to the New South Wales DECCW AHIMS registered sites in that database, four artefact scatters and one possible resource tree had been recorded in the bushland between the Cobaki Broadwater and the Tugan Bypass (Figure 14) (I. Fox pers. com. April 2008). The BMP also had records of an archaeological survey conducted on the western side of the Subject Lands in Queensland (EYL 2006). This survey recorded nine isolated finds of flakes or flaked pieces. Twenty-four test pits were also excavated up to a depth of 40 cm. Fourteen of these pits contained artefacts. Numbers of artefacts for each pit varied from 2 to 37. The location of isolated find and test pits adjacent to the Subject Lands boundary are indicated in Figure 14.

Information on two additional sites was located in the files of the Bundjalung Mapping Project. These were a burial ground for both Aboriginal and non-Aboriginal people on the south bank of the Tweed River at Phillip Drive, and a possible ceremonial ground at Lakeview Drive on a ridge overlooking Terranora Broadwater. This site was observed in 1974 after a bushfire, but now has houses on it.

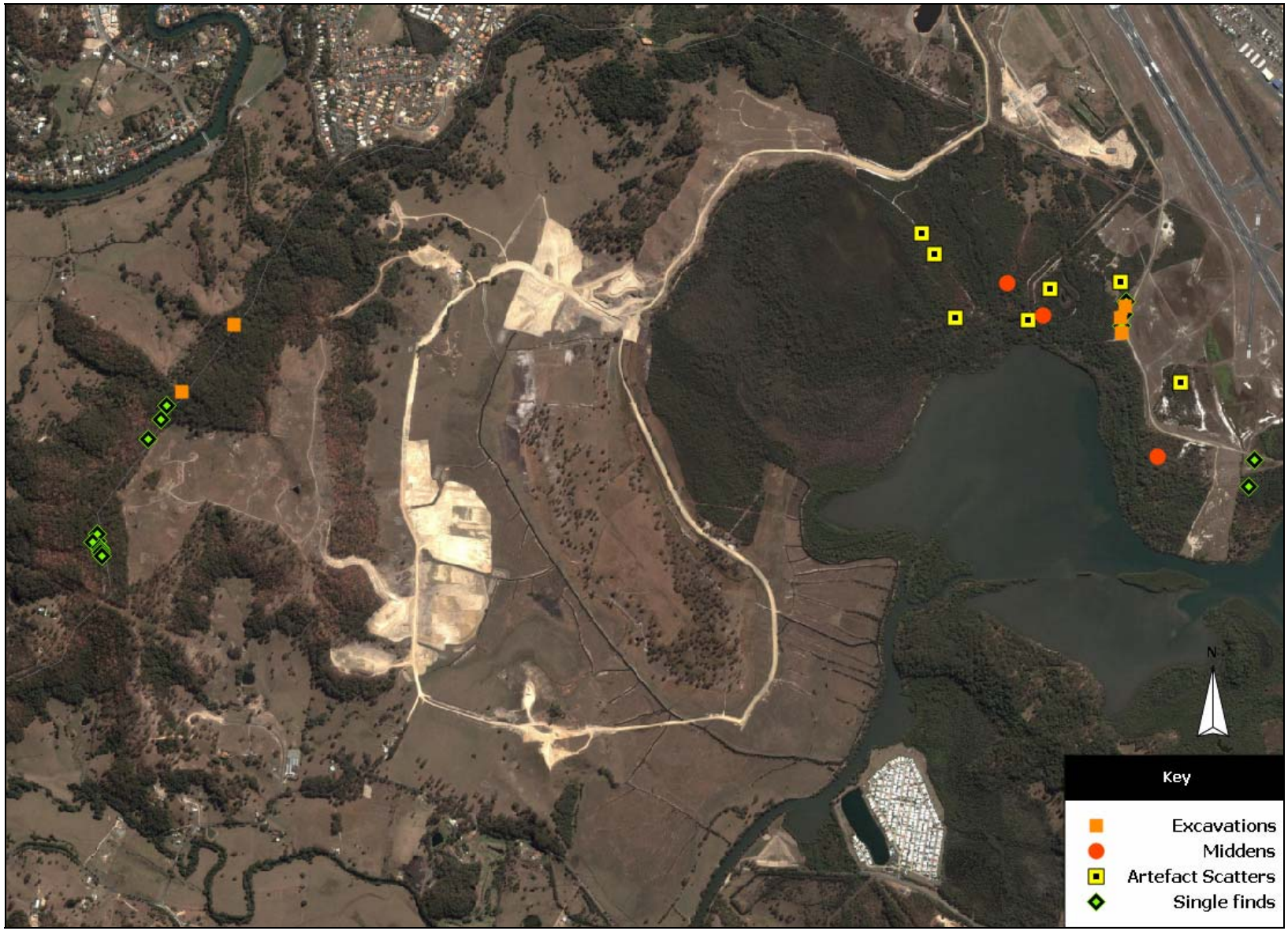

Figure 14: Location of archaeological sites recorded in the vicinity of the Subject Lands (Google Earth 2008)

4.5 Potential Site Types and Site Locations

As part of the process of developing an assessment methodology, Everick conducted an inspection of the Subject Lands on 10 December 2007. The Everick 2007 survey had the benefit of a prolonged drought immediately prior to undertaking the survey, meaning ground surface visibility was generally high. On the basis of this inspection, a review of previous studies in the region (including a previous one of most of the Subject Lands), a search of the DECCW AHIMS database and the history of site disturbance, a predictive model of potential archaeological site types and site locations was developed (Table 2). This analysis was also informed by the results of the recent excavation conducted for the Tugun Bypass Roadworks (Ozark 2007), 1.3 km to the east of the eastern boundary of the Subject Lands, where significant archaeological sites were identified through excavation The predictive model shown in Table 2 and Figure 15 was used to guide the survey and test excavation strategy detailed below.

Table 2: Table of Archaeological Site Sensitivity for Subject Lands (January 2008)

Site Type	*Sand Ridge*	*Drained Salt Marsh*	*Mid-lower Hill slopes*
Midden	**Moderate**	**Low**	**Low**
Burial	**Low-moderate**	**Low**	**Low**
Scarred Tree	**Low**	**Low**	**Low**
Open Campsite	**Moderate**	**Low**	**Moderate**
Quarry	**Nil**	**Nil**	**Low**
Single artefacts	**Moderate**	**Low**	**Moderate**
Bora/Ceremonial site	**Low**	**Low**	**Low**

The areas of archaeological sensitivity shown in Figure 15 were part of a preliminary predictive model and only relate to those areas intended to be impacted by the Development proposal, as identified in the Concept Plan (Figure 3). Additional areas of archaeological sensitivity within environmental protection zones have been identified following the archaeological excavations. The purpose of retaining Figure 15 in this report is to demonstrate the reasoning applied for undertaking the survey and excavation strategies.

Due to the high levels of disturbance over much of the Subject Lands there is little likelihood that undisturbed Aboriginal archaeological sites or objects will exist on previously disturbed/cleared land or eroded surfaces. The exception would be where subsurface cultural deposits are located at depth in the Sand Ridge (shown in blue in Figure 15).

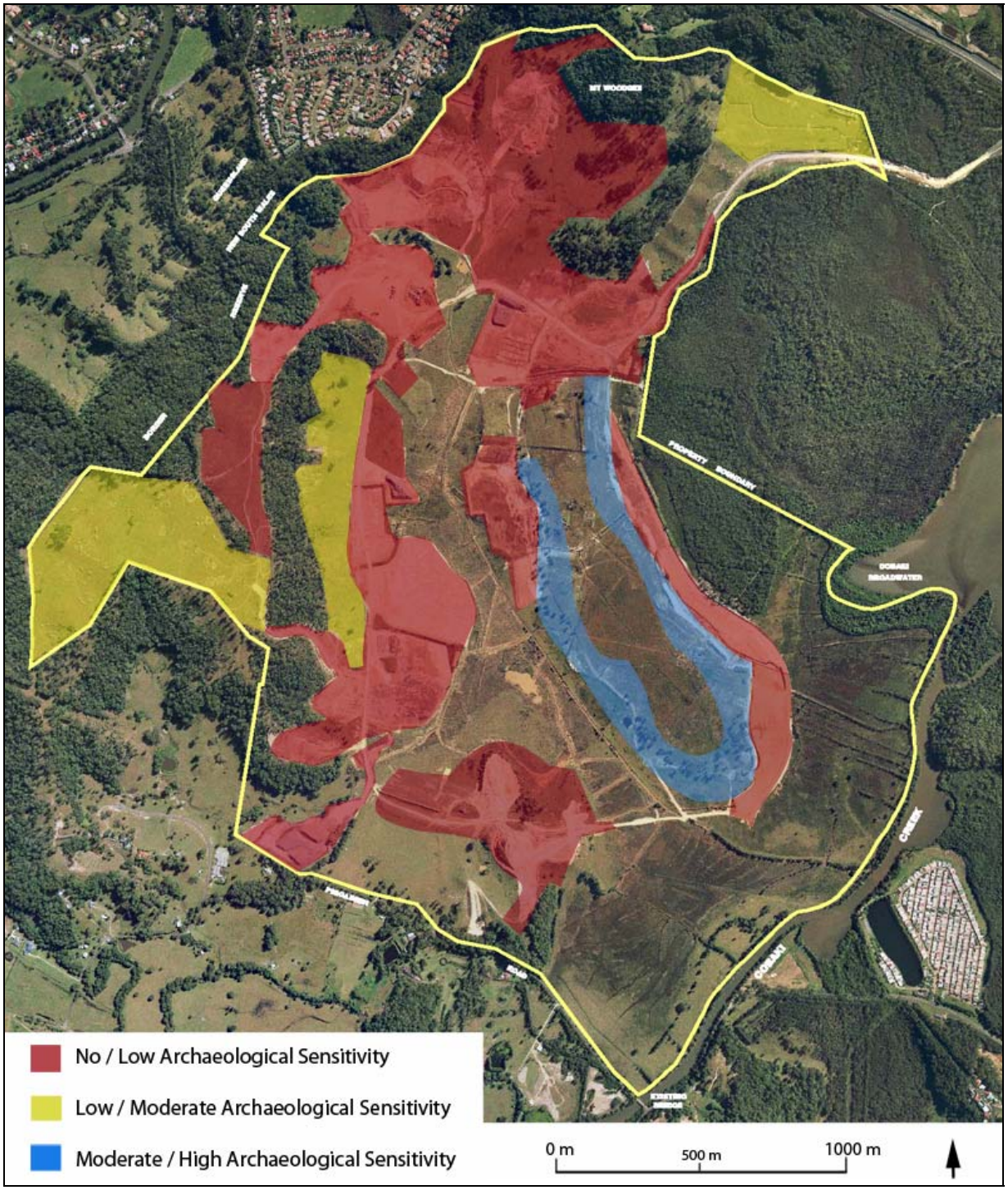

Figure 15: Preliminary model of potentially archaeologically sensitive areas (Everick 2008)

Bora/Ceremonial areas which consist of above ground earth or rock structures would have long since been cleared and levelled had they existed. Due to extensive clearing of trees of sufficient age in the proposed area of residential subdivision, scarred or carved trees are likely to have a low probability of being found. Human burials in the volcanic soils of the ridges and the organic rich salt marsh lands are considered to have a low probability of surviving. They may exist in sandy areas that have not been disturbed, although pH samples taken during excavations would indicate that these areas are too acidic to afford the preservation of bone for any length of time. None were identified during test excavations.

The Sand Ridge is the most likely location for middens. One midden was identified during excavations in the south-east corner of the Sand Ridge. There is a reasonable possibility that other subsurface deposits exist in the surrounding area. Single artefacts or open campsites are unlikely to be found in the salt marshes but may be found in the hills in the north and west of the Subject Lands or in the Sand Ridge. In both these circumstances it is likely that many will be in disturbed contexts. There is only a low probability that a quarry would be found due as the local stone is an unsuitable source for making artefacts. The areas with the highest potential to contain cultural material are the Sand Ridge and northern foreshore areas of the Cobaki Broadwater.

5. PRELIMINARY ARCHAEOLOGICAL SURVEY

5.1 Methods

An archaeological survey was undertaken by Everick Heritage Consultants and Cyril Scott, a representative of the Tweed Byron Local Aboriginal Land Council, on 21 and 22 April 2008. The aim of this survey was to ground truth through using the predictive archaeological model of likely site location and site type. The areas selected for survey were those identified as having archaeological potential. The survey did not cover areas of the development that were previously a salt marsh, or had suffered massive disturbance through earthworks, or were going to be preserved as undisturbed environmental areas. The survey was conducted on foot by a team of four. The areas covered by the survey and survey conditions are presented in Figures 16 & 17. When cultural material was identified, its location was recorded as a waypoint and photographs of the material and its location taken. Notes were made on the artefact class, size and type of raw material. Other factors such as degree of disturbance were also noted.

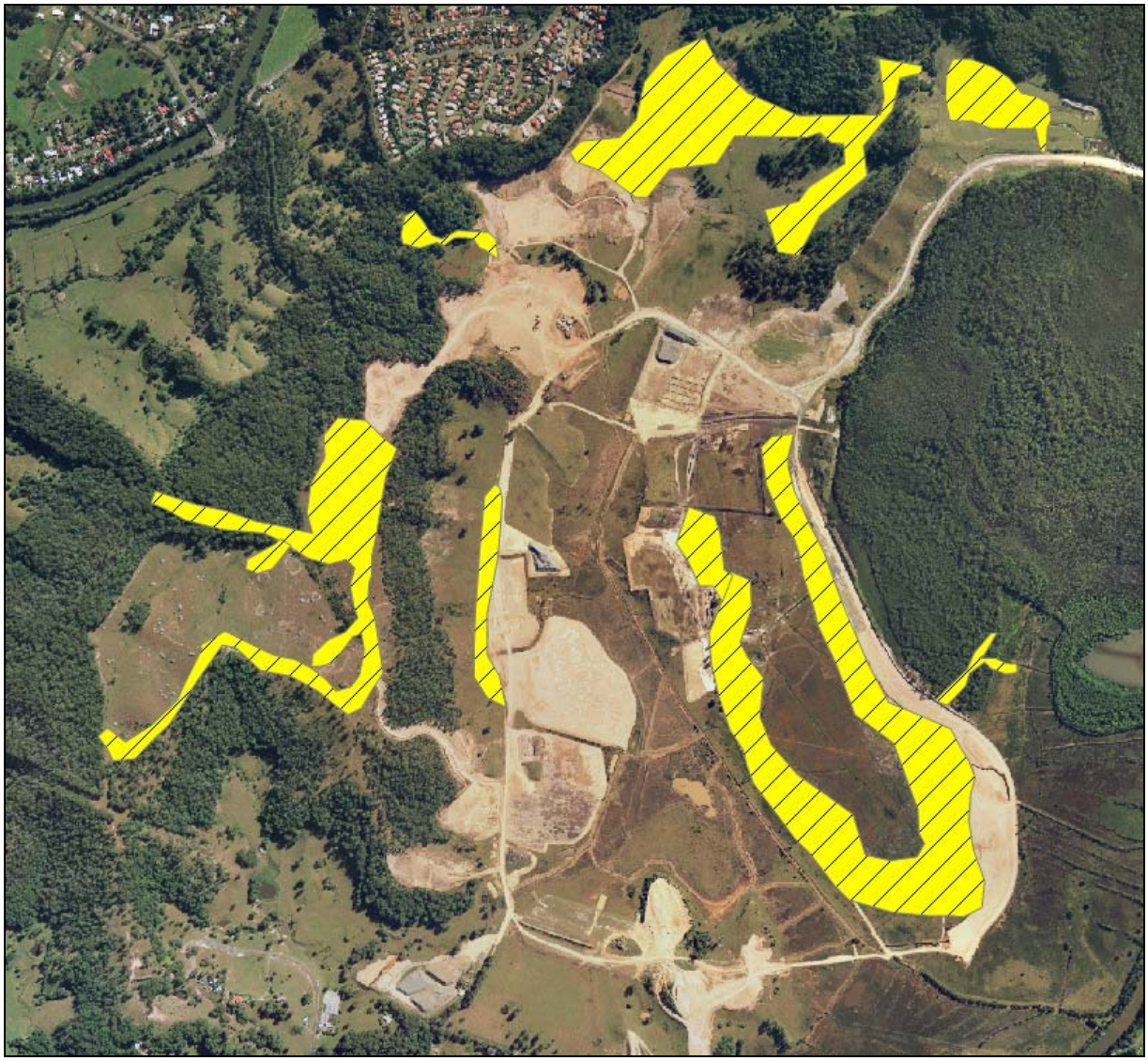

Figure 16: Areas surveyed for cultural material in yellow

5.2 Constraints to Site Detection

Constraints to site detection can be influenced by previous and present European land uses and dense surface vegetation. The area of surface exposure and the degree of surface visibility across exposed surfaces are usually the product of recent land uses e.g. ploughing, road construction, natural erosion and accelerated erosion (McDonald *et al.* 1990:92). In this case no areas where extensive earthworks have been conducted, apart from sections of the central Sand Ridge were investigated.

Specific areas were selected for inspection where there was exposure though erosion, road and track construction or there was generally low or sparse ground cover. These areas are indicated in Figure 16. Exposure and visibility were highly variable. There is no direct relationship between exposure and visibility and the recording of cultural material.

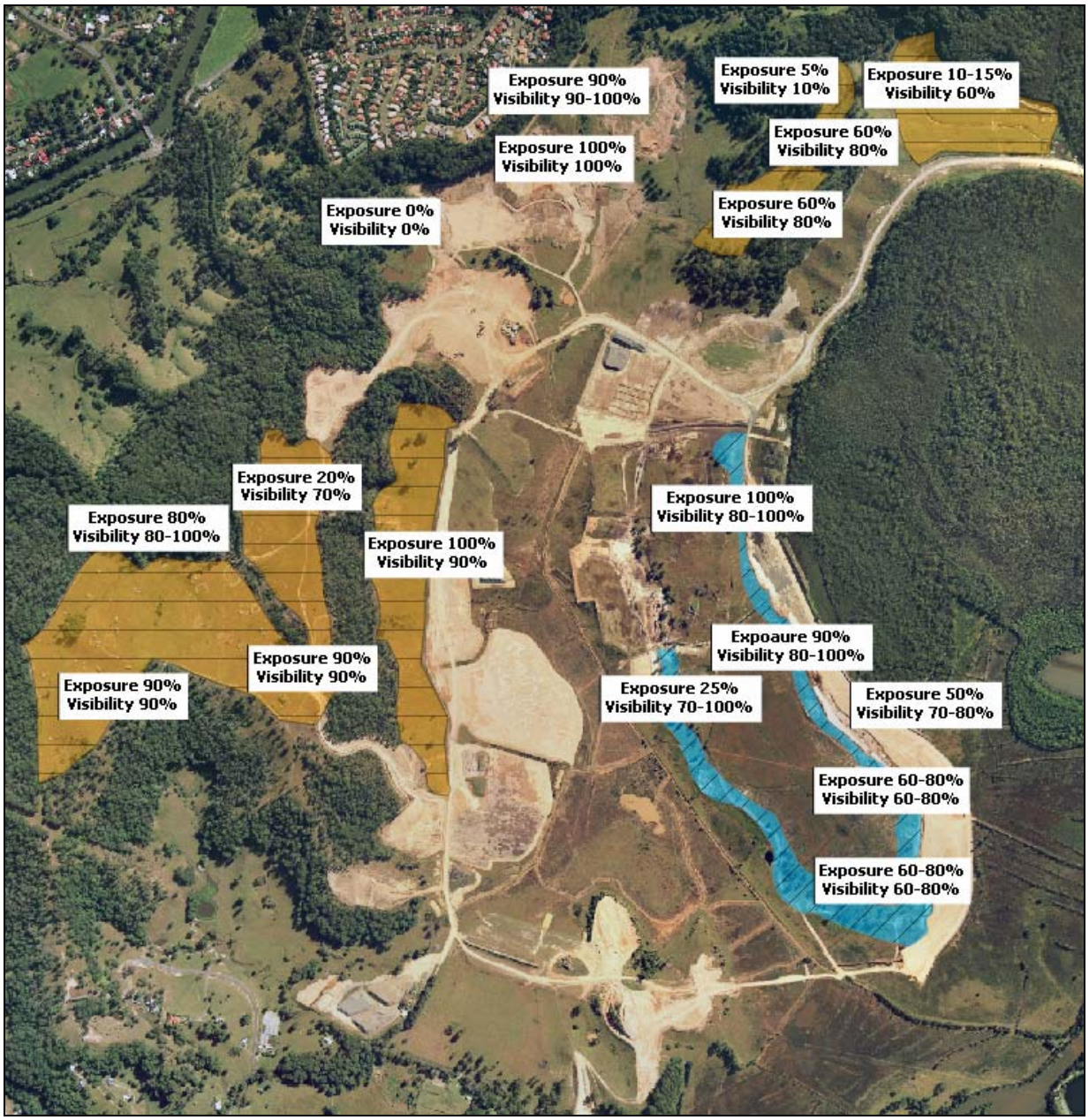

Figure 17: Exposure and visibility of areas covered in the survey

5.3 Survey Coverage

Figure 17 provides an evaluation of survey coverage which affords an approximate measure for the potential of the land surface to reveal archaeological evidence. This method is the preferred method outlined in N.S.W. N.P.W.S. Aboriginal Cultural Heritage Guidelines for Archaeological Survey Reporting, Appendix 4:44-48. The exposure and visibility percentages in Figure 17 do not provide an exact proportion of ground coverage but are a reasonable estimate.

With the exception of the south-western corner of the development - which had extensive ground cover at the time of survey - most of the areas were accessible for inspection. Areas that would be impacted by residential development or significant infrastructure development (as shown in the Concept Plan) were inspected. Additionally, some areas designated as open space or environmental protection, were also inspected.

5.4 Results

Nineteen locations with cultural material were identified (Figure 18, Table 3). These include eight individual artefacts, four shell and artefact scatters, three artefact scatters, three shell scatters and one possible scarred tree (Figures 19 - 26). Because of the complexity of the distribution of cultural material on the Sand Ridge which has been exacerbated by development works, at this stage there has been no attempt to identify sites. This will require further work, particularly subsurface investigation involving a range of subsurface exploratory approaches.

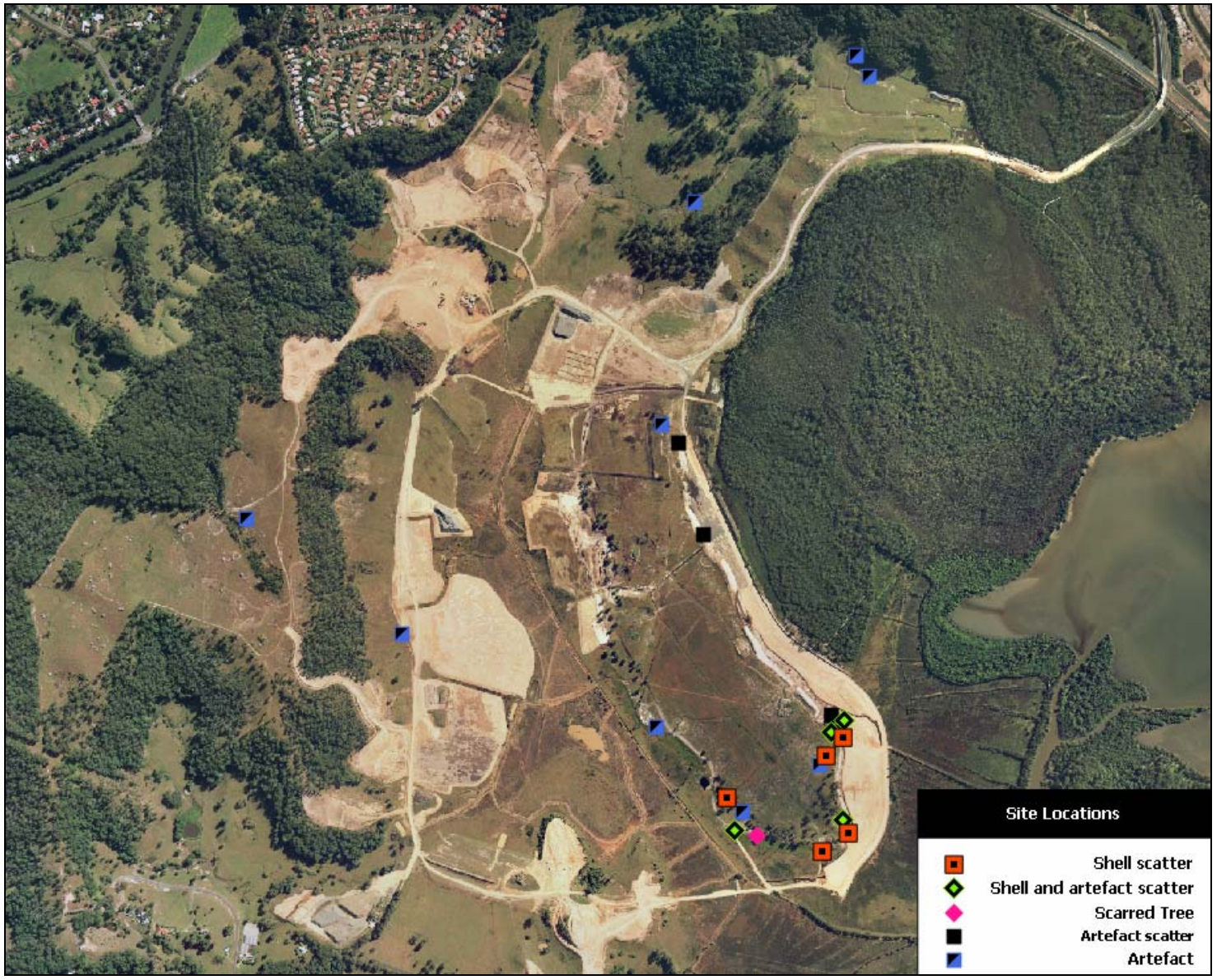

Figure 18: Distribution of archaeological material on the Subject Lands

Table 3: Description of archaeological material recorded during the survey of the Subject Lands

Location	Northing	Easting	Environment/site type	Artefacts		
				Description	Materials	Measurements
1	-28.17288	153.48095	Sand Ridge –Cleared and levelled , top 30 cm removed on outer edge /artefact scatter	Retouched Flake	Chert	
				Retouched Flake	Silcrete	
				Flake	Wongawallen Chert?	
				Bevel-edged fragment	Greywacke	130 x 75 x 60mm
2	-28.17123	153.48036	Sand Ridge -Cleared and levelled top 30 cm removed from outer edge/artefact scatter	Core		31 x 20 x 12mm
				Possible hammerstone		39 x 32 x 8mm
				Flake	Wongawallen Chert?	19 x 19 x 3mm
				Flake	Chalcedony?	26 x 25 x 4mm
				Flake	Obsidian	22 x 20 x 4mm
				Ochre pieces		25 x 20 x 6mm
				quartz pieces (2)	Quartz	
				Flaked piece	Chert	16 x 6 x 2mm
3	-28.17025	153.48037	Sand Ridge –Partially cleared and levelled / single artefact	Flake - hinge fracture	Pink Chert	29 x 16 x 12mm
4	-28.16987	153.47979	Sand Ridge –Partially cleared and levelled / single artefact	Hammerstone	Sandstone/ Greywacke	60 x 30 x 20mm
5	-28.17855	153.4851	Sand Ridge –Cleared and levelled /Thin shell deposit (6m NS - 6m EW). Deposit mixed with tree trunk	Shell fragments	Oyster, whelk, cockle	
				two ochre pieces		
				Flake - retouched (adze?)	Cream Chert	8 x 32 x 15mm
				Manuport		
6	-28.17856	153.48529	Sand Ridge –Cleared and levelled /Single artefact on levelled surface next to spoil heap	Bevel-edged pounder	Greywacke	112 x 90 x 80mm
				Flake - hinge fracture	Basalt	33 x 56 x 10mm
7	-28.17792	153.48521	Most north easterly point on Sand Ridge drop. Cleared and levelled/ Artefact scatter on sand edge (100m x 20m N-S). Maximum artefact density = 8 artefacts/m^2	Bevel-edged pounders (2)	Greywacke	
				Flakes (2)	Chert/Chalcedony	
				Retouched Flakes	Chert/Chalcedony	
	-28.17797	153.48544		Grindstone fragments	Greywacke	
				Shell Fragments (c.10cm below current surface)	Oyster, whelk, cockle	
	-28.17823	153.48542		Ochre pieces		

				Cores	Greywacke	
				Manuports	Greywacke	
8	-28.18093	153.48549	Sand Ridge –Cleared and levelled/ Thin shell scatter from edge of east face to spoil heaps	Flakes	Chert/Silcrete	
				Flake - retouched	Greywacke	
	-28.1811	153.48552		Shell	Oyster, whelk, cockle	
9	-28.18163	153.48485	Partially cleared, Scribbly Gum on Sand Ridge/Shell scatter (18m x 15m)	Shell fragments	Oyster, whelk	
10	-28.18127	153.48281	Partially cleared, Scribbly Gum on Sand Ridge/Scarred tree	Scarred Tree (scar is 2.7m x 19cm. Commences 35cm above ground)	Eucalypt	80cm diam.
11	-28.18113	153.48215	Partially cleared, Scribbly Gum on Sand Ridge/Shell and artefact scatter	Edge ground axe fragment	Greywacke	
				Shell fragments	Cockle, whelk, oyster	
				Flakes (2)	Silcrete	
12	-28.17881	153.48515	Partially cleared, Scribbly Gum on Sand Ridge/Shell scatter	Shell fragments	Oyster, whelk, cockle	
13	-28.17876	153.48479	Partially cleared, Scribbly Gum on Sand Ridge shell scatter (5m N-S 30-40EW)	Shell fragments	Oyster, whelks	
14	-28.17822	153.47952	Partially cleared, Scribbly Gum on Sand Ridge/single artefact	Flaked piece	Chert	
15	-28.17252	153.46656	Partially cleared, Scribbly Gum on Sand Ridge/single artefact	Flake	Chert	
16	-28.16371	153.48068	Cleared ,steep hill slopes with shallow rocky soils/single artefact	Flake	Silcrete	
17	-28.17566	153.4716	Cleared ,lower hill slopes with shallow rocky soils/single artefact	Retouched flake	Silcrete	55 x 30 x 15mm
18	-28.15965	153.48571	Cleared and drained lower slopes with deep soils/single artefact	Retouched Flake, some cortex, extensively worked	Fine grained Silcrete	50 x 40 x 32mm
19	-28.16018	153.48605	Cleared and drained lower slopes with deep soils/single artefact	Core	Silcrete	90 x 40 x 40mm

Figure 19: Flakes exposed on the north-eastern side of the Sand Ridge

Figure 20: Hammerstone located on the north-eastern side of the Sand Ridge

Figure 21: Scatter of shell and artefacts on the eastern end of the Sand Ridge

Figure 22: Shell exposed by tree clearing, eastern side of the Sand Ridge

Figure 23: Close up of shell exposed by tree clearing

Figure 24: Levelled area exposing stone artefacts and shell fragments

Figure 25: Location of artefacts eroding out of a road cutting

Figure 26: Possible scarred tree, south-eastern side of Sand Ridge

5.5 Revised Model of Archaeological Sensitivity

The model derived from the desktop study was largely substantiated by the field survey, although some modification was required to the postulated pattern for the central Sand Ridge and parts of the Mid – Lower Back Slopes (Figure 27). This model was used to guide the archaeological test excavation strategy. It should be noted that this does not represent the final model of archaeological sensitivity.

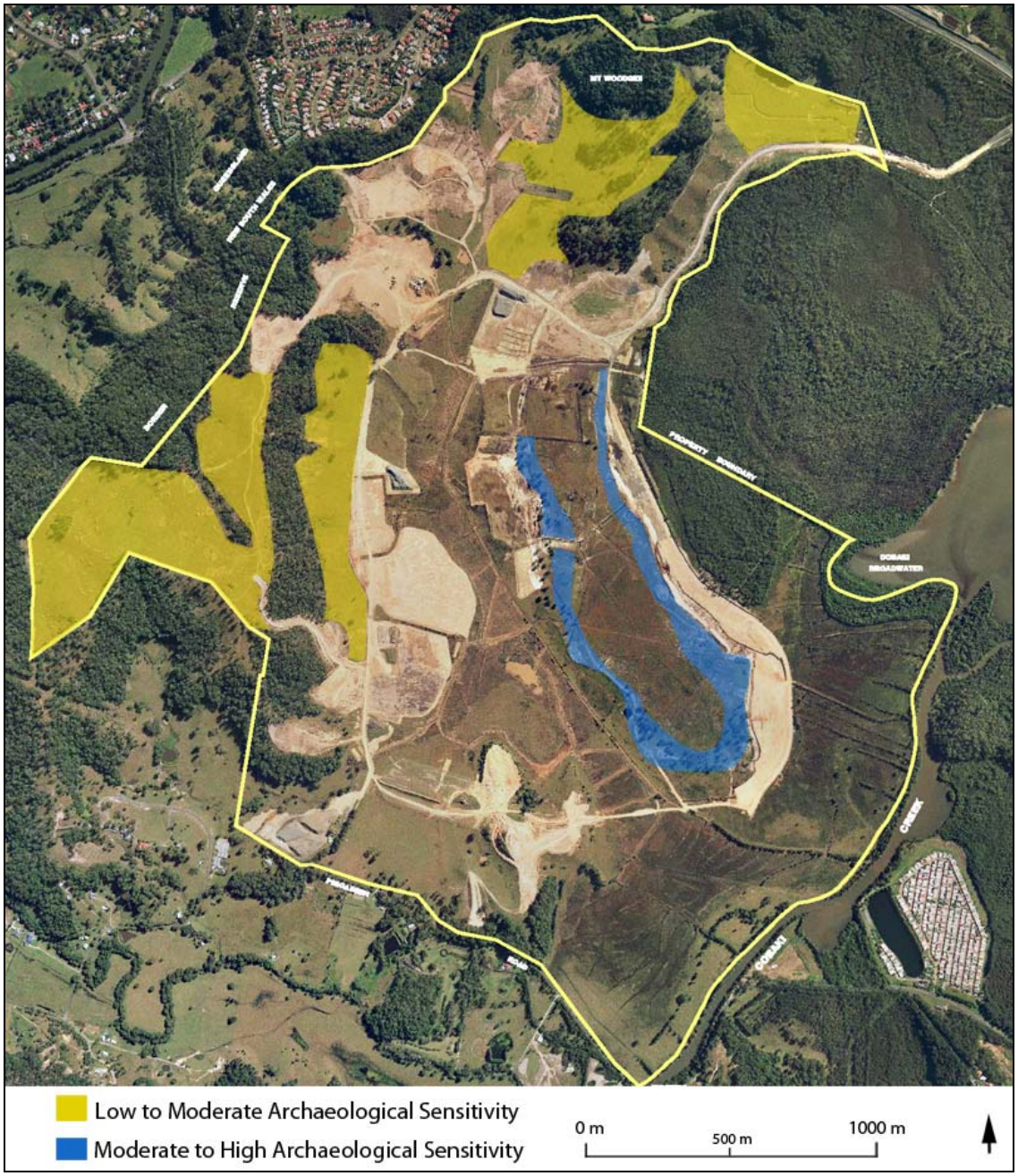

Figure 27: Revised model of the archaeological sensitivity (October 2008)

6. ARCHAEOLOGICAL TEST EXCAVATIONS

6.1 General Excavation Methods

In accordance with the model of archaeological sensitivity, three general areas within the Subject Lands were targeted for excavation: termed the Front Paddock, the Back Paddock (both within the Mid to Lower Back Slopes Physiographic Unit) and the Sand Ridge.

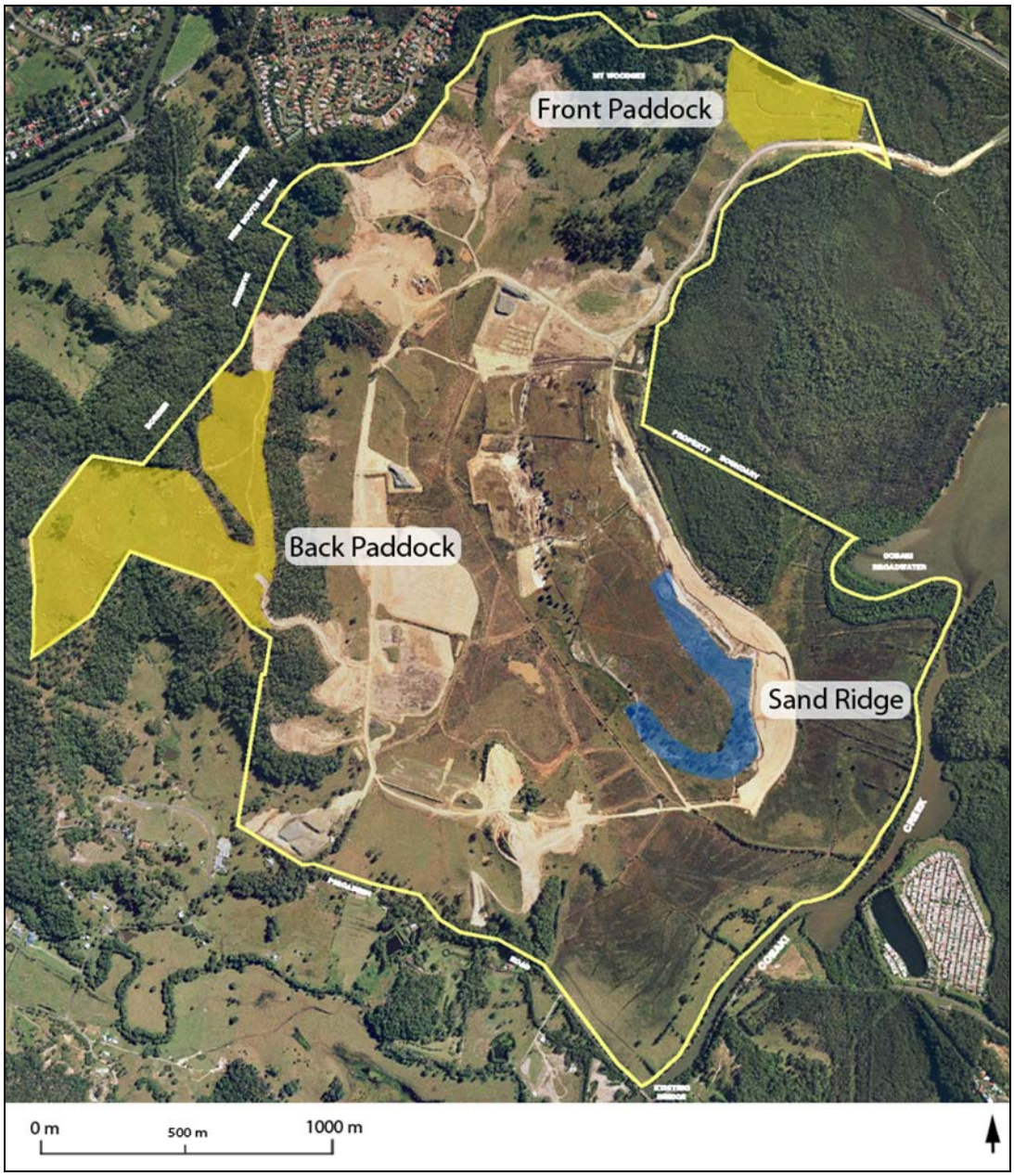

Figure 28: Excavation Areas

The general excavation methods were selected based on the fact that most of the soils had a history of disturbance and that few undisturbed deposits were likely to remain. The strategy focused on covering as much ground as possible to generate a statistically viable archaeological model. In this respect, the excavations had three aims. The first was to search for and collect artefacts. This was seen as particularly important by the Aboriginal Stakeholders participating in the excavations. The second was to investigate and record archaeological data to contribute to the 'story' of Aboriginal occupation of the Cobaki Broadwater region, and ensure that important cultural information was retained for future generations. The third was to locate *in situ* deposits from which dated sequences might be obtained. A detailed field log was kept. Notes on each excavated unit were recorded and any features noted. Colour photographs were taken of trenches and exposed profiles. Sediment samples were taken from each trench.

6.1.1 Front Paddock

An initial surface collection was conducted to retrieve any artefactual material exposed in this area. Previous investigations of the Front Paddock suggested that this area may be a potential spring site. To investigate, a series of 20 m trenches were plotted across the Front Paddock to examine the sub-surface deposits in this area, and to determine if any artefacts were present. Trenches were dug using an excavator with a 1.5 m wide batter bucket. The sediment from Trench 1 was sieved through 8mm and 4mm mesh sieves. No artefacts were recovered. Due to the lack of artefactual material in Trench 1, and to the nature of the podsolic soils which were very difficult to sieve, a decision was made not to sieve, but instead to closely inspect deposits from the remaining trenches. The Aboriginal participants supported the change in excavation strategy.

6.1.2 Back Paddock

An initial surface collection was conducted to retrieve any artefacts present in these areas. An excavation strategy based on 20 m x 20 m hollow square quadrants was initially adopted. All the trenches were located on podzolic soils characteristic of the hills in that region. These soils made sieving the excavated material particularly slow. As a result, the strategy was later changed to a series of 10 m x 10 m right angle trenches and one single trench, to improve the sample spread. This change was supported by the Aboriginal participants in the excavations. Trench locations were selected with two aims in mind. The first was to sample three different topographic areas – ridge crests, midslopes/saddles and lower slopes. The second was to test the degree of intra-unit variability and determine whether there was a relationship between slope and artefact density. The trenches were dug using an excavator with a 1.5 m wide batter bucket. Each excavation unit was approximately 5 cm deep with each 'bucket scoop' representing an

excavation unit ('XU'). The deposits were excavated through the upper sandy-clay layer to an estimated maximum depth of 50 cm, and terminated in the upper units of the hard and impenetrable compact clays. The deposit was wet sieved through 8 mm and 4 mm mesh sieves. All materials retained in the 8 mm and 4 mm mesh sieves were collected. The excavated finds from each XU were placed in a labeled bag. All excavated finds were taken to the Everick laboratory for analysis.

6.1.3 Sand Ridge

All artefacts that were exposed on the surface that would be disturbed as a result of the development activities were collected and recorded. The detailed subsurface investigations were conducted using an excavator with a 1.5 m wide batter bucket. A series of trenches were placed at locations selected to obtain information about the subsurface character of the cultural material – particularly its depth, nature and age. An initial 6 m trench was excavated at the north-eastern end of the Sand Ridge. The aims were to assess the impact of the fill layer that had been deposited on the Sand Ridge, to identify the boundary between the fill and the sand, and to determine if any cultural material could be found considering the history of disturbance.

A series of east-west transects were located along the length of the Sand Ridge. Within these transects a number of 2 m trenches were then excavated. Each excavation unit was approximately 5 cm deep with each 'bucket scoop' representing an excavation unit ('XU'). The deposit from all trenches was wet sieved through 8mm and 4mm mesh sieves and all materials retained in the 8mm and 4mm mesh sieves were collected. The excavated finds from each XU were placed in a labelled bag. All excavated finds were taken to the Everick laboratory for analysis.

6.2 Laboratory Analysis Procedures

Stone was initially sorted into cultural and non-cultural material. The cultural stone was sorted by artefact type and raw material type. Shell and shell fragments were sorted by species, counted and weighed. Bone fragments were retained for identification by a specialist. Charcoal was also retained for dating and wood identification but not analysed. Organic material was not retained.

6.2.1 Stone Artefacts

The cultural stone artefacts were identified to technological type and raw material type. Usewear and possible residues, when identified, were also noted. This information was collated to produce a general understanding of the site. A more detailed technological and residue analysis on appropriate artefacts will be undertaken by specialists in the forthcoming months.

6.2.2 Shell

All bags of shell were inventoried at the laboratory with Trench and Excavation Unit details being recorded for each bag. Most of the shells required a thorough washing to remove the sand and soil adhering to the surface and of bivalves and from inside gastropods. Each bag of shells was then analysed in turn and statistical measures of identified species were recorded on a customised 'Shell Analysis Recording Form'. This data was then transferred into a spreadsheet for ease of comparison. The three measures recorded for comparative analysis between species included weights, a count of the Number of Identified Specimens ('NISP') and a calculation of the Minimum Number of Individuals ('MNI'). Weight has been selected as the useful measure used to identify differences in component frequencies, as both of the count methods have limitations due to differential weathering and fragmentation within a species through time.

6.3 Front Paddock Excavations

6.3.1 Site Description

The Front Paddock is located on the lower slopes of the Macpherson Range at the north-western part of the Development Area (Figure 28). It is situated within the Mid to Lower Back Slopes Physiographic Unit (Figure 4). This area would once have been a dense forest, but has since been extensively cleared and is now heavily grassed grazing land. Two disused roads run through the southern and western side of the Front Paddock. Two deep drainage ditches run from south-west to north-east (Figure 29). They originated from a possible spring in the south-west of the site. The investigation aimed to determine if the spring was related to Aboriginal occupation.

Figure 29: Front Paddock view north showing drainage ditch running from west to east

6.3.2 Surface Collection

A total of three artefacts were recovered during an extensive inspection and surface collection of the Front Paddock (Table 4 and Figure 30).

Table 4: Front Paddock Surface Collection

Location	*Artefact Type*	*Raw Material*	*Length (mm)*	*Width (mm)*	*Thickness (mm)*	*Weight (grams)*
FP/SC	Multi-platform core	Silcrete	31.50	52.89	39.37	66.06
FP/SC	Flake	Chalcedony	46.89	24.59	14.76	13.48
FP/SC	Flaked piece	Chalcedony	22.18	29.86	7.33	5.43

Figure 30: Front Paddock surface collection

6.3.3 Trenches

A series of nine trenches were excavated systematically across the Front Paddock. Trench dimensions are listed in Table 5, and a plan of the trenches is provided in Figure 31 below.

No artefacts were recovered from any of the trenches.

Table 5: Front Paddock trench dimensions

Trench	*Trench length (m)*	*Trench width (m)*	*Trench depth (cm)*
1	18.80	1.5	0-19
2	22.20	1.5	0-14
3	8.70	1.5	0-15
4	19.00	1.5	0-10
5	19.60	1.5	0-18
6	19.70	1.5	0-12
7	19.40	1.5	0-16
8	20.00	1.5	0-15
9	20.00	1.5	0-16

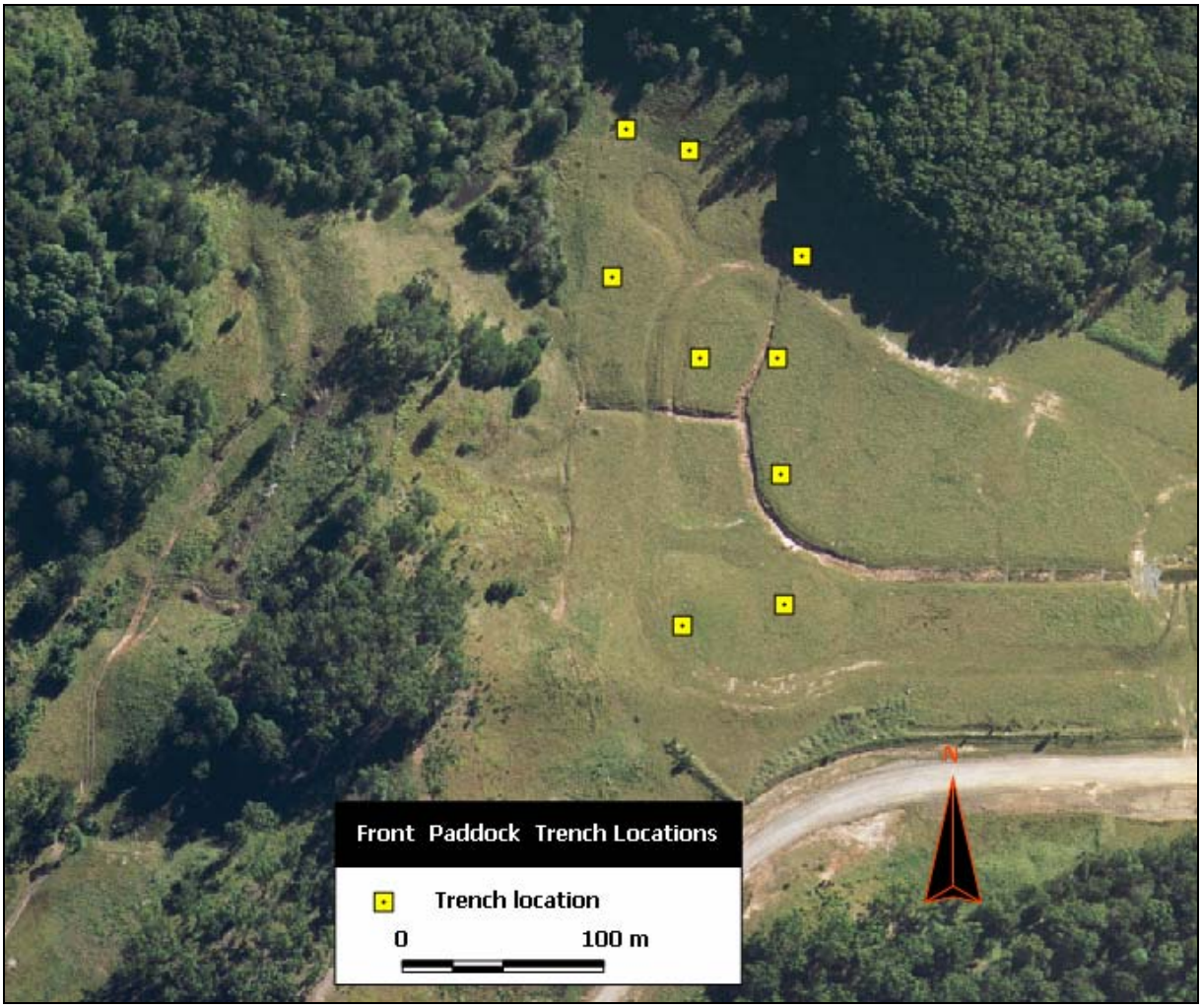

Figure 31: Trench locations across the Front Paddock

The stratigraphic profile remained consistent across the nine trenches. Deposits were typical of the podzolic soils of this area and comprised a thin, organic rich, sandy-clay layer of between 14 and 20 cm in depth, overlying hard yellow clay (Figure 32). Ethnographic evidence and the results of Back Paddock excavations (see below) tend to indicate that these lands would have been occupied. The most plausible explanation for the lack of cultural material identified during the excavations would be erosion. Indications of extensive slipping and erosion on the face of the Front Paddock appear to demonstrate that most of the cultural material has been eroded into the wetlands of the Cobaki Broadwater.

Figure 32: Example of excavation techniques - Front Paddock Trench 8

6.4 Back Paddock Excavations

6.4.1 Site Description

The Back Paddock is situated on a spur that forms part of the Macpherson Range. Its principal feature is a ridgeline that that runs from this spur, along the western edges of the Development Area (Figure 33). This area has been cleared of native vegetation and is currently under pasture. Dams have been constructed in some gullies. Roads and tracks run across ridge lines. Clearing has exacerbated natural erosion, particularly wind erosion across the ridgeline.

Figure 33: Back Paddock view north-east

6.4.2 Surface Collection

Prior to excavations, the site was inspected for artefacts. A total of 14 artefacts were recovered from the surface collection of this area (Table 6).

Table 6: Back Paddock surface collection

Location	Artefact type	Raw material	Length (mm)	Width (mm)	Thickness (mm)	Weight (grams)
BP/T5/FS105/SC (near T5)	Flake	Silcrete	32.05	16.64	4.8	2.12
BP/T5/FS105/SC (near T5)	Flake	Chalcedony	10.92	16.45	2.9	0.46
BP/T8/FS121/SC (near T8)	Flake	Silcrete	20.51	21.74	6.39	1.89
BP/T8/FS121/SC (near T8)	Flake	Silcrete	29.82	19.01	6.37	3.82
BP/T8/FS121/SC (near T8)	Flake	Intermediate volcanic	14.94	15.65	3.6	0.61
BP/T8/FS121/SC (near T8)	Flake	Silcrete	27.06	30.87	4.64	3.45
BP/T8/FS121/SC (near T8)	Multi-platform core	Chalcedony	30.03	39.87	32.9	54.43
BP/T8/FS121/SC (near T8)	Flaked piece	Milky quartz	23.78	14.43	3.01	1.49
BP/SC/FS150 (near T8 & T11)	Retouched flake	Chalcedony	18.26	21.79	8.39	3.34
BP/SC/FS150 (near T8 & T11)	Retouched flake	Chert/Argillite	59.62	38.17	11.89	25.74
BP/SC/FS150 (near T8 & T11)	Flake	Acid volcanic	20.69	25.46	6.44	2.95
BP/SC/FS150 (near T8 & T11)	Flake	Chalcedony	21.64	13.17	7.1	2.18
BP/SC/FS185 (near T12 & T13)	Flake	Chalcedony	10.27	12.24	2.28	0.26
BP/SC/FS185 (near T12 & T13)	Flake	Chalcedony	17.38	8.26	7.11	1.96

6.4.3 *Trenches*

A total of 14 trenches were excavated across the Back Paddock, and 686 artefacts were recovered. A plan of the trenches is provided in Figure 34. See Table 7 below for trench dimensions and artefact distribution. Trenches 1 - 4 (Figure 35), 7, 12 and 13 were located on ridge crests. Trenches 5, 6 and 8 - 11 were located on mid slope/saddles. Trench 14 was located on a lower slope near a spring. Trenches 1 - 4 formed a hollow square and trenches 7 and 13 were single trenches. The remainder were dug with one on a N/S transect and another running E/W.

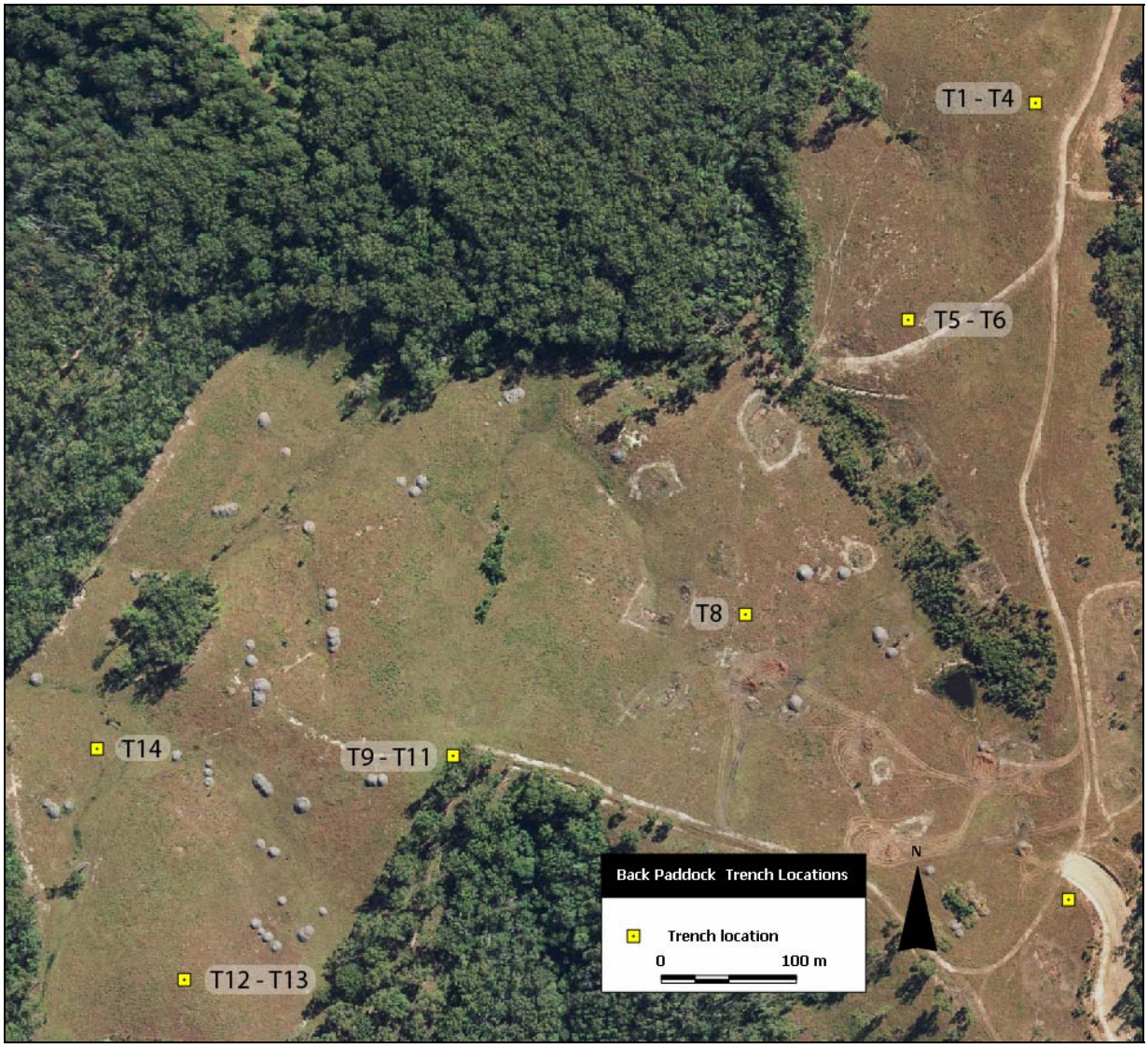

Figure 34: Trench locations across the Back Paddock

Table 7: Back Paddock Trench dimensions

Trench	*Trench length (m)*	*Trench width (m)*	*Trench depth (cm)*	*Number of Artefacts*	*Artefacts/m^3*
1	20	1.5	0-15	31	6.88
2	20	1.5	0-20	28	4.66
3	20	1.5	0-25	15	2
4	20	1.5	0-35	212	20.19
5	10	1.5	0-30	102	22.66
6	10	1.5	0-30	58	6.22
7	10	1.5	0-15	12	5.33
8	10	1.5	0-15	33	14.66
9	10	1.5	0-30	25	5.55
10	10	1.5	0-25	65	17.33
11	10	1.5	0-20	11	3.66
12	10	1.5	0-40	51	8.5
13	10	1.5	0-42	45	7.14
14	10	1.5	0-32	10	2.08

Figure 35: Back Paddock Trenches 1 and 4

The podzolic soils of the Back Paddock were consistent across the 14 trenches. The deposit predominantly comprised a top humic layer (ranging from 10 - 15 cm in depth), above a light grey clayey-sand (average of 20 cm in depth), and overlying a hard and compact yellow/orange clay (Figures 36 and 37). Some trenches revealed evidence of charcoal from burnt tree roots.

Figure 36: Back Paddock Trench 6 north section

Figure 37: Back Paddock Trench 9 north-east section

6.4.4 Artefacts

A total of 686 artefacts were recovered from excavations of the Back Paddock. These included flakes, flaked pieces, retouched flakes, cores and backed blades. The backed blades have only been located in the Back Paddock, with none identified in the Sand Ridge or Front Paddock. Raw material types include chalcedony, silcrete, chert/argillite, quartz and a range of volcanics. A selection of the artefact types and raw material types that were recovered from the Back Paddock are illustrated in Figures 38 - 41.

Figure 38: Chalcedony and silcrete cores from Trench 13

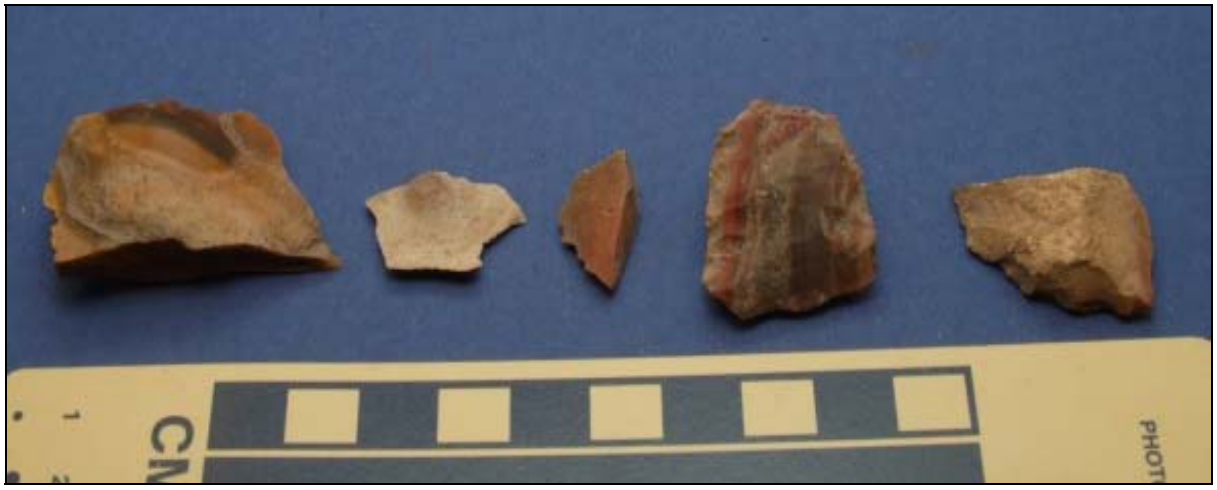

Figure 39: Chalcedony and silcrete retouched flakes from Trench 5

Figure 40: Chalcedony, silcrete and chert/argillite flakes from Trench 10

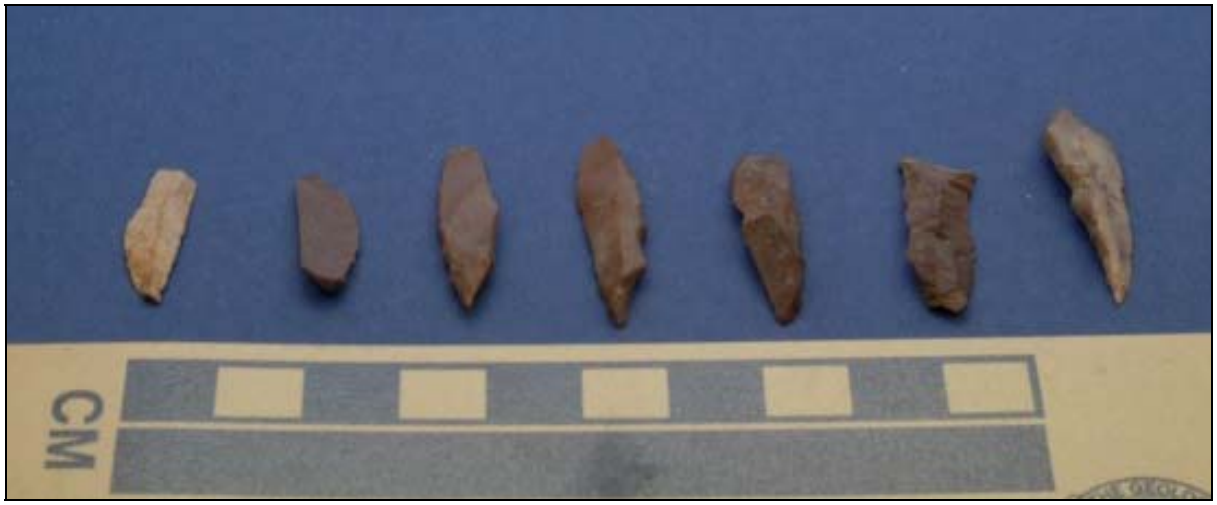

Figure 41: Chalcedony Backed blades from Trench 4

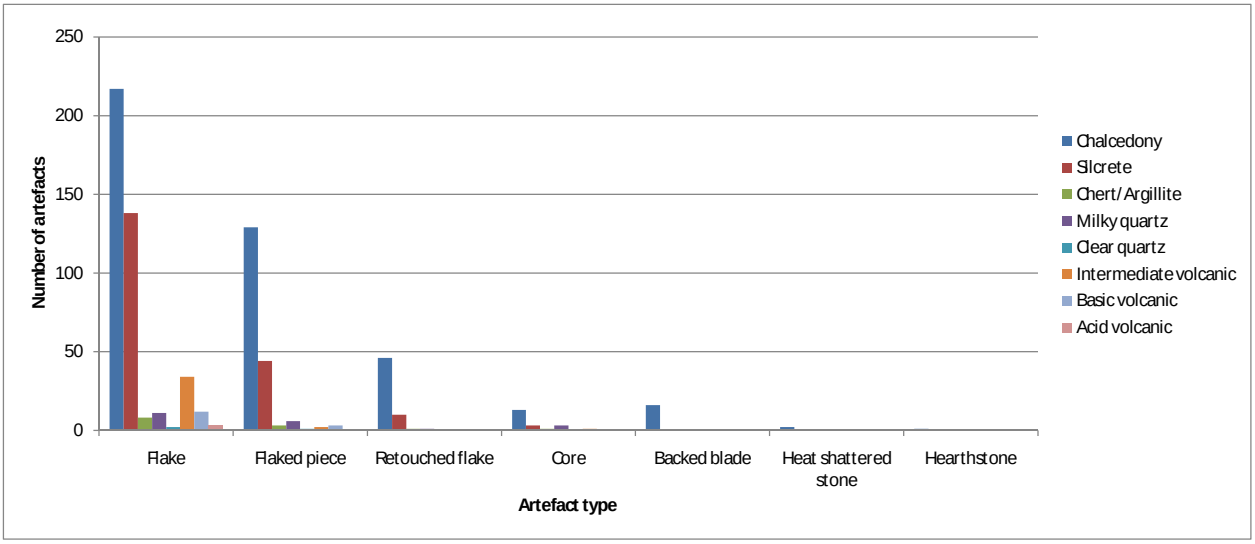

Figure 42: Distribution of artefacts by type and raw material

6.4.5 Review of Results

Trenches across the Back Paddock were placed to sample three different topographic areas – ridge crests, midslopes/saddles and lower slopes. Furthermore, the strategic placement aimed to test the degree of intra-unit variability to determine whether there was a relationship between slope and artefact density. The excavations revealed that all trenches contained artefacts but there is high variability in artefact numbers across the trenches and landform types (Figure 43). The results from Trenches 1 - 4 illustrate that there is also high artefact variability within locations.

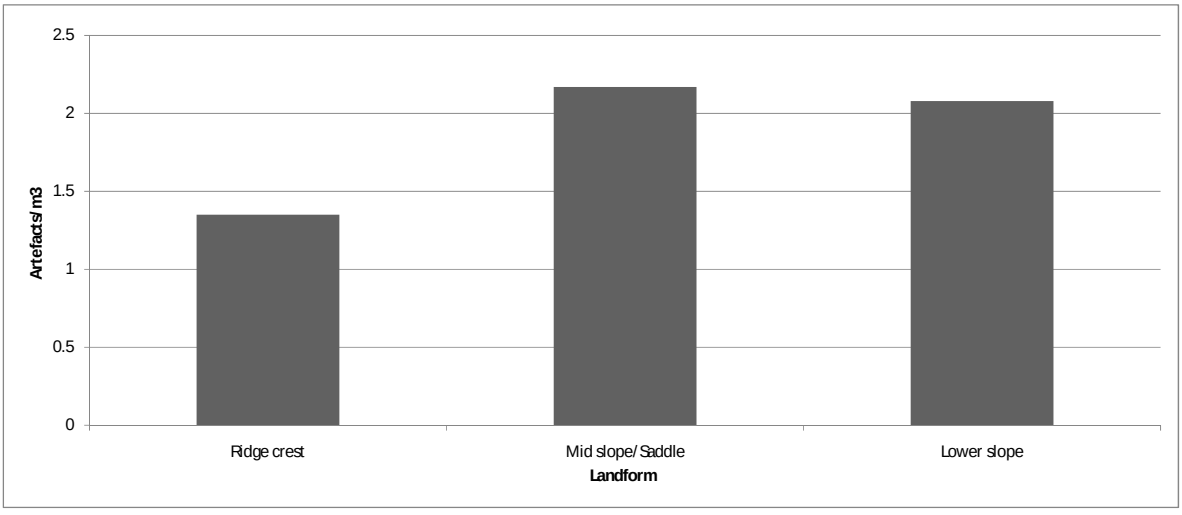

Figure 43: Artefact distribution across landform type

Flakes are the most common artefact type in the assemblage with chalcedony being the preferred raw material. Variability is also demonstrated in the distribution of artefacts by type and raw material across the Back Paddock (Figures 44 and 45).Flakes are present in all raw material types, while cores are present in only five of the eight raw materials. Chalcedony, silcrete, chert/argillite and quartz are all imported stone materials. Whilst no sourcing studies have been conducted in the Tweed area, the most likely source for these imported materials are the beds of creeks and rivers in the neighbouring hinterland. The volcanics in the assemblage were most likely sourced locally.

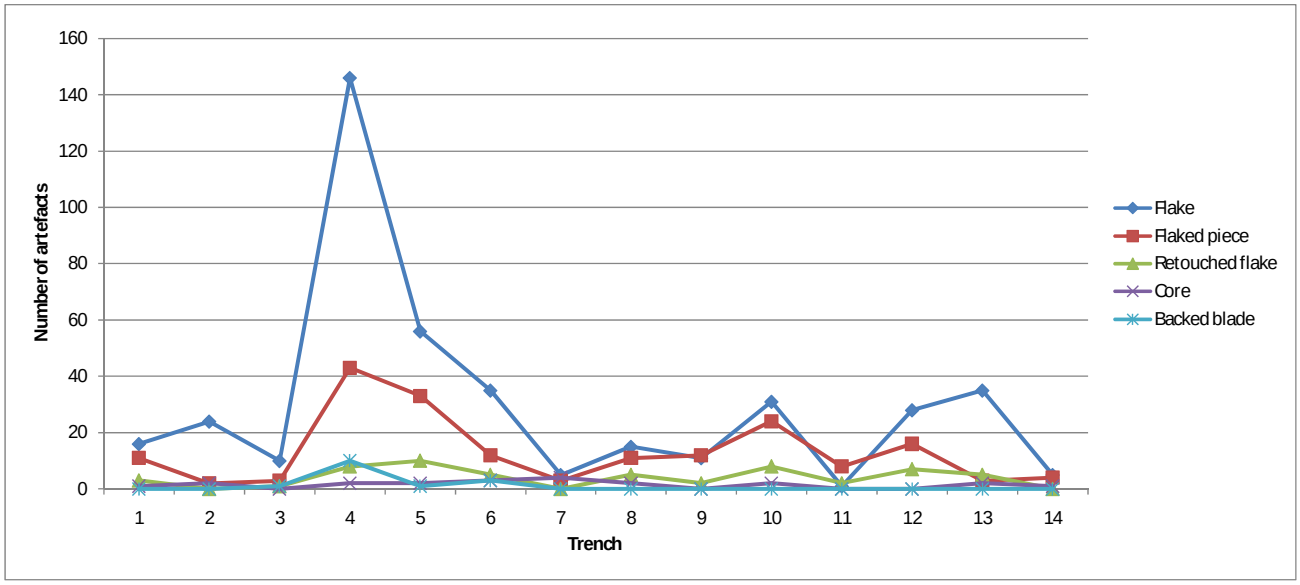

Figure 44: Number of artefact types per trench

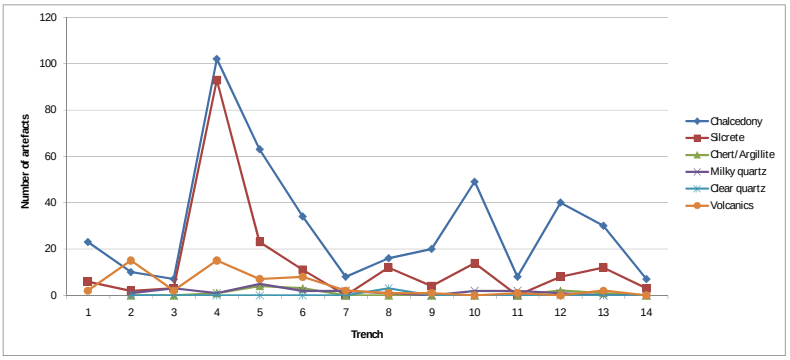

Figure 45: Number of raw material types per trench

6.5 Sand Ridge Excavations

6.5.1 Site Description

This area is a central low Sand Ridge on marine plains located in the central and south-eastern parts of the Development Area (Figures 28 and 46). This low Sand Ridge projects south from the lower slopes of the Macpherson Range into a drained salt marsh. The ridge is an unusual feature in that it is an Aeolian dune comprising sands blown in from the Cobaki Broadwater during episodes of drying when the edges of the lake were less vegetated. The ridge has a possible Pleistocene origin. The outer 100 metres of the ridge is slightly elevated, creating a freshwater swamp in the central section. The ridge has largely been cleared of natural vegetation with the exception of scribbly gum woodlands on the eastern and south-eastern edges. An extensive network of drains has been dug to drain the ridge. The edges of the ridge have been extensively modified by development. The outer edge of the dune along the north-eastern and southern edges has been cut and filled with rock and soil and a road constructed around its perimeter. A rubble drain has been excavated along its western perimeter. Large amounts of topsoil have been redistributed over the surface, up to a depth of 30 cm in places.

Figure 46: View south-west over the Sand Ridge

6.5.2 Surface Collection

A preliminary collection of surface artefacts across the whole of this area was undertaken upon arrival at the site. Eleven artefacts were recovered (Table 8). Each artefact had its positions recorded using a GPS.

Table 8: Sand Ridge Surface Collection

Location	Artefact type	Raw material
SR/SC/2	Flake	Intermediate volcanic
SR/SC/3	Flake	Silcrete
SR/SC/8	Retouched flake	Chalcedony
SR/SC/11	Retouched flake	Chalcedony
SR/SC/11	Flake	Milky quartz
SR/SC/19	Flake	Basic volcanic
SR/SC/100	Flake	Basic volcanic
SR/SC/100	Flaked piece	Basic volcanic
SR/SC/100	Retouched flake	Chalcedony
SR/SC/1101	Flake	Intermediate volcanic
SR/SC/MSH near T23 & T24	Hammerstone	Acid volcanic

6.5.3 Excavation Trenches

A total of 58 trenches were excavated at the Sand Ridge site and 3,145 artefacts were recovered. See Table 9 below for trench dimensions and artefact distribution. A plan of the trenches is provided in Figure 47.

Table 9: Sand Ridge Trenches

Trench	Trench length (m)	Trench width (m)	Trench depth (cm)	Number of Artefacts	Artefacts/m^3
1	6	1.5	195	263	14.98
2	2	1.5	70	10	4.76
3	2	1.5	96	151	52.43
4	2	1.5	120	21	5.83
5	2	1.5	120	13	3.61
6	2	1.5	120	9	2.5
7	2	1.5	60	70	38.88
8	2	1.5	71	95	44.60
9	2	1.5	71	77	36.15
10	2	1.5	71	42	19.71
11	2	1.5	76	50	21.92
12	2	1.5	76	40	17.54
13	2	1.5	80	189	78.75

Trench	Trench length (m)	Trench width (m)	Trench depth (cm)	Number of Artefacts	Artefacts/m^3
14	2	1.5	80	140	58.33
15	2	1.5	75	68	30.22
16	2	1.5	73	13	5.93
17	2	1.5	80	0	0
18	2	1.5	127	13	3.41
19	2	1.5	121	0	0
20	2	1.5	103	36	11.65
21	2	1.5	86	35	13.56
22	2	1.5	98	36	12.24
23	2	1.5	100	82	27.33
24	2	1.5	75	58	25.77
25	2	1.5	80	45	18.75
26	2	1.5	54	76	46.91
27	2	1.5	100	5	1.66
28	2	1.5	115	16	6.15
29	2	1.5	120	11	3.05
30	2	1.5	90	43	15.92
31	2	1.5	84	24	9.52
32	2	1.5	85	22	8.62
33	2	1.5	83	53	21.28
34	2	1.5	101	38	12.54
35	2	1.5	59	19	10.73
36	2	1.5	40	10	8.33
37	2	1.5	63	33	17.46
38	2	1.5	20	0	0
39	2	1.5	67	35	17.41
40	2	1.5	58	4	2.29
41	2	1.5	60	9	5
42	2	1.5	54	38	23.45
43	2	1.5	54	12	7.40
44	2	1.5	79	6	2.53
45	2	1.5	66	26	13.13
46	2	1.5	60	8	4.44
47	2	1.5	56	0	0
48	2	1.5	52	132	84.61
49	2	1.5	90	102	37.77
50	2	1.5	95	78	27.36
51	2	1.5	90	90	33.33
52	2	1.5	80	56	23.33
53	2	1.5	72	33	15.27
54	2	1.5	94	198	70.21
55	2	1.5	95	283	99.29
56	2	1.5	50	0	0
57	2	1.5	60	0	0
58	2	1.5	140	129	30.71

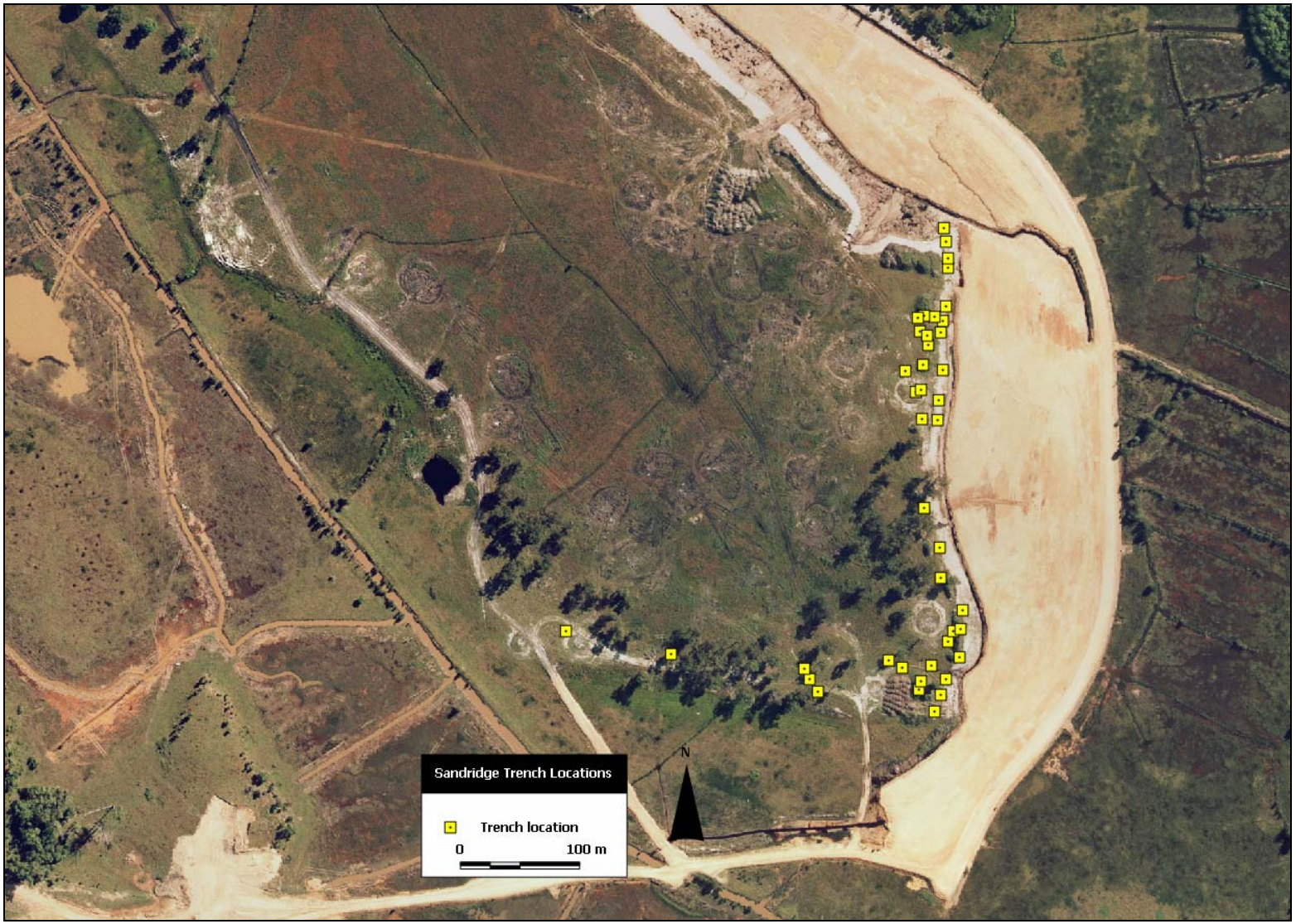

Figure 47: General trench locations across the Sand Ridge

Figure 48: Trench locations across the north-eastern section of the Sand Ridge

Figure 49: Trench locations across the central section of the Sand Ridge

Figure 50: Trench locations across the south-eastern section of the Sand Ridge

Trenches 17 and 38 were machine excavated to depths of 80 cm and 20 cm respectively, and then abandoned without any deposit being sieved as they were in areas which had been heavily disturbed. Modern fill was evident throughout the soil matrix.

The stratigraphic profile of the other trenches across the Sand Ridge varied little. The soil matrix consisted of a top modern fill layer (15 - 30 cm deep) onto the original ground surface (4 - 6 cm deep). Below the original ground surface was dark grey sand with a high organic content. The profile then demonstrated a gradational change in colour from dark grey through to pale grey sand at the base of the pits (Figures 51 - 52).

Figure 51: Sand Ridge Trench 18 south section

Figure 52: Sand Ridge Trench 20 south section

6.5.4 Stone Artefacts

A total of 3,145 artefacts were recovered from excavations of the Sand Ridge. These included flakes, flaked pieces, retouched flakes and cores. Additionally, seven bevelled-edge pounders were recovered. However backed blades were absent. A further 22 flakes show evidence of having been ground. Again, raw material types were predominantly chalcedony, silcrete, chert/argillite, quartz and a range of volcanics. Figures 53 - 57 demonstrate a selection of the artefact type and raw material types that were recovered from the Sand Ridge. A large amount of recovered quartz is in the process of being analysed at the time of publishing this report.

Figure 53: Chalcedony and silcrete retouched flakes from Trench 7

Figure 54: Chalcedony, silcrete, chert/argillite and volcanic flakes from Trench 30

Figure 55: Chalcedony, silcrete and volcanic cores from Trenches 55 and 58

Figure 56: Bevelled edge pounder from Trench 1 (intermediate volcanic)

Figure 57: Flaking on the back of the bevelled edge pounder

Figures 58 - 61 below demonstrate the range, types and raw materials of the artefacts recovered from the Sand Ridge.

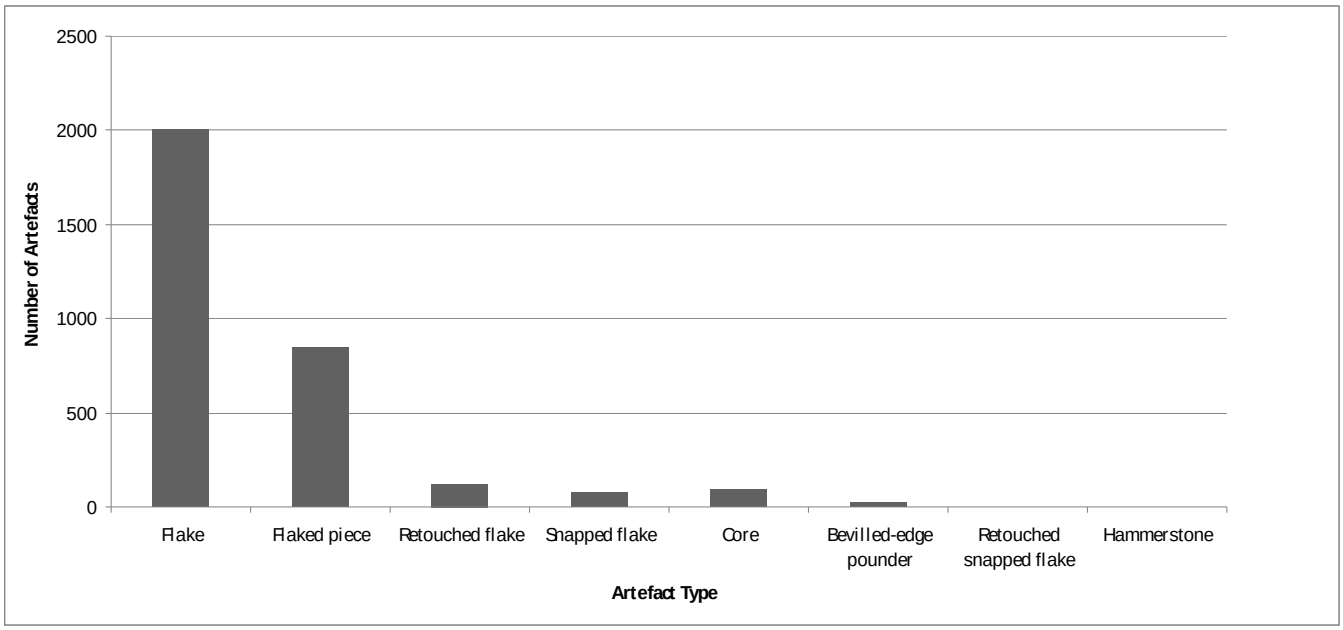

Figure 58: Distribution of artefact types

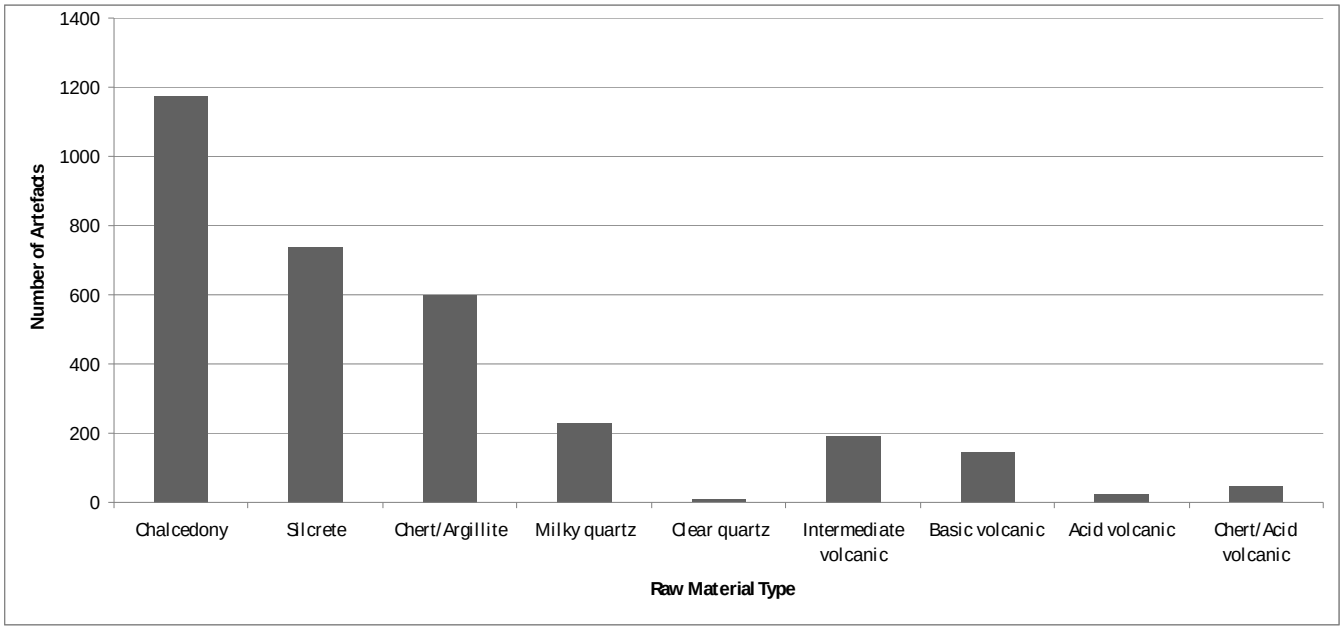

Figure 59: Distribution of raw materials

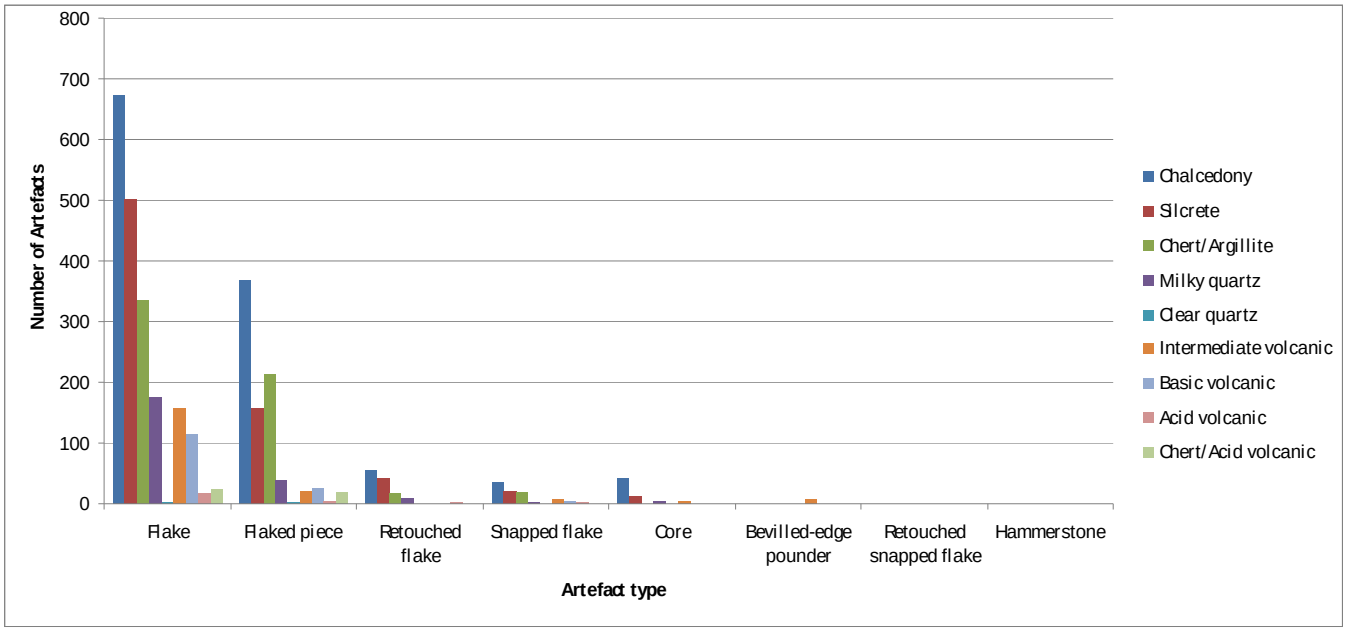

Figure 60: Distribution of artefacts by type and raw material

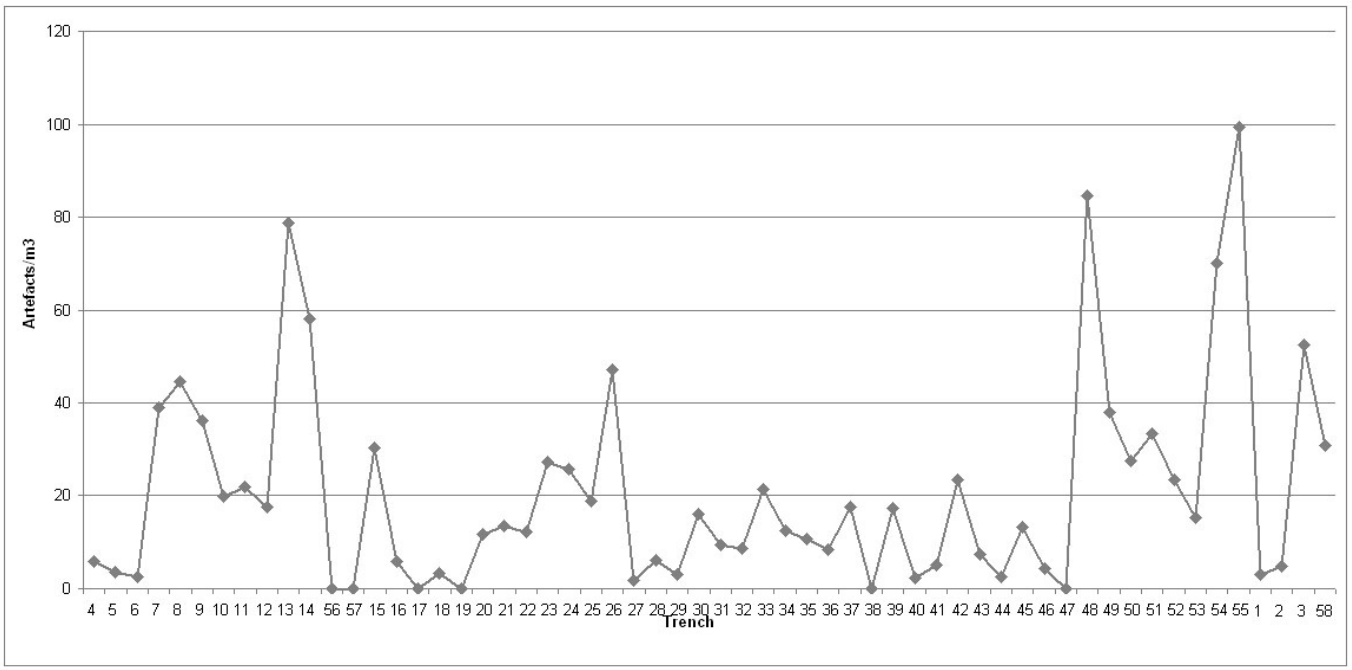

Figure 61: Distribution of artefacts/m^3 from south to north along the Sand Ridge

6.5.5 Shell and Other Fauna

Shell was a common cultural material found at the Sand Ridge. At least ten species of marine shell were present. The most dominant types of shell by weight were oyster (*Saccostrea glomerata*), hercules club whelk (*Pyrazus ebininus*), cockle (*Anadara trapezia*) and mud creeper (*Batillaria australis*). The other marine species represented in minor amounts included marine snail (*Polinices sordidas),* pipi (*Donax deltoides*), Trochus (*Bembicium auratum*), tingle whelk *(Bedeva paivae)*, Dove (*Nassarius burchardi)* and one specimen of unidentified gastropod. Details of the recovered shell are recorded in Table 10. The shells with minor representation are not discussed in detail here. There were also instances where two species (all oyster on hercules club whelk and oyster on mud creeper) were attached. Quantification measures used for analysis include Number of Identified Specimens (NISP), Minimum Number of Individuals (MNI) and mass weights.

Table 10: Shell species collected from Sand Ridge sorted by weight

Shell Species	*MNI*	*NISP*	*Weight (g)*
Saccostrea glomerata	569	13,420	10,104.33
Pyrazus ebeninus	783	1,954	5,821.05
Anadara trapezia	90	336	886.42
Batillaria australis	242	361	261.37
Polinices sordidas	10	13	59.29
Donax deltoides	10	38	11.69
Bembicium auratum	5	5	2.79
Bedeva paivae	1	1	0.73
Nassarius burchardi	3	3	0.47
unidentified gastropod	1	1	0.3
TOTAL	**1714**	**16132**	**17148.44**

The shell assemblage exhibits a high degree of fragmentation, especially for the oyster. It should be noted that approximately half of the NISP count was made up of fragments less than 10 mm in diameter, and as such NISP is not a reliable quantitative measure in this case. Due to this the analysis is largely confined to weight proportions. The high level of fragmented shell indicates the site was subject to extensive post depositional disturbance, such as from damage by livestock trampling, ploughing and heavy machinery. Table 11 shows the quantities of shell excavated from the ten trenches with the highest shell representation. The other 48 trenches yielded varying amounts of shell from nil to < 200 g in weight. The analysis of shell for the purposes of this summary is limited to the Shell Midden (see below), as this is

likely to reveal the most useful information about shell exploitation by people who occupied the Sand Ridge.

Table 11: Top ten Trenches sorted by 'all shell' weight recovered

Trench	*MNI*	*NISP*	*Weight*
T25	691	9294	9224.72
T23	143	2157	2210.99
T24	38	719	629.01
T26	49	574	602.47
T3	109	511	530.39
T37	49	399	497.28
T48	63	251	467.68
T52	55	202	260.09
T55	29	188	252.74
T49	41	235	242.51

Sand Ridge Shell Midden:

An extensive amount of shell was found in Trenches 23, 24, 25 and 26, which represents the remains of a shell midden. Table 12 shows the varying concentration of shell material in each XU for the shell midden. No dates are yet available for the midden so we cannot place a time period on any of the XUs. However, it is fair to say that over time the shell density increased as 91% of the shell was recovered from XUs above 30 cm. 58% of shell was collected from between 10 - 15cm, which appears to be when the midden creation was at its greatest. All of the shell species increase in mass at around this time.

Table 12: Percentage of shell mass recovered by depth

XU depth	*% of recovered shell mass*
0-10cm	14%
10-15cm	58%
15-25cm	10%
25-30cm	9%
30-40cm	4%
40-50cm	3%
50-95cm	2%

The dominant shell species recovered are *Saccostrea glomerata* (rock oyster) and *Pyrazus ebeninus* (hercules mud whelk) (Figure 62). Both of these species have previously been recorded as popular shellfish gathered during the Late Holocene (Hall 1990a, McNiven 1999). Table 13 shows the intra-species weight comparisons by depth. In the lower XUs (15 - 95cm) there was little difference in the quantities of these two species, compared by weight. However, in the 10 - 15cm XU there is a marked increase in mass of rock oyster dominating over the mud whelk by around 4:1.

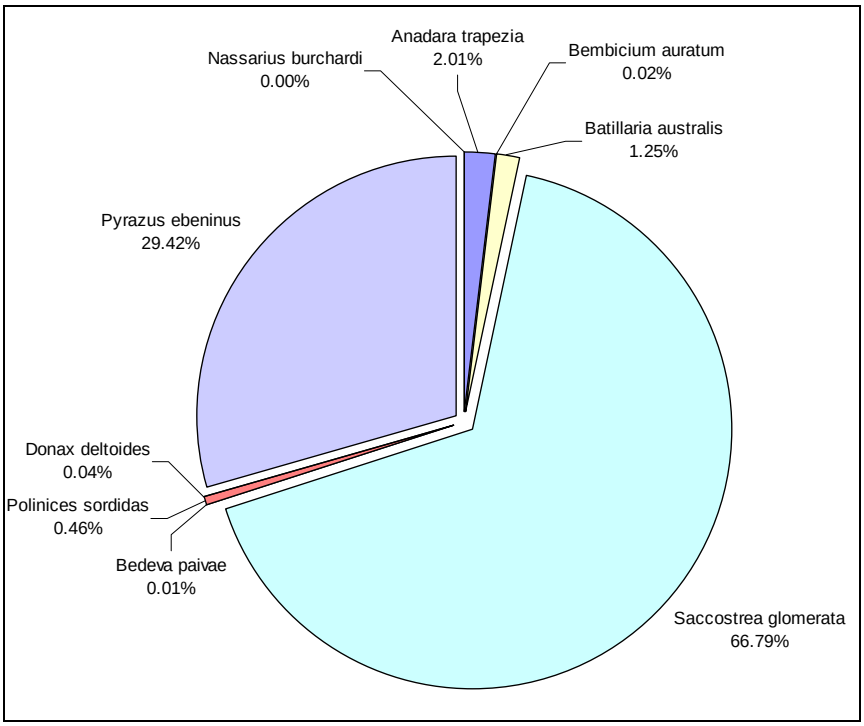

Figure 62: Representation (%) of shell species in midden

Table 13: Comparison of shell species mass across XUs

Shell species	*0-10cm*	*10-15cm*	*15-25cm*	*25-30cm*	*30-40cm*	*40-50cm*	*50-95cm*
Pyrazus ebeninus	648g	1406g	619g	549g	255g	154g	131g
Saccostrea glomerata	1096g	5651g	581g	556g	285g	174g	81g
Anadara trapezia	67g	93g	21g	57g	10g	3g	3g
Batillaria australis	11g	107g	11g	22g	4g	4g	0
Bembicium auratum	1g	2g	0	0	0	0	0
Bedeva paivae	0	1g	0	0	0	0	0
Donax deltoides	0	3g	0	0	0	1	0
Polinices sordidas	1g	53g	4g	0	0	0	0

Rock Oyster (*Saccostrea glomerata*)

Saccostrea glomerata is an extremely common species that inhabits sheltered rocky shores and mid intertidal zones (Jansen 2000, Edgar 2000). The pattern of the rock oyster's representation varied across the Sand Ridge, however it was present in most trenches and it was the predominant species in the shell midden. The rock oyster represents the largest quantity of shell material by mass (66% of total shell) found in the shell midden. The MNI (n=353) was calculated by counting the intact oyster lids and as such is a conservative estimate.

Figure 63: *Saccostrea glomerata* (rock oyster) collected from shell midden

Whelk (*Pyrazus ebininus)*

The Hercules Club Whelk had the second highest mass representation of the four major shell species. *Pyrazus ebeninus* represented 29% of the total shell mass in the midden. Whelk was the dominant species by MNI (n=393), which was calculated by counting the flared-aperture opening of the gastropod. This species is extremely common in eastern Australia, inhabiting mud flats, lake margins and estuaries (Coleman 1975:35). It is also a robust gastropod that would preserve well over time.

Figure 64: *Pyrazus ebeninus* (hercules club whelk) collected from shell midden

Cockle (*Anadara Trapezia*)

This species is extremely common and inhabits sheltered rocky shores and mid intertidal zones (Jansen 2000, Edgar 2000). *Anadara trapezia* represented only 2% of the sample. The MNI (n=25) was calculated by counting all right valves that had evidence of the umbo still being intact. Although this is a robust bivalve that should preserve well over time, most of the specimens collected are heavily weathered.

Figure 65: *Anadara trapezia* (cockle)

Mud creeper (*Batillaria australis*)

This species is found on mud flats in estuaries, river mouths and mangrove swamps. Based on weight *Batillaria australis* represented only 1% of the sample. The MNI count (n-130) was calculated using the same method as for *Pyrazus ebeninus*. The high MNI and low mass is indicative of the small size of these gastropods, which would likely contain little meat. Their increasing presence in the midden may indicate population pressures on resources.

Figure 66: *Batillaria australis* (mud creeper) collected from shell midden

Pipi (*Donax deltoides*)

Donax deltoides shell beds are generally found in great abundance lying below the sand surface within exposed sandy beach and low-intertidal environments (Edgar 2000). Finding pipi in this midden indicates exploitation of beach resources and travel between the open beach and the Cobaki Lakes Development Sand Ridge. The nearest open beach today is Bilinga/Kirra, some 3.5 km to the northeast as the crow flies. In the shell midden pipi is located in the upper to mid XUs.

Figure 67: *Donax deltoides* (pipi) collected from shell midden

Fish Bone

Both the 8 mm and 4 mm sieve fraction were examined for fish bones. Nine fragments of fish bone were collected from three trenches. Most of the recovered fish bones were located in Trenches 23 and 25, which were the location of the shell midden and also contained the highest mass of shell. Three fish bones were identified to element (vertebra, ceratohyal and parasphenoid), however the fish taxa could not be determined from these elements. The other six fragments were unidentifiable. There are insufficient remains to draw any firm conclusions from this pattern.

6.5.6 Review of Results

The aims of the Sand Ridge excavations included: assessing the impact of the fill layer that had been deposited on the Sand Ridge; identifying the boundary between the fill and the sand, to determine if any cultural material could be found taking into consideration the level of disturbance; and obtaining information about the subsurface character of the cultural material – particularly its depth, nature and age. The fill layer, whilst causing some surface disturbance, appears to have had little impact on the subsurface deposits. Artefacts were recovered from all except four trenches (not including Trenches 17 and 38), and display high variability in numbers, artefact type and raw material type across the trenches (Figures 68 - 71). Flakes accounted for the bulk of the assemblage, with chalcedony being the preferred raw material.

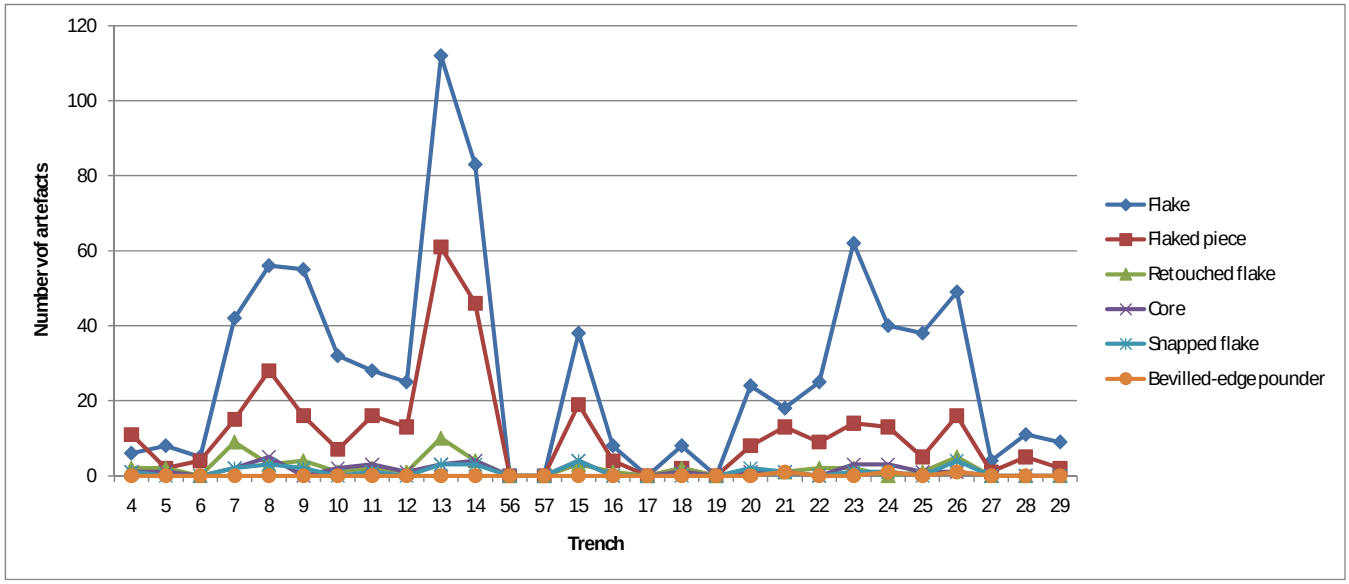

Figure 68: Number of artefact types per trench south to north across the Sand Ridge

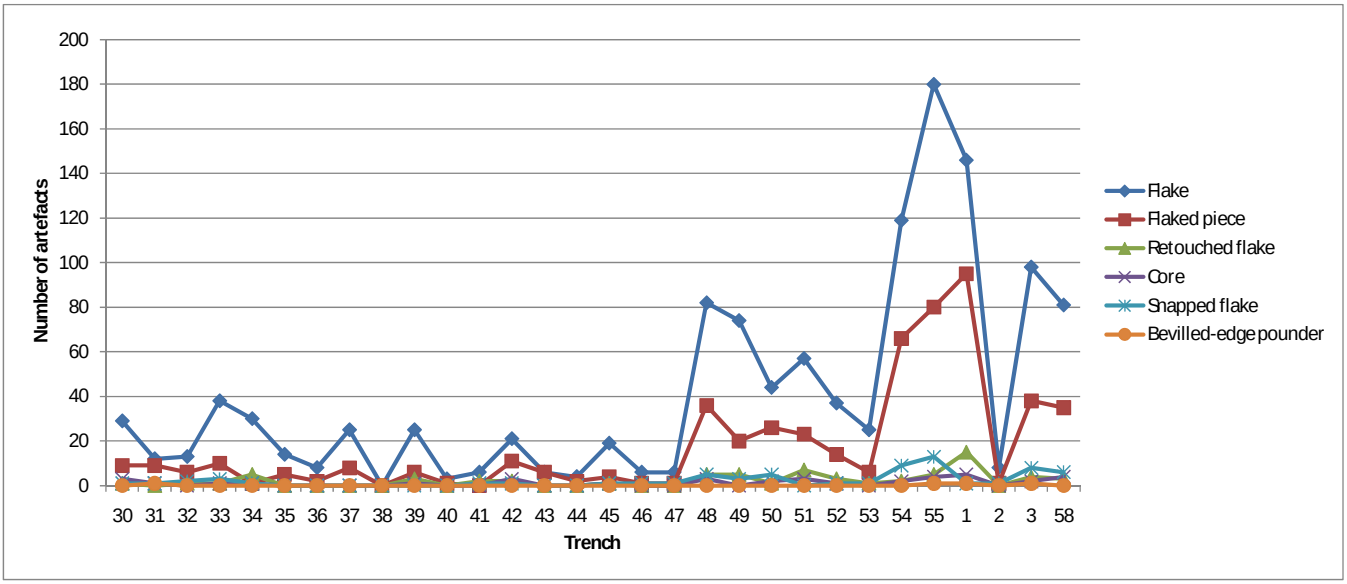

Figure 69: Number of artefact types per trench south to north across the Sand Ridge (cont.)

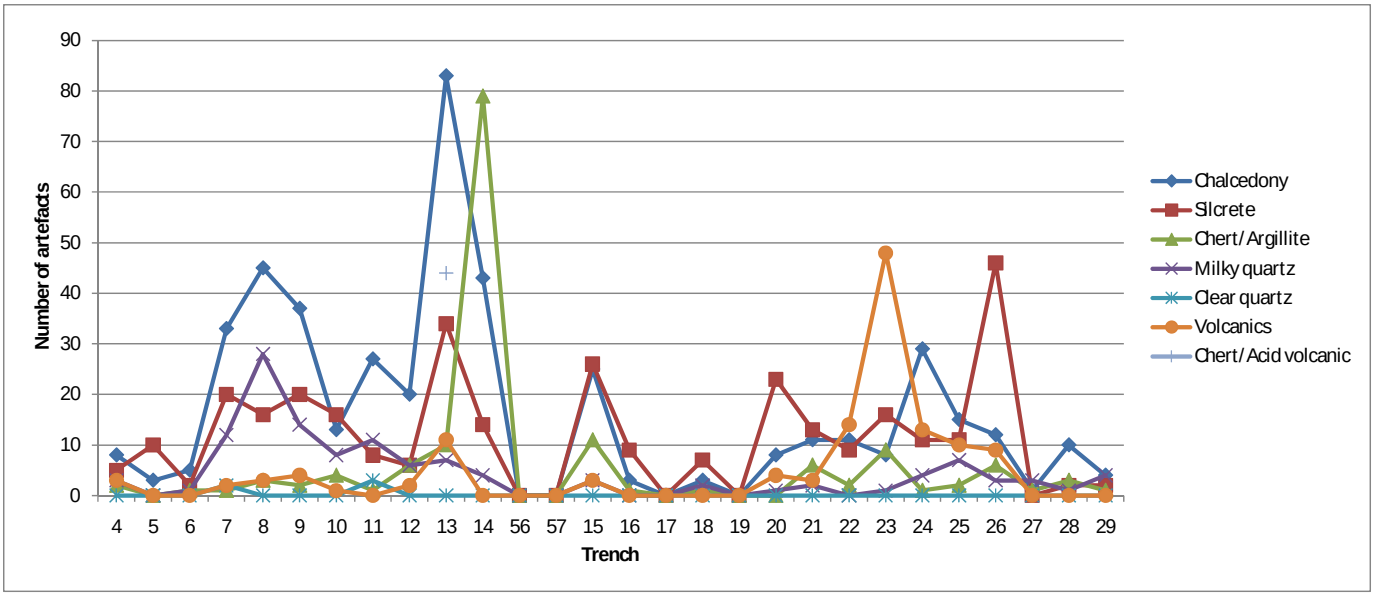

Figure 70: Number of raw materials types per trench south to north across the Sand Ridge

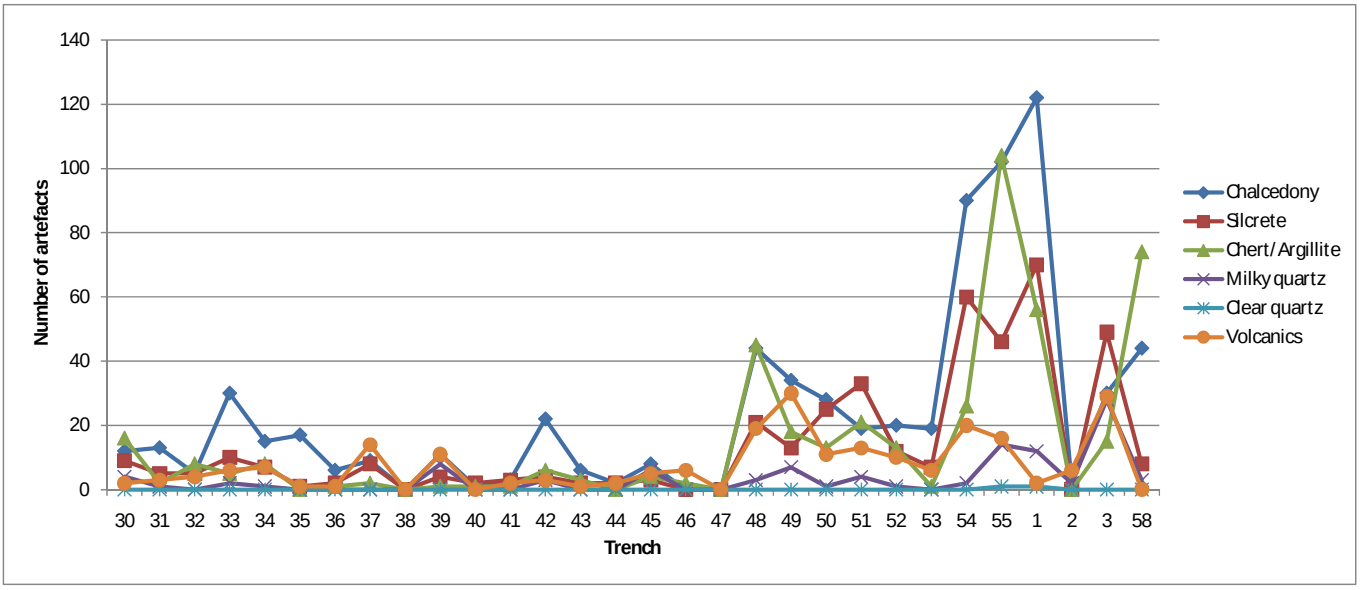

Figure 71: Number of raw material types per trench south to north across the Sand Ridge (cont.)

The midden identified in the excavations appears to be an *in-situ* deposit. A comparison of shell quantities with artefact density demonstrated a correlation in numbers, with both reducing at depth (Figure 72). This pattern suggests a cultural event, and no signs of post depositional disturbance were present. The correlation would appear to be linked to an increase in occupation of the site in the Late Holocene.

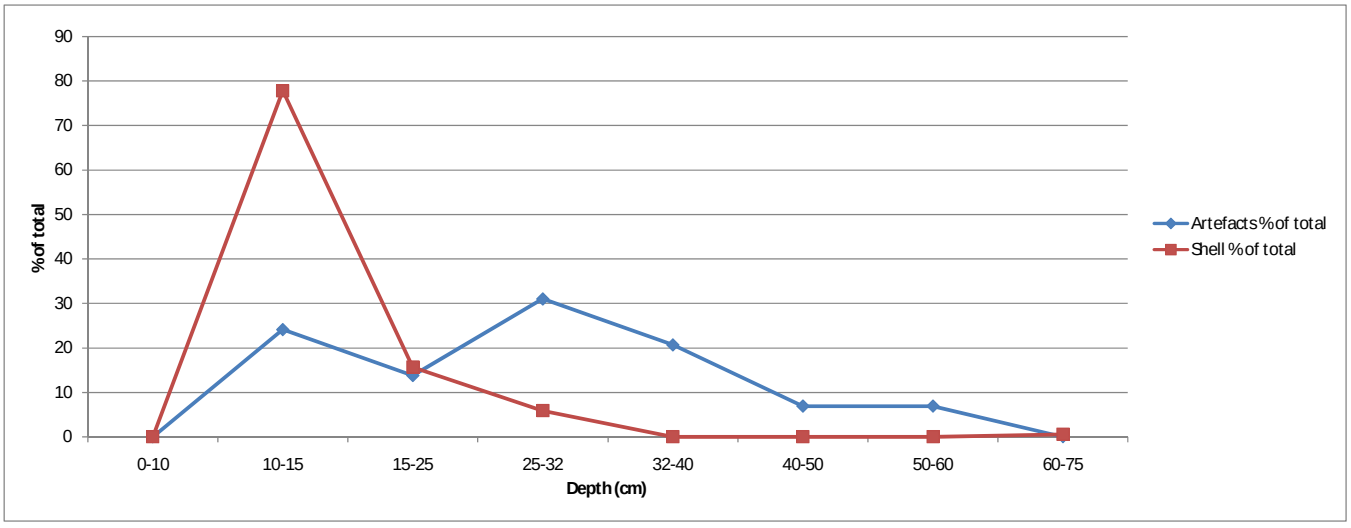

Figure 72: Comparison of shell with artefacts in Trench 24

6.6 Discussion

6.6.1 Stone Tools

Stone artefacts are an important source of archaeological information because they survive in the ground for a much longer period of time than other types of artefacts (such as wood, bone and shell), and because they provide evidence about technology and economy in the past. Identification of particular artefacts or tool types can tell us about the kinds of activities that happened in the past and provide an indication about how old particular sites might be.

Analysis of the recovered artefacts involved scrutinising artefact types and raw material types, and considering their distribution across the site and at depth. Patterns, relationships and anomalies were investigated. Analysis of the artefactual material recovered from the archaeological excavation of the Subject Lands is currently on-going. The preliminary findings are discussed below.

The volume and variety of artefacts recovered from the Back Paddock and Sand Ridge suggest diverse occupation of this area by Aboriginal people over periods of time. The variability displayed across artefact type, raw materials and their distribution suggest many different activities were occurring at the site during Aboriginal occupation of the area, and that different areas were being used for different activities over time.

Both primary (local) and secondary (imported) sources of stone were used by Aboriginal people occupying the Subject Lands. There is a clear preference for chalcedony across all artefact types within the assemblage, comprising 41% of the total. Silcrete comprises 24% of the total, with local volcanics representing only 12%. The abundance of imported source material suggests either travel or trade to acquire these materials. The variation displayed in the range of chalcedonys and silcretes recovered may suggest that more than one source for these raw materials were available at the time of Aboriginal occupation.

The presence of seven bevelled-edge pounders in the artefact assemblage indicates that some areas of this site were food processing places. Previous use-wear studies on bevelled pounders have been conducted by Kamminga (1981) who identified these pounders as being used for processing starchy plant material (cf. Odell 2004:183). In the Tweed, the rhizome of the Bungwall fern (*Blechnum indicum*) was a major component of the vegetable diet for Aboriginal people. Bevelled-edge pounders from the Tweed area were predominantly used to process the root of the Bungwall fern into a food resource. A pounder

recovered from Trench 1 on the Sand Ridge (Figures 53 and 54) displays evidence of a gloss along the working surface. This gloss is most likely residual resin from plant processing.

There is some evidence that on-site artefact manufacture may have been one of the activities occurring at Cobaki Lakes Development area during Aboriginal occupation. A comparison of flakes with cores demonstrates similarity in size and raw material occurrences between these artefact types. On the whole cores are small and well worked. The predominance of flakes and cores made from fine grained siliceous stone coupled with their generally small size indicates that there was a preference for this material. In some cases, recovered flakes can be fitted to their cores. The presence of a flake in the same location as the core from which it was struck may suggest on-site manufacture.

The presence of flaked artefacts with split cones within the assemblage further suggests on-site manufacture. The split cone is a feature which usually occurs at the time of flaking due to a weakness or imperfection in the core material, rather than through use-wear.

The backed blades recovered during excavation are an interesting item. They were found only in the Back Paddock and were highly localised within this area, found in Trenches 3 - 6 with 67% being located in Trench 4. The clustering of artefacts in this manner may be a reflection of the sample size, but is possibly related to specific tasks undertaken in that area.

6.6.2 Shell and Fish Species

Everick's excavations at the Sand Ridge revealed extensive evidence of cultural shell scatters, including at least one major shell midden. The four major species present at the Sand Ridge – oysters (*Saccostrea glomerata*), whelks (*Pyrazus ebininus*), cockles (*Anadara trapezia*) and mud creepers (*Batillaria australis*) – are all key species generally associated with estuarine environments. The heavy weathering of shell species such as *Pyrazus ebeninus* suggests an extended period of exposure prior to deposition or intensive onsite weathering due to fluctuations in the water table.

The recovery of the pipi or eugarie shell (*Donax deltoides*) indicates the use of open surf beach resources, and may be suggestive of the proximity of the Sand Ridge to the open surf beach during a time of human occupation. McNiven (1991 and 1999) hypothesised that *Donax* shell beds were a little-used resource until the last 1,000 years. Generally estuarine environments offered greater productivity and diversity of potentially edible shellfish than open beach habitats. However, the population increases during the Late Holocene no doubt exerted extra subsistence demands on marine resources resulting in exploitation of

marginal resources (McNiven 1989:47). The combined evidence of estuarine and open beach species at the Sand Ridge indicates that the Cobaki Broadwater was a productive intertidal and marine ecosystem during the Late Holocene.

An analysis of the recovered artefacts associated with the shell midden, further substantiates this feature as a cultural event. There is a clear correlation between shell quantities and artefact numbers across the midden, with both proportionally decreasing with depth. This pattern indicates the midden is the result of human activity, and not formed by natural or post-depositional processes.

The coastal strip, including the hinterlands of northern NSW is known to have been a major focus of Aboriginal occupation at the time of European settlement. This is substantiated by the number of recorded sites for this region in the DECCW AHIMS Register. This register contains details of archaeological sites that have been recorded in the general region around the study area. A shell midden (DECCW #4-2-39) has been recorded in the near vicinity on the Cobaki Broadwater foreshore within the boundaries of the Gold Coast Airport (Lilley 1987). Another midden – (DECCW #4-1-31) – was reported and recorded as being immediately west of the airport boundary (Collins 1999:18). A midden (DECCW #4–2–71) dated to between 4,700 and 4,200 years BP has been investigated at Sextons Hill, which is 5.5 km south of Gold Coast Airport (Appleton 1993). Although already partially destroyed, the remains included oyster, whelk and cockleshell with the bones of pademelon, snapper and bream, and artefacts such as bone points, ochre, and stone artefacts (Appleton 1993:49).

7. ARCHAEOLOGICAL SIGNIFICANCE OF THE SUBJECT LANDS

7.1 Considerations

Given the results of the excavations detailed above, the assessment of archaeological (scientific) significance is a key aspect of developing future management strategies for the proposed development. There are many considerations that go into evaluating a site or landscape's potential archaeological significance. Two important criteria, listed in the New South Wales *Aboriginal Heritage Standards and Guidelines Kit* (1997:88), are research potential (defined as the potential to elucidate past human behaviours) and educational potential. The primary considerations when evaluating a site's research potential are discussed below.

Rarity: This is related to how prevalent a particular site type is in a given region. Sites that are particularly scarce have the potential to contribute more to our knowledge of past behaviours relative to sites which are common place. For example, in the Tweed, coastal middens would have been common prior to European settlement. However, the impacts of sand mining and development have resulted in coastal middens becoming relatively rare, thus increasing their archaeological significance.

Antiquity: The value in a site's antiquity is closely linked to its rarity. As a general rule, the numbers of particularly old sites will reduce as time progresses. When sites of great antiquity are identified, they are of high archaeological significance.

Representativeness: A site's representativeness indicates whether a site is considered to represent a particular pattern of past human behaviour. It is important to identify sites that have high representative value and conserve them for future generations (Pearson and Sullivan 1995:148). Representativeness is assessed based on current research questions and technologies, and may change through time. It should be noted that a site's representativeness is also related to its cultural value, as distinct from its purely scientific value.

Complexity: A site may demonstrate a range of human behaviours and/or past climate and environmental changes (Pearson and Sullivan 1995:148).

Integrity: The stratigraphic integrity of a site relates to the subsequent disturbance of a site once it has entered the archaeological record. Disturbance may have been the result of impacts by humans (such as land clearing) or natural causes (such as erosion or bioturbation from ants). It is generally the case that the greater a site's integrity, the greater its archaeological significance.

Connectedness: A site should not be viewed in isolation, as the human behaviours that were responsible for the creation of the site were invariably connected to other sites reflecting different behaviours nearby.

7.2 Limitations

With all scientific research, including the assessment of 'scientific significance', it is important to acknowledge the limitations of any conclusions that have been drawn in relation to the assessment of the Subject Lands.

The assessment of archaeological significance is a highly subjective activity, and depends much on the values of the researcher(s) involved. In this assessment, we have divided the Subject Lands into areas of

'High', 'Moderate – High', 'Moderate', 'Low – Moderate', 'Low' and 'No/Nil' archaeological significance. The values we have used are not precise. They exemplify arbitrary distinctions that are necessary for ease of demonstrating the values of the Subject Lands as a whole. These categories represent a relative continuum of significance, which is demonstrated by the diagram in Figure 73. The intention of Figure 73 is to show examples of the values used in this assessment. Of course, it is quite possible that even a single artefact may be of high archaeological significance, where it can be demonstrated that the artefact exhibits one or more of the criteria above.

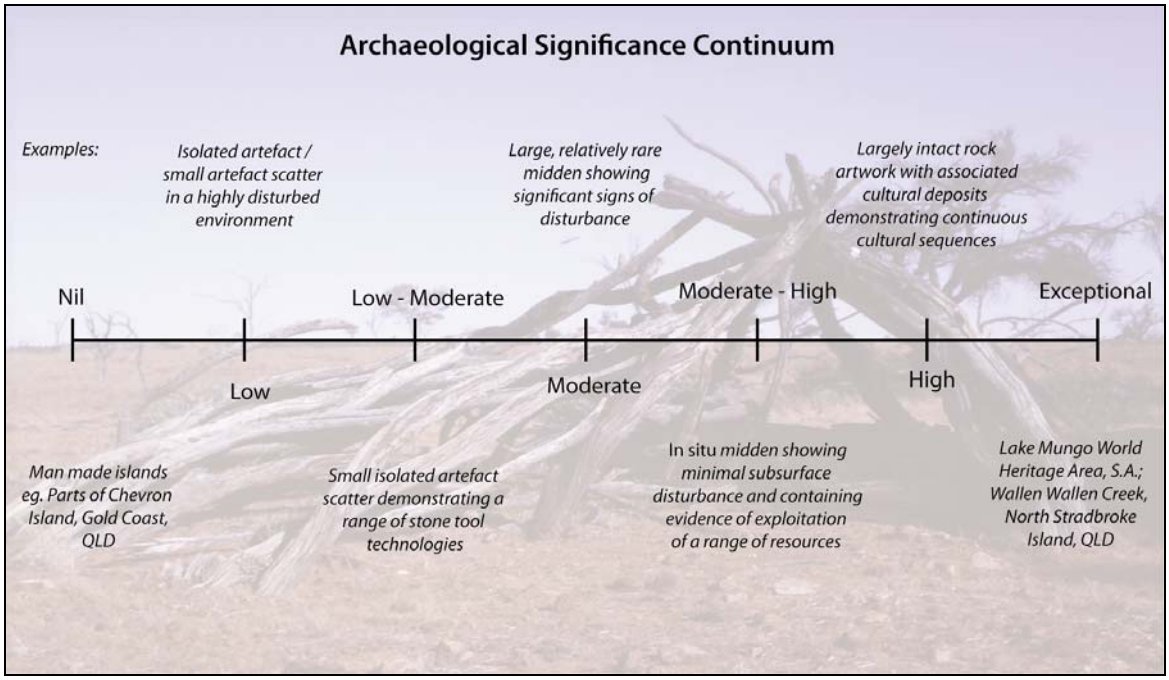

Figure 73: Archaeological Significance Continuum applied in this assessment

Categorising the Subject Lands into levels of archaeological significance (Figure 74) does not mean that every part of each area can be ascribed the same level of significance. Rather, each category relates to the assessed significance of individual and related archaeological sites expected to be located within a given area. It also takes into account the prevalence of archaeological sites within a given area.

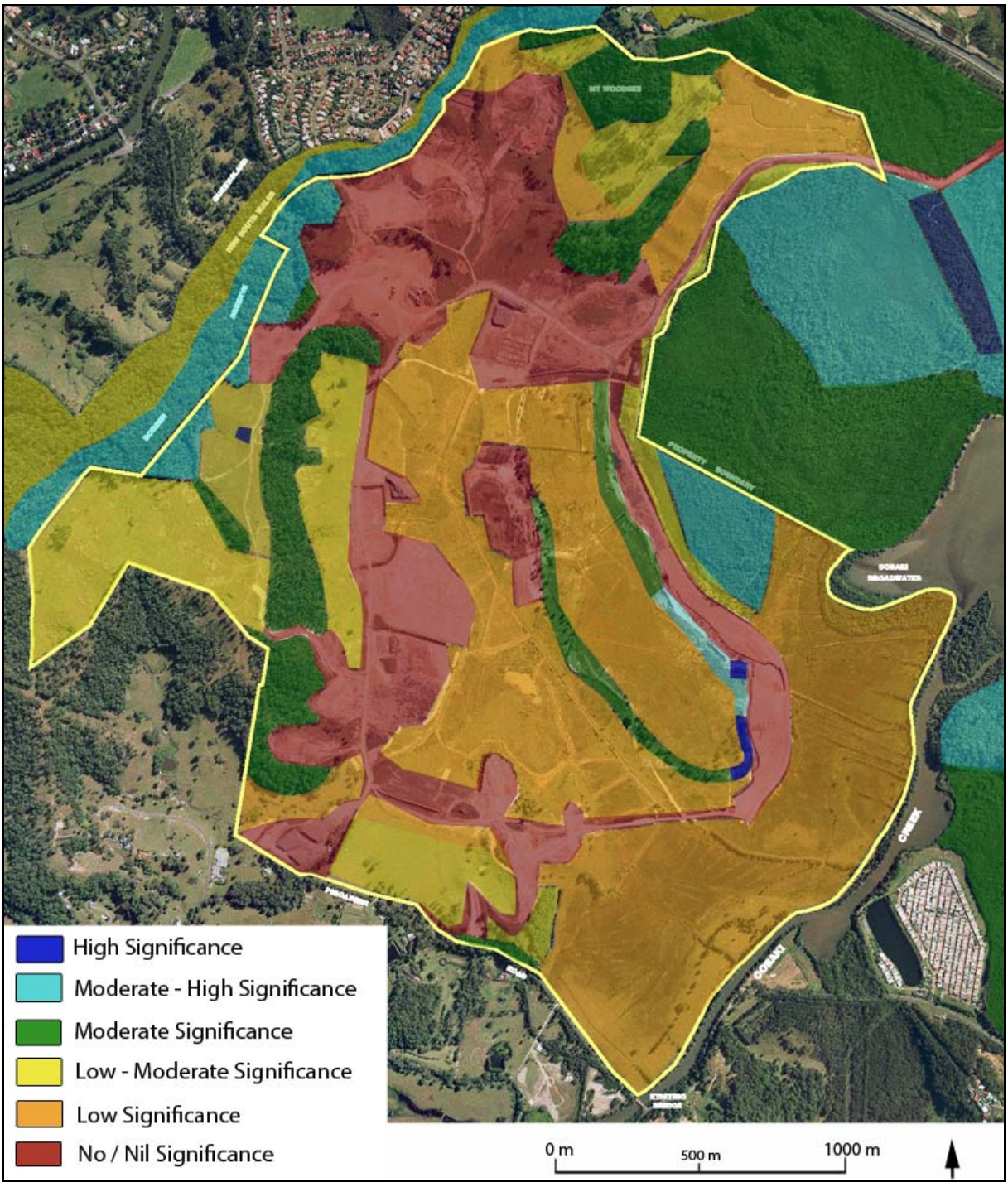

Figure 74: Areas of Archaeological Significance

It should be acknowledged that it is quite possible that areas identified as being of lower archaeological significance may contain individual sites of higher significance. An example of this would be the highly significant finds in Back Paddock Trench 4. However, Figure 74 demonstrates the *general representation* of archaeological significance of the Subject Lands as evaluated during this assessment.

While areas outside the Subject Lands were outside the scope of this study, some consideration must be given to them when assessing issues such as rarity, age and representativeness (Figure 74). Archaeological sites within Cobaki Lakes should not be viewed in isolation. They are part of a cultural landscape (see Section 8 below), and can generally be compared to the sites around them to demonstrate patterns of occupation. There are many areas of archaeological significance surrounding the Subject Lands that can provide insights and perspective for the management of the sites within the Subject Lands.

7.3 Archaeological Significance of the Mid to Lower Back Slopes

Initially identified as being of Low to Moderate archaeological sensitivity, the archaeological test excavations at the Mid-to-Lower Back Slopes have revealed a different picture. The areas selected in the area identified as the Back Paddock for excavation were to test if subsurface artefacts occurred in each of three topographic zones; ridge crests, mid-slopes and gully floors. Artefacts were found in all areas sampled, although numbers varied both within and between the sampled areas. Numbers also varied within sample units. For example, the numbers of artefacts in trenches 1-4, all within the same locality, varied from 15-212. Artefact numbers on crests tended to be higher than those on the lower slopes or gullies. All artefacts were found in the sandy loam B Horizon of the podzol soils at depths ranging from surface to 40 cm. All the samples were from areas that were highly disturbed.

Although the artefacts are found in highly disturbed soils, some areas must undoubtedly be considered of high archaeological significance, and warrant preservation. In particular, the area immediately surrounding Trench 4 is of high archaeological significance. It contained a number of backed blades that represent a technological innovation unique in relation to other artefacts identified in the Subject Lands. This area has the potential to add considerably to our knowledge of technologies and trade in the region. Although other areas of the Mid-to-Lower Back Slopes have been cleared of native vegetation and used for grazing purposes, they still retain the capacity to add to the archaeological 'story' of the region, albeit in a limited way as temporal distinctions have largely been lost due to the high levels of past ground disturbance, and local spatial relationships have been changed. Never-the-less, some disturbed areas contain moderately significant archaeological deposits, and warrant preservation and conservation.

Those areas of the Mid-to-Lower- Back Slopes that have been included as environmental protection zones within and surrounding the Subject Lands have generally seen little ground disturbance. These areas are considered more likely to retain their research potential, and are therefore considered of moderate-to-high archaeological significance.

7.4 Archaeological Significance of the Sand Ridge

The second pattern of archaeological site distribution reflects patterns found in the Sand Ridge in the south east corner of the Subject Lands. The archaeological excavations identified a consistent pattern of Aboriginal occupation of this area. The highest density of cultural material was within the far south eastern portion of the Sand Ridge. This area also contains a midden that is largely *in situ*. The far south-east corner of the Sand Ridge is considered of high archaeological significance. It has the potential to add considerably to our knowledge of the timing and nature of Aboriginal occupation of these lands. It contains cultural material that can yield information about important issues such as trade, technologies and the nature of resource exploitation. While dating the cultural material is in progress, it is considered likely that this area will demonstrate a pattern of continuous Aboriginal occupation of this area for many thousands of years at least.

The area immediately surrounding Trench 58 is considered of high archaeological significance. The cultural material found in this trench was at considerable depth (below a layer of peat), and it is considered likely that this area will contain important information on the timing of Aboriginal occupation of this area. While dates for this deposit have yet to be returned, the layer of Peat may indicate significant environmental changes have occurred following the discard of these tools. The most recent significant environmental change occurred approximately 5000 years ago, potentially dating these deposits to that period.

The western and northern portions of the Sand Ridge are considered of low archaeological significance. The excavations have demonstrated that these areas contain little cultural material. These findings are consistent with typical Aboriginal occupation of the region that sees campsites being located in very close proximity to resources such as that of the Cobaki Broadwater.

7.5 Archaeological Significance of the Lowland Marsh and Highly Disturbed Areas

The drained Lowland Marsh areas were, prior to the establishment of a comprehensive drainage system, subject to tidal inundation and flooding. Other parts of the Subject Lands have been highly disturbed by development activities including clearing and dam and drain excavation. Under existing Development Applications quarrying, road building, excavation and filling have been undertaken. These areas are considered to be of low archaeological significance as there is little or no likelihood that these areas would retain any cultural material. The likelihood that these areas would add to our archaeological knowledge of the region is considered very low.

8. CULTURAL SIGNIFICANCE OF THE SUBJECT LANDS

8.1 Theoretical Framework

A cultural landscape approach recognises the continuity between past and present by acknowledging the connection between the remembered past and contemporary communities (Brown 2007:38). An integral part of contextualising a cultural landscape is to facilitate the incorporation of the knowledge of Traditional Owners. This can enable a comprehensive understanding of the socio-cultural context and a true recognition of significance and meaning (Harrison 2005:258; Ross et al. 2003:80). For some Aboriginal people sites have a particular significance which has little or no relationship to the archaeological significance (Greer 1999:117). To assess Aboriginal cultural heritage sites appropriately, they must be seen in the context of the people to whom the sites are significant (Godwin and Weiner 2006:127; Greer 1999:116). For Aboriginal people, places are situated within a complex web of memories, beliefs, stories, practices, family members, local environments and cultural places that together constitute a cultural landscape that represents both ancient, traditional life and dynamic living traditions (Bradley et al. 2002:9; Ross 1996:4; Smith and Burke 2005:389). This view embraces Aboriginal people's conception of space and time, where "places always exist in relation to other…places" and "the past impacts actively on the present" (Smith and Burke 2005:382).

The lived experience of past and present traditions illuminates connections that are both tangible and intangible, and are visible in the dynamic, on-going cultural interaction that Aboriginal groups have with their country (Godwin and Weiner 2006:127; Sullivan 1993:60). It is important to remember that places do not have inherent cultural significance. It is through memories, stories, visiting, teaching and other activities with places that the significance is ascribed by the people who interact with them (Brown

2007:137; Smith 1996:67). Collaborative research, community consultation and the collection of oral histories can be used to inform an understanding of the nature of intangible experiences and values that are associated with the tangible aspects of sites and landscapes. This understanding underpins the identification and assessment of the cultural significance of a site or landscape.

8.2 Statement of Cultural Significance

Through the course of community consultation, a picture has developed of the significance of the Subject Lands and surrounds to the Aboriginal people of the Tweed. The following statement on cultural significance has been developed through phone attendances, community meetings and excavations involving the Aboriginal Stakeholders. Their involvement provided the socio-cultural context of the area, encompassing past and present activities and sets the archaeological research into a broader cultural landscape (Ross et al. 2003:80). All correspondence that has contributed to this statement has been provided to the DOP.

The Cobaki Lakes Development area is situated within a greater, highly significant cultural landscape known to the Aboriginal people of the Tweed. The significance of this region is part of local oral tradition, where it was known as an important camping ground. This significance of the Subject Lands was recounted on 25 July 1885 by J.G. Appel in the Logan Witness newspaper where he noted that it was “the favourite camping ground of the Aboriginals”. The ridge running through the west of the development site (much of which is now the State Border) is known as being a traditional pathway for those moving between the coast and the hinterland. This knowledge is supported by the fact that Aboriginal men guided the Qld/NSW border survey team 150 years ago, using their old walking trails.

It is important that the development site is not viewed in isolation from the surrounding lands. The Aboriginal people of the Tweed would move around this region to ensure that resources were managed correctly. The local descendants of the traditional people from this area have been taught for generations that areas around the Cobaki Broadwater are utilised for specific purposes. For example, there are known to be places used specifically for women’s business that are a small distance away from the Subject Lands. The Aboriginal Stakeholders have not advised Everick that the development proposal will impact on this site.

Other areas are used for men’s business. Ceremonial grounds are known to be located in the region, although many have been destroyed by development activities. There is known to be a ceremonial ground on the top of Campbell’s Hill, in close proximity to the development site. Another two ceremonial grounds are said to be within 2.5 km to the south and two more within 2 to 3 km to the north.

With many estuarine resources nearby, the Subject Lands were known by Aboriginal people of the Tweed to be an area of trade. Evidence of the significance of the Cobaki and Terranora Broadwater to Aboriginal people can be found all around the shoreline and adjacent ridges. Extensive middens and concentrations of artefacts that identify campsites have been destroyed by the construction of the Tugun Bypass, the original Coolangatta Airport, and again with recent runway extensions, plus, Piggabeen Road deviation to the south of the Cobaki Broadwater, to name but a few. The Aboriginal Stakeholders have stated consistently that the destruction of nearby sites heightens the cultural significance of the identified archaeological sites within the Subject Lands.

The development of the Subject Lands will result in further destruction of the heritage of the Aboriginal people of the Tweed. The Aboriginal Stakeholders have not attempted to prevent development within the Subject Lands. However they have, quite reasonably, strongly advocated that as many as possible of the cultural sites within the Subject Lands be protected and those that are about to be impacted be appropriately recorded as being part of the greater cultural landscape. The Aboriginal stakeholders do not see these sites as simply scientific artefacts that are being destroyed. They are a tangible connection to the ancestors of the Aboriginal people of the Tweed and a connection to the life ways of Aboriginal people prior to European colonisation. The Aboriginal Stakeholders have also consistently expressed the view that the sites are an invaluable education resource for future generations of Aboriginal and non-Aboriginal people.

The following statement was provided to Everick by Aboriginal Stakeholder Jackie McDonald:

> *"It is important to remember that the significance of the Cobaki region is not just to our forefathers. It has an unbroken connection to and is therefore highly significant to present generations of my people as well. We, the descendants of Kitty Sandy, Bungary, Blow and Slabb, to name a few, still access the resources of Cobaki Lakes today, as our people have done for thousands of years. We teach our children to fish and gather in the shallows. We show them plants used for traditional food and medicines and we educate them about how the artifacts collected were utilized by our ancestors. We access this important landscape for Cultural expression and in doing so, we continue to carry out our cultural obligations and maintain our connection to country."*

With regard to the aspects of cultural significance discussed above, the Mid to Lower Back Slopes have been assessed as being of *moderate to high cultural significance*. As a campsite, meeting place, place of trade and traditional pathway, this is a landscape that the Aboriginal people of the Tweed continue to hold strong traditional and contemporary associations with.

The Sand Ridge has also been assessed as being of *moderate to high cultural significance*. The large amount of cultural material within the Sand Ridge represents a tangible physical connection to the past lifeways of the Aboriginal people of the Tweed. It was the location of an important camp site. Its significance is connected to the abundant faunal and plant resources associated with the Cobaki Broadwater.

Those areas of the Subject Lands that have been highly modified through development activities are considered of low cultural significance.

9. STATEMENT OF HERITAGE IMPACT

The Cultural Heritage Management Plan for the Subject Lands relies on the creation of a series of Heritage Parks and Heritage Protection Areas (See Recommendations in Section 9 of the Concept Plan CHMP (Everick: February 2010)). All Cultural Heritage within Heritage Parks will be conserved using landscaping techniques approved by the Registered Stakeholders. Cultural heritage within Heritage Protection Areas may be the subject of minimal disturbance (for example, the construction of walking tracks or signage), but only under the supervision of nominated Aboriginal Stakeholders. Other areas containing cultural material may be subject to significant ground disturbance.

Table 14 provides estimates of the percentage of each area of archaeological significance (Figure 71) to be impacted by the proposed development.

Table 14: Extent of Heritage Impact (approximation only)

Archaeological Areas (Figure 71)	*% in Heritage Parks*	*% in Heritage Protection Areas*	*% in Potentially Highly Disturbed Areas**
High Significance	90 %	0%	10%
Moderate – High Significance	2%	85%	13%
Moderate Significance	0%	75%	25%
Low – Moderate Significance	1%	10%	89%
Low Significance	0%	2%	98%
No / Nil Significance	0%	0%	100%

***** Note: some Potentially Highly Disturbed Areas may be the subject of fill or minimal disturbance by incorporation into parks or open space.

10. RECOMMENDATIONS

The following recommendations are based upon:

- the desktop study (Sections 4.1,4.2)
- field inspection (Section 4.5)
- Aboriginal Stakeholder consultation

It is intended that these recommendations provide the key management practises on which the Cultural Heritage Management Plan submitted with this assessment is based.

Recommendation 1: Cultural Heritage Parks

It is recommended that a series of Cultural Heritage Parks ('CHP's') be established around the Subject Lands in areas which will ensure that a representative sample of the cultural material will be retained.

All CHP's within the Back Paddock (CHP's 1 – 7) will each be a minimum of 400 m^2. The plan in Figure 77 identifies the areas within which the CHP's will be located ('CHP General Area'). All CHP's within the Back Paddock require adherence to the following procedures:

(a) The CHP General Areas will be marked on all working plans as areas where Construction works are not to be undertaken.
(b) The CHP's will be fenced with temporary fencing around their boundaries as shown in Figure 75. At such time as final boundaries are known they fencing may be altered to reflect this.
(c) The CHP's will not be impacted by any Construction works and the temporary fencing will remain in place until:
    a. where CHP's will be covered in soil to a depth greater than 50cm, the Cultural Heritage Consultant and a Monitor is present to supervise the initial deposit and compacting of the fill; or
    b. where the CHP's will be left uncovered or covered in soil to a depth of less than 50cm, at such times as the Signage and Landscaping procedures (Concept Plan CHMP Paragraph 14) have been implemented.

All CHP's within on the Sand Ridge (CHP's 8 – 10) are of a fixed minimum size. The plan in Figure B identifies the boundaries of CHP's 8 - 10. All CHP's on the Sand Ridge require adherence to the following procedures:

(a) The CHP's will be marked on all working plans as areas where Construction works are not to be undertaken.
(b) The CHP's will be fenced with temporary fencing around their boundaries as shown in Figures B.
(c) The CHP's will not be impacted by any Construction works and the temporary fencing will remain in place until such times as the Signage and Landscaping procedures (Concept Plan CHMP Section 14) have been implemented.

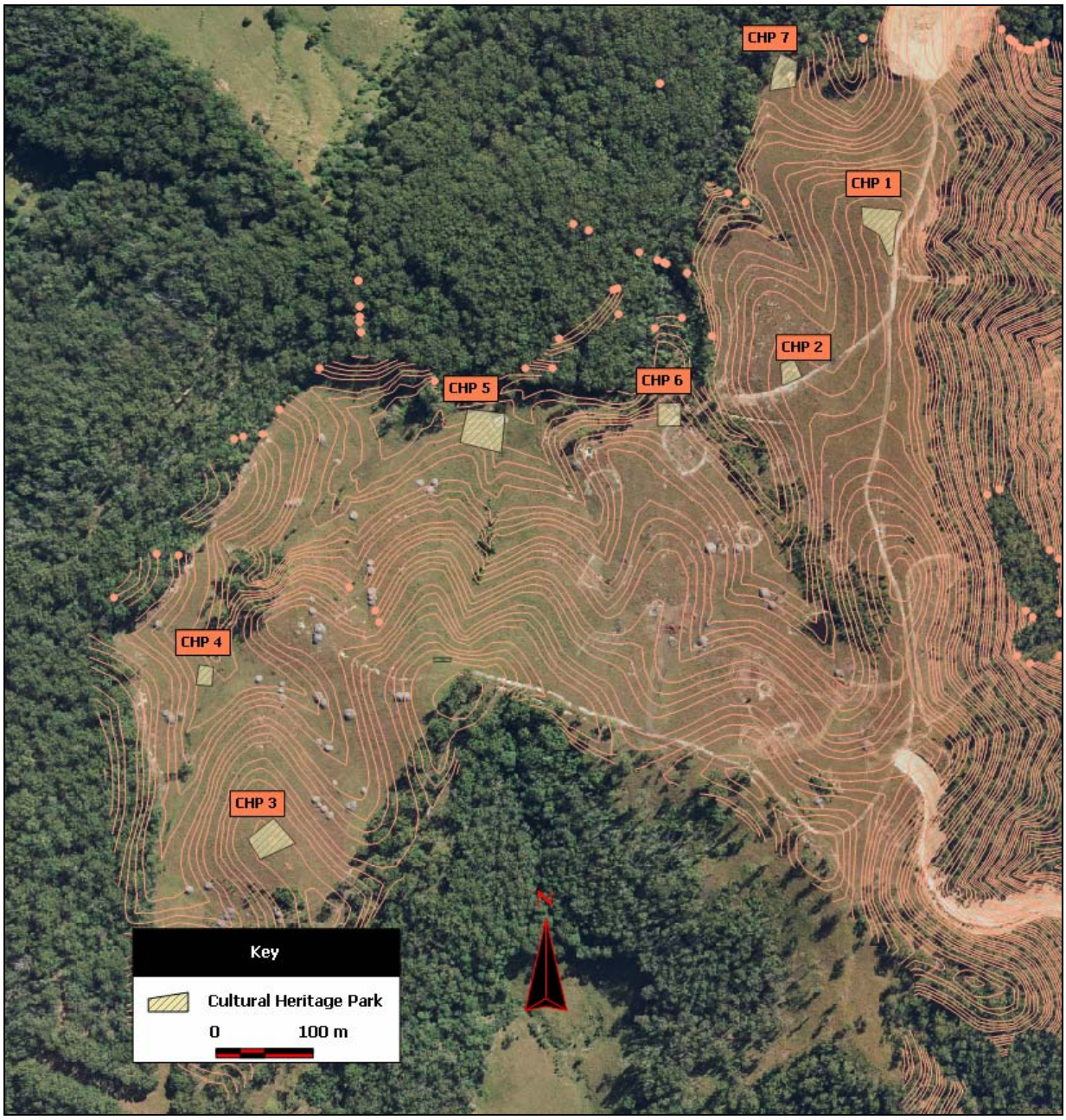

Figure 75: Back Paddock Cultural Heritage Parks

Figure 76: Sand Ridge Cultural Heritage Parks

Recommendation 2: Cultural Heritage Protection Area

Archaeological modelling for the Subject Lands confirms that the areas identified in this assessment as Cultural Heritage Protection Areas (Figure 77) will contain a representative sample of the type and distribution of artefacts within the Mid to Lower Back Slopes. Because many Aboriginal Objects within the Back Paddock will be lost during Construction, it is appropriate that particular care be taken when undertaking activities within the Cultural Heritage Protection Areas.

It is recommended that the following activity response hierarchy be adopted for minor development activities with the Cultural Heritage Protection Areas:

Disturbance	***Examples***	***Monitoring Activity***
No/Minimal Ground Surface Disturbance	• Noxious weed control using poisons • bushfire hazard reduction • professional surveys or site investigation activities	None Required
Minimal Ground Surface Disturbance	• Pathways and walking tracks not requiring excavation • Erection of signage • Landfill (not Cut)	Pre-Construction survey by one monitor
Ground Surface Disturbance and Minimal Subsurface Disturbance	• Fencing • Paths and Walking Tracks requiring excavation • Construction of public amenities such as toilets and shelters. • Minor drainage or sewage works	Pre-Construction survey by one Monitor. Monitoring of initial subsurface disturbance by two Monitors.
Significant Subsurface Ground disturbance	• Roads • Clearing using a bulldozer • Ground surface modification involving removal of topsoil for the purposes constructing parks or building pads. • Large stormwater or sewage works.	Pre-Construction survey by one Monitor. Hand Test Pits by three Monitors and a qualified archaeologist, in accordance with the Test Pit Procedure. Monitoring of initial subsurface disturbance by two Monitors.

Figure 77: Cultural Heritage Protection Areas

Recommendation 3: Signage and Landscaping

It is recommended that the Registered Aboriginal Stakeholders and the broader Aboriginal community of the Tweed Valley will be invited to participate in the design of open space/public park landscaping and interpretative cultural signage for locations near any known Aboriginal Sites and areas of cultural significance. This is viewed by the Registered Aboriginal Stakeholders as an important part of maintaining connections to Country.

Recommendation 4: Cautionary Principle

It is recommended that all effort must be taken to avoid any impacts on Aboriginal cultural heritage values at all stages during the development works. If impacts are unavoidable, mitigation measures should be negotiated between the Developer and the Aboriginal Community.

Recommendation 5: Inductions on Aboriginal Culture and Tradition

It is recommended that contractors or employees of the Developer who are engaged in earthworks or subsurface disturbance on the Subject Lands should be given induction training on how to identify Aboriginal cultural material and why it is important that it is preserved.

Recommendation 6: Care and Control of Cultural Material

It is recommended that any Aboriginal cultural material removed from the Subject Lands be catalogued and handed into the care and control of the Tweed Byron LALC.

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Appendix A: Index of Community Consultation File

EVERICK
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ABN 78102206682

April 2010

CONFIDENTIAL CONSULTATION CORRESPONDENCE

FOR THE PROPOSED COMMUNITY RESIDENTIAL DEVELOPMENT AT

COBAKI LAKES, TWEED HEADS, NSW

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Innovative Heritage Solutions

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EVERICK
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ABN 78102206682

April 2010

CONFIDENTIAL CONSULTATION FILE NOTES AND MEETING MINUTES

FOR THE PROPOSED COMMUNITY RESIDENTIAL DEVELOPMENT AT

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Appendix B: Correspondence Regarding Monitoring

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Our Ref: EV.78

1st August 2008

Ms Kym Yuke
Gold Coast Native Title Group
PO Box 1233
COORPAROO DC QLD 4151

Dear Kym,

RE: CULTURAL HERITAGE ASSESSMENT REPORT FOR PROPOSED COBAKI LAKES RESIDENTIAL DEVELOPMENT

I refer to your conversation on 17 June 2008 with our Project Manager Tim Robins, at which time you requested that if Everick were to recommend monitoring that we provide some academic comment on the past success of such procedures on identifying cultural heritage. During this conversation you expressed reservations over the use of monitoring as an effective means of identifying cultural material on a given site.

We are sympathetic to this view, and from the outset note the limitations of monitoring. It is not intended that monitoring would be the only method of archaeological investigation. However, it would be remiss of us not to consider the benefits that monitoring may have to the project, some of which we have outlined below.

We advise that as part of producing a methodology for the project, Everick has developed a predictive model of archaeologically sensitive areas in which further investigation is warranted. Based on the sensitivity of an area, Everick recommends using a suite of methods to identify and / or recover cultural heritage items. As well as sub-surface testing in some areas, monitoring during earthworks has been identified as a method that has potential value.

Generally, monitoring development sites can provide a way of identifying and recovering cultural heritage features and artefacts that may have been undetectable by surface field surveys. Monitoring acts as a further safeguard for any artefacts that may have been missed. If any archaeological evidence is detected during monitoring, we generally advise that clearing and / or earthworks should cease pending advice from the DECC and Traditional Owners.

No archaeological survey is ever likely to uncover all the cultural heritage remains in an area and test pits will not necessarily give a representative sample of cultural heritage materials (Burke & Smith 2004:257). Additionally, due to time constraints and the cost factor there are insufficient resources to conduct endless test pits.

As we have previously informed you, under current Development Approvals, earthworks on parts of Cobaki Lakes are well under way. These Approvals were granted following archaeological studies that were undertaken by other consultants. Due to the high levels of disturbance over much of the Subject Lands there is little likelihood that undisturbed Aboriginal archaeological sites or objects will exist on previously disturbed / cleared land or eroded surfaces. We suggest that in such situation the primary goal of monitoring would be to

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collect and preserve any and all artefacts or features of cultural heritage significance exposed in the course of work in the project area.

Section 3.17 of National Parks and Wildlife Service Guidelines for Archaeological Survey Reporting (1997) accepts that monitoring of areas during the construction / earthworks stage is valid when used in conjunction with prior sub-surface testing, and may be necessary in situations where there is the possibility of burials.

Attenbrow (1992:4) reports from Cumberland Street in Sydney how "*archaeologists monitoring the construction excavations after their archaeological excavations were completed…noticed shell exposed on a construction site during bulldozing operations by the building contractor.*" Some archaeologists even conduct Cultural Resource Management salvage excavations using heavy equipment, such as front-end loaders, "*to scrape or blade a site surface in order to locate and recover possible features and artefacts*" (Hester et al. 1997:75; see also Condon & Egan 1984). While this is not actually implied here, in any case the recommendation that monitoring take place during earthworks for subsurface material is consistent in reports. For example:

From Collins' report (2006:13) Byron LALC expressed no objections to a development proposal at Yelgen, NSW where "*Land Council representative/s are engaged to monitor all development-related clearing and earthworks. Owing to concerns for potential traditional burials, Bundjalung Elder John Roberts advised that it would be prudent for Aboriginal monitors to be in attendance during the course of any deep excavations that may be necessary on these landforms.*"

In an earlier study of the Yelgen area Davies (1994:28) assessed forested spurs towards the northern boundary to have archaeological potential and recommended Aboriginal construction monitoring. In the absence of wide area excavation, Collins (2006:33) assessed that "*it is extremely unlikely that any dispersed human burials (if they were ever present and still survive) or isolated artefacts would be intercepted during a subsurface archaeological investigation, and Aboriginal monitoring of development-related earthworks thus offers the only real chance of detecting these types of sites.*"

A report conducted by Navin Officer Heritage Consultants (2006:31) notes that "*beyond the scope of archaeological sampling, the potential to encounter background artefacts within the context of development related ground disturbance will always remain. While the intrinsic scientific value of any recovered artefacts does not, in general, outweigh the expense of conducting the monitoring however, low density distributions of artefacts are a current subject of interest by some heritage practitioners and DEC policy regarding this issue may change in the future. The monitoring of construction related ground works by Aboriginal groups is now increasingly practiced.*"

Kuskie & Clarke (2006:48-49) suggest that "*Subsequent to testing, the proponent may be in a position to implement one or a combination of strategies…Monitoring is the primary strategy for managing the possible occurrence of Aboriginal skeletal remains. Monitoring for the presence of shell and stone artefacts is also often of value to the aboriginal community who may be seeking to identify and salvage material that was not visible on the surface during a preliminary study. Monitoring may represent a suitable strategy as a final salvage measure after Development Consent is granted.*"

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In a report by Barry & Wheeler (2007:44), one outcome that emerged as a result of consultation with the Aboriginal community, during development at Moruya, NSW, was that "*Cobowra LALC has recommended they be invited to monitor development earthworks in order to salvage Aboriginal artefacts that are culturally significant to their community.*"

Ngarang-Wal Cultural Heritage Management Group and Turnix Pty Ltd (2005:8) undertook a cultural heritage survey of the proposed Tugun Bypass from Steward Road to Kennedy Drive in August 2005. One of the recommendations made in the report was "*that because of the possibility that indigenous burials may be encountered during roadworks in this area an agreement for monitoring during initial earthworks should be developed and implemented.*"

OzArk (2006), in Stage 2 of the CHMP for Tugun Bypass C4 route, also included archaeological management recommendations comprising test / salvage excavation and monitoring.

These are but a few Cultural Heritage Assessments that document the practice of appointing Monitors to carry out observations during excavations and sub-surface disturbance activities on the Site.

We note that no decision has been made as to whether monitoring will be appropriate at this stage. This is something that will be decided after extensive consultation with the Aboriginal community and the relevant government authorities. I should also state that it is our recommendation that monitoring be limited to the sand only areas of the site. In these areas the contrast between artefacts and sand, or more importantly, between bone and sand, makes monitoring a viable approach to supplement other techniques.

If you have any further queries then please contact us.

Yours faithfully,

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