5.1 Ethno-history

It is generally accepted that traditional Aboriginal people of Lake Cathie-Bonny Hills belonged to the Birpai 'tribe', and spoke a closely related variant of the Kattang language (Holmer 1966). Dialectic groups composed of interlinked extended families traditionally inhabited distinct territories within the wider Kattang language association. Land belonged to individual clans whose estate boundaries were known and well-defined. At the time of first European settlement, the Birpai maintained alliances with other 'tribes' via a system of regulated movement for ceremonial, ritual, and social/secular purposes (Breton 1833; Howitt 1904; Fitzpatrick 1941:61.124).

During the course of everyday traditional life, resource exploitation seems to have been undertaken by a number of extended family units that would gather and then disperse as conditions demanded (Henderson 1851; Godwin 1990:97). As disclosed by Birpai Elder, the late Bill Hotlen (Collins 1996:8), a seasonal landuse system was generally followed, with hinterland hunting through spring and summer, and movement to the coast for autumn and winter fishing.

The first written account of the Birpai comes from the journal of Surveyor-General John Oxley, whose exploration party travelled down the Hastings River valley from the west in 1818. Oxley (1820:307-328) noted that “the natives in the vicinity (of Port Macquarie) appeared very numerous”, where “a great many natives’ canoes were seen on the river”. On travelling south, the party camped near a freshwater spring at Bonny Hills, but no mention is made of encountering either Aboriginal people or evidence of their camps here or anywhere else between Port Macquarie and the Camden Haven. Upon skirting the northern shore of Queens Lake (part of the Camden Haven estuarine system, 5.4km south of the project area) Oxley (1820:328) “disturbed a large party of natives, some of whom were busily employed in preparing bark for a new canoe”. These people were residing in a lakeside encampment comprising “gunias or bark huts” and possessed “arms and utensils of every description”. There were “many large canoes on the lake … one of which was sufficiently large to hold nine men, and resembled a boat” (Oxley 1820:332-333). The discovery of this occupied campsite in the mid-spring of 1818 suggests that the margins of resource-rich estuaries may have been used on a semi-permanent basis irrespective of the usual seasonal round followed elsewhere.

The frontier of European settlement moved north from Newcastle upon the 1821 establishment of a penal station at Port Macquarie. Little is known about the Lake Cathie-Bonny Hills coast between the late 1820s and 1860, and it is thought to have remained an isolated outpost of Port Macquarie, visited by limeburners, cedar cutters, escaped convicts and graziers in search of free pasture (Camden Haven Learning
Exchange 1987:6). Even so, limeburners were operating in the Camden Haven by 1828, burning the then prolific oyster beds available in Queens Lake (Ogburn et al 2007:276) and probably also exploiting Aboriginal shell middens on the shoreline.

While historical information suggests that the Birpai in and round Lake Cathie-Bonny Hills could have maintained a traditional lifestyle with minimal disruption up until the 1870s, their population is likely to have already been decimated by measles and smallpox, which reached Port Macquarie as early as 1831 (Campbell 1985:337). At least some of the local Aboriginal people are believed to have been massacred by early European settlers near Greenhills Gully in Bonny Hills (Collins 2003a:10). During the late 1930s, around six Aboriginal families continued to camp for an extended period beside Greenhills Gully while the men mustered cattle for a local landowner (Bartlett 1991).

5.2 Registered Aboriginal sites and places

5.2.1 OEH Aboriginal Heritage Information Management System (AHIMS)

Table 1. Types of Aboriginal sites registered on AHIMS within 3km of the project area

<table>
<thead>
<tr>
<th>Site type</th>
<th>Site Features</th>
<th>Frequency</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shell midden</td>
<td>Shell, stone artefacts, pebbles</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Open camp</td>
<td>Stone artefact scatter</td>
<td>11</td>
<td>55</td>
</tr>
<tr>
<td>Isolated artefact</td>
<td>Stone artefact</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Scarred tree</td>
<td>Bark/wood removal scar on trunk</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>20</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 2. Details of Aboriginal sites registered on AHIMS within 3km of the project area

<table>
<thead>
<tr>
<th>AHIMS ID</th>
<th>Site name</th>
<th>Site type</th>
<th>Local landform</th>
<th># identified artefacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-6-0235</td>
<td>Lake Cathie/Lake Side Way</td>
<td>Scarred tree</td>
<td>Bank of Cathie Creek estuary</td>
<td>1</td>
</tr>
<tr>
<td>30-6-0130</td>
<td>99-2 trail #2</td>
<td>Isolated artefact</td>
<td>Subcoastal ridge crest</td>
<td>1</td>
</tr>
<tr>
<td>30-6-0094</td>
<td>SATM 2</td>
<td>Isolated artefact</td>
<td>Subcoastal spur footslope</td>
<td>1</td>
</tr>
<tr>
<td>30-6-0128</td>
<td>Point Rd #1</td>
<td>Isolated artefact</td>
<td>Subcoastal spur crest</td>
<td>1</td>
</tr>
<tr>
<td>30-6-0252</td>
<td>Dam Trail #1</td>
<td>Scarred tree</td>
<td>Subcoastal spur footslope</td>
<td>1</td>
</tr>
<tr>
<td>30-6-0114</td>
<td>M9</td>
<td>Isolated artefact</td>
<td>Alluvial flat</td>
<td>1</td>
</tr>
<tr>
<td>30-6-0116</td>
<td>M11</td>
<td>Open artefact scatter</td>
<td>Coastal ridge fooslope</td>
<td>150 (approx.)</td>
</tr>
<tr>
<td>30-6-0184</td>
<td>M12</td>
<td>Open artefact scatter</td>
<td>Coastal knoll fooslope</td>
<td>11</td>
</tr>
<tr>
<td>30-6-0109</td>
<td>M4</td>
<td>Open artefact scatter</td>
<td>Sand rise and sand fooslope</td>
<td>115</td>
</tr>
<tr>
<td>30-6-0115</td>
<td>M10</td>
<td>Open artefact scatter</td>
<td>Sand rise near Duchess Gully</td>
<td>40; 26 from test excavations</td>
</tr>
<tr>
<td>30-6-0111</td>
<td>M6</td>
<td>Open artefact scatter</td>
<td>Alluvial flat near Duchess Gully</td>
<td>2</td>
</tr>
<tr>
<td>30-6-0112</td>
<td>M7</td>
<td>Open artefact scatter</td>
<td>Alluvial flat near Duchess Gully</td>
<td>2</td>
</tr>
<tr>
<td>30-6-0012</td>
<td>Lake Cathie Beach</td>
<td>Shell midden</td>
<td>Rainbow Beach foredune</td>
<td>&gt;10</td>
</tr>
<tr>
<td>30-6-0032</td>
<td>Duchess Creek</td>
<td>Open artefact scatter</td>
<td>Bed and bank of Duchess Gully tributary</td>
<td>4</td>
</tr>
<tr>
<td>30-6-0108</td>
<td>M3</td>
<td>Open artefact scatter</td>
<td>Sand and alluvial flat near Duchess Gully</td>
<td>12; 1 from test excavations</td>
</tr>
<tr>
<td>30-6-0106</td>
<td>M1</td>
<td>Open artefact scatter</td>
<td>Sand rise near Duchess Gully</td>
<td>20</td>
</tr>
<tr>
<td>30-6-0113</td>
<td>M8</td>
<td>Open artefact scatter</td>
<td>Spur fooslope above Duchess Gully</td>
<td>3</td>
</tr>
<tr>
<td>30-6-0107</td>
<td>M2</td>
<td>Open artefact scatter</td>
<td>Sand rise near Duchess Gully</td>
<td>5</td>
</tr>
<tr>
<td>30-6-0110</td>
<td>M5</td>
<td>Isolated artefact</td>
<td>Alluvial flat</td>
<td>1</td>
</tr>
<tr>
<td>30-6-0162</td>
<td>1B1</td>
<td>Scarred tree</td>
<td>Sand flat</td>
<td></td>
</tr>
</tbody>
</table>
An extensive search of the AHIMS database performed on the 15th of January 2019 (Client Service 392550) revealed 20 registered Aboriginal sites within 3km of the project area (Appendix I). Although including scarred trees and a shell midden, the sites are overwhelmingly dominated by stone artefact occurrences (Table 1). None of the registered sites are within the project area, the closest being an isolated find (#30-6-0114; a greywacke flake) on the alluvial flat some 470m to the south-east.

Details of the registered sites are provided in Table 2. As also evident on Figure 4, the registered sites are concentrated in and near Duchess Gully, where they occur on coastal foredunes, inner barrier sands, the alluvial flat, and bedrock-soil footslopes. Away from the near-coastal zone, registered sites are restricted to isolated stone artefacts and a scarred tree.
5.2.2 Other heritage registers
On-line searches of the Australian Heritage Database, NSW State Heritage Register and Schedule 5 (Environmental Heritage) of Port Macquarie Hastings LEP 2011, performed on the 28th of January 2019, revealed no registered/listed Aboriginal sites/places at Lake Cathie-Bonny Hills.

5.3 Past Aboriginal cultural heritage assessments and archaeological investigations

5.3.1 The project area
As briefly outlined below, the project area has been inspected for archaeological evidence on the three separate occasions. None of these inspections has resulted in the recording of Aboriginal ‘objects’ within or close to this particular area.

**Happ and Bowdler 1983**
In 1983, Happ and Bowdler surveyed a 225ha property east of Ocean Drive, proposed for the development of an ‘international sports and leisure village’. The property included the present project area. The survey resulted in the detection of three silcrete artefacts laying on a lag of pebbles, ochre nodules and sand in the bed of a small tributary of Duchess Gully around 1.3km south-east of the project area, and a silcrete flake in a spill of sand on the tributary bank (together registered as AHIMS site #30-6-0032). Although no other archaeological evidence was found, the survey was constrained by vegetation cover.

**Collins 1996**
A survey of a 130ha proposed residential development area that encompassed the northern half of that inspected by Happ and Bowdler (1983), including the present project area, was undertaken by Collins in 1996 and resulted in the recording of 11 Aboriginal stone artefact occurrences within and near the property boundaries. The sites comprised nine scatters of stone artefacts (open campsites) and two isolated artefact finds (M1 to M11 listed in Table 2). Apart from one isolated artefact (M9; #30-6-0014) on the alluvial flat in centre of the Duchess Gully basin (470m south-east of the project area), the recorded sites were situated on inner barrier sands, the alluvial flat and bedrock-soil footslopes near Duchess Gully, within 500m and less of the coastline.

The recorded stone artefact assemblage comprised flakes, flaked pieces, cores, split pebbles, pebble and flake tools made on a range of raw stone materials, primarily siltstone, quartz and chert. Almost half of the identified artefacts featured pebble cortex, suggesting that their constituent stones were most likely collected from Rainbow Beach.

Consultation with Birpai Elder and knowledge-holder the late William ‘Gulah’ Holten revealed that the Rainbow Beach area was not known to contain any sites/places of ceremonial, mythological or otherwise spiritual importance. However, Mr Holten was aware that a large, traditionally-used base camp did occur in the general locality, though he was not able to recall its exact whereabouts.

**Virgin 2018**
A more recent field inspection was conducted in 2018 to inform an Aboriginal archaeological due diligence assessment of the project area (Virgin 2018). The inspection included all accessible ground surface exposures and the trunks of mature trees. No Aboriginal objects were detected. It was concluded that the area is ‘relatively unlikely to have been a preferred location for occupation by Aboriginal people in the past’ (Virgin 2018:10).

5.3.2 The nearby locality
In addition to those outlined in Section 4.3.1 above, a number of other field surveys and investigations have been completed for development-related purposes in the Rainbow Beach locality. The results of these surveys/investigations are summarised in Table 3, serve to further inform expectations with respect to the likely archaeological record of the project area.

Although the surveys have together sampled all available local landform elements, Aboriginal sites have been recorded with outstandingly highest frequency on coastal sands (foredune and inner barrier flat), especially those near Duchess Gully. Sites have also been identified on coastal alluvial flats and the footslopes of bedrock-soil hills and ridges. Apart from occasional small stone artefact scatters, isolated artefacts and scarred trees in the subcoastal hills/ridges zone, most of the sites recorded on alluvial and bedrock soil substrates within 3km of the project area lie reasonably close to Duchess Gully.
Table 3. Summary of other past Aboriginal cultural heritage assessments and investigations near the project area

<table>
<thead>
<tr>
<th>Reference</th>
<th>Survey landforms</th>
<th>Summary and results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starling 1971</td>
<td>Coastal foredune</td>
<td>Survey to assess the impact of sandmining on Aboriginal sites. Recorded discontinuous pipi midden horizons, some containing charcoal, flakes, fire-shattered and unworked pebbles, within the foredune scarp along the full length of Rainbow Beach.</td>
</tr>
<tr>
<td>Coleman 1981</td>
<td>Sand flat, alluvial flat, hills and ridges</td>
<td>Survey of a water pipeline easement and associated reservoir sites between Port Macquarie and Laurieton. The easement crossed the Rainbow Beach locality just west of Duchess Gully. Two shell middens and a scarred tree were recorded, all near the Camden Haven River estuary at Dunbogan.</td>
</tr>
<tr>
<td>Collins 1995</td>
<td>Alluvial flat, hills and ridges</td>
<td>Survey of a 10.5km long and 15m wide water pipeline easement between the Pacific Highway and Bonny Hills that ran along Houston Mitchell Drive and the western margin of Ocean Drive opposite the Lake Cathie Public School. Archaeological finds were restricted to a scatter of five stone artefacts (made on quartz and greywacke) on the bank of a permanent creek 4km north-west of the school, and an isolated quartz core on the lower slope of a hill near Bonny Hills.</td>
</tr>
<tr>
<td>Collins 2003a</td>
<td>Alluvial flat, hills and ridges</td>
<td>Survey of a 2ha section of upper ridge slope at Bonny Hills and a 67ha area comprising ridge crests, slopes and alluvial flats sandwiched between Lake Innes Nature Reserve and Ocean Drive east of and immediately north of the Lake Cathie Public School, proposed for rezoning to allow residential development. No Aboriginal sites/materials were detected</td>
</tr>
<tr>
<td>Collins 2003b</td>
<td>Sand flat, alluvial flat, ridge</td>
<td>Survey of a 32ha property proposed for rezoning to allow residential development, situated between the coastal dunes and the area inspected by Happ and Bowdler (1983) and Collins (1996) (report section 5.3.1), south of Ocean Drive at Lake Cathie. The survey resulted in the recording of a scarred Brush Box tree (shield tree) standing in sand-based litoral rainforest 120m inland of the coastline.</td>
</tr>
<tr>
<td>Collins 2006</td>
<td>Sand flat, alluvial flat, hills and ridges</td>
<td>Re-inspection and assessment of sites M1 to M10 recorded by Collins (1996), in light of a revised residential subdivision concept plan. Survey of an additional 8ha of land adjoining the southern boundary to be included in the proposal. A scatter of 11 stone artefacts (M12) made on siltstone, chert, jasper and chalcedony was recorded on the western footslope of a bedrock soil knoll around 130m inland of Duchess Gully.</td>
</tr>
<tr>
<td>Collins 2007</td>
<td>Sand flat, alluvial flat</td>
<td>Archaeological test excavations conducted on and/or adjacent to sites M3, M6/M7, and M10 near Duchess Gully to identify and mitigate proposed residential development impacts. The test excavation results were consistent with Collins’ 1996 findings, indicating a higher level of artefact discard on the elevated inner barrier sands than on the alluvial flat. Artefacts on the alluvial flat were considered to represent part of a background distribution of itinerantly discarded materials that also focussed on land close to Duchess Gully.</td>
</tr>
<tr>
<td>Collins 2009</td>
<td>Sand flat, alluvial flat, ridge slope</td>
<td>Survey of a 65ha area seaward of Ocean Drive, south and east of that previously inspected by Happ and Bowdler (1983) and Collins (1996, 2006), incorporating a proposed ‘eco tourist’ development site on the degraded inner barrier dune between Rainbow Beach and Duchess Gully, sand and alluvial flats proposed for open space, drainage and habitat conservation (including a constructed wetland), and a ridge slope targeted for future school construction. The survey area encompassed the artefact scatter recorded by Happ and Bowdler in a tributary of Duchess Gully, and artefact scatter M2 recorded by Collins in 1996. No Aboriginal artefacts/materials were detected at either site, or elsewhere.</td>
</tr>
</tbody>
</table>

5.4 Synthesis of available information and archaeological expectations for the project area

5.4.1 Summary and discussion

As plotted on Figure 4, the area bordered by Ocean Drive between the townships of Lake Cathie and Bonny Hills features an unusually dense concentration of Aboriginal sites, reflective of a traditional coastal landuse system that included camping, stone tool manufacture/maintenance, the extraction of bark/wood for shield making, and the collection of pipi shells and pebbles from the Rainbow Beach shore. However, no sites/places of ceremonial, mythological or otherwise spiritual importance have been reported within or near this area, the closest being a place associated with ceremonial activities on the summit of the Jolly Nose escarpment (Collins 1995:20, 2003a:6).

Past survey/investigation results demonstrate that the coastal foredune and well-drained rises on the degraded inner sand barrier were preferred for traditional occupation. Camps were sometimes established on bedrock-soil footslopes, but the several surveys completed in the locality have revealed these to occur within 500m of the beach, in the proximity of Duchess Gully. A low-density distribution of stone artefacts has been found on the alluvial flat. These artefacts are likewise focused on Duchess Gully. The only Aboriginal object so far recorded on the alluvial flat remote from Duchess Gully is a single greywacke flake (M9; #30-6-0014) 470m south-east of the project area.
The past results suggest that the registered Aboriginal sites off the coastline and productive coastal margins (including Duchess Gully) are representative of a background scatter of stone artefacts lost or discarded, probably by small groups ranging out from the coastal camps in search of food and material resources. Non-coastal evidence of this background scatter (within 3km of the project area) is extremely scanty, and apart from the M9 flake (#30-6-0114) is restricted to an isolated quartz core (#30-6-0094) on a hillslope inland of Bonny Hills, and two isolated artefacts (#30-6-0130 and #30-6-0128) on the crest of a ridge/spur flanking the Lake Innes Nature Reserve further north. A scarred tree (#30-6-0252) has also been registered in this latter locality.

The present project area is expected to have been visited in traditional times. This visitation and may well have resulted in the occasional discard of stone artefacts (background scatter), as well as tree scarring caused by the removal of bark or wood for the construction of shelters, the manufacture of items like canoes, containers and shields, and cuttings made to collect food and assist with tree climbing. However, despite several surveys, no Aboriginal objects have been detected on ridges or slopes bordering the Duchess Gully basin away from the coastal fringe. These include the project area, which has been inspected on three separate occasions with a nil result (Happ and Bowdler 1983; Collins 1996; Virgin 2018). Consistent with the past survey findings in conjunction with the vegetation clearing and development disturbance that has already taken place, the project area is considered to have a low level of archaeological sensitivity. In the event that stone artefacts were ever discarded within this area, there is little to no possibility that any could remain in a primary depositional context or that they would be of further scientific/archaeological value.

On the basis of her due diligence assessment of the project area, Virgin (2018:18) concluded that “there is a low likelihood that the proposed works will result in harm to Aboriginal objects”. While still to be inspected for the present assessment and Aboriginal consultation completed, the available evidence supports this conclusion.

5.4.2 A predictive model of the nature and location of archaeological sites within the project area

The following predictions are based upon the environmental and disturbance context of the project area, past survey/investigation results, and information previously disclosed by Aboriginal informants:

- In the absence of stone or ochre outcrops, the project area will not contain occupation shelters, stone arrangements, stone or ochre quarries, axe grinding grooves or rock art.
- Due to the extent of past vegetation clearing, culturally modified trees are highly unlikely to survive. If present, such trees will be confined to the south-western corner of the project area, which would not be affected by the proposed development.
- Given the clear preference for occupation of the local coastal margins, sites comprising evidence of sustained or repeated Aboriginal camping/use (shell middens, dense artefact scatters) are not expected to occur within the project area.
- Isolated stone artefacts lost or discarded by small itinerant resource-gathering groups may occur anywhere in the Rainbow Beach locality. Owing to the perceived very low density of this background artefact distribution off the coastal fringe, in conjunction with the small size of the project area, it is unlikely that this area would have ever contained more than one or two isolated stone artefacts, if any at all. Any isolated stone artefacts that may be present within the project area will have been displaced (and possibly broken) by vegetation clearance and disturbance activities required for construction of the existing school buildings, school grounds, and other infrastructure.

6 FIELD INSPECTION

A field inspection of all accessible ground surface exposures and mature trees within the project area will be undertaken with the assistance of nominated representatives of the Registered Aboriginal Parties once Stages 1, 2, and Stage 3 steps 4.3.1 and 4.3.2 of the CRs (DECCW 2010a) are complete.

7 CONCLUSIONS

Given that the CRs are yet to be completed and a field inspection and consultation with RAPs is still to be done, any conclusions with respect to the impact of the school redevelopment on the Aboriginal cultural heritage values are preliminary only, and are at this point totally reliant upon existing information.

As reviewed in Section 5.3 of this report, a considerable number of archaeological surveys have been done between Lake Cathie and Bonny Hills. In addition to surveys of a water pipeline easement bordering Ocean Drive (Collins 1995) and ridges/hills on the northern side of Ocean
Drive directly opposite the Lake Cathie Public School (Collins 2003a), three surveys have encompassed the project area itself (Happ and Bowdler 1983; Collins 1996; Virgin 2018). None of these surveys have resulted in the detection of Aboriginal objects near or within the project area.

Aboriginal organisations and knowledge-holders consulted during the course of several of the past studies (Collins 1995, 1996, 2003a, 2003b, 2006, 2007, 2009) have not identified modified or unmodified sites/places of ceremonial, mythological or otherwise special cultural significance near or within the project area, and raised no objections to development of the present school.

On the basis of all currently available information, it is concluded that the project area has a low level of Aboriginal cultural heritage sensitivity and that the proposed school redevelopment would be unlikely to harm Aboriginal objects (with the possible exception of displaced isolated stone artefacts). This conclusion is consistent with that reached by Umwelt (Australia) Pty Ltd in its recent archaeological due diligence assessment of the redevelopment proposal (Virgin 2018:18).

8 MANAGEMENT RECOMMENDATIONS

The below management recommendations are of a general nature only. Depending upon the outcome of the field inspection and consultation with the RAPs, these management recommendations may change. It is nevertheless considered that the project area is highly unlikely to contain either significant Aboriginal objects or other sites/places of special Aboriginal cultural heritage value or contemporary attachment,

1) Prior to their on-site involvement, all contractors, subcontractors and their employees engaged for the school redevelopment works should undergo a general site induction that provides information on legal obligations with respect to Aboriginal objects, and ‘stop-work’ conditions applicable in the event that any identified or suspected Aboriginal objects are discovered at any stage.

   A register should be kept of all persons inducted. The register should include dates, names and signatures of those inducted, the name of the person carrying out the induction, and an acknowledgement that Aboriginal cultural heritage requirements have been explained and understood.

2) If any identified or suspected Aboriginal objects are detected at any time, all disturbance work should immediately cease within 10m of the find and temporary protective fencing erected around this ‘no-go zone’ pending further management advice from the Department of Planning and Environment in liaison with the OEH (Planning and Aboriginal Heritage Section, North Coast Region) and the Registered Aboriginal Parties. If the find consists of or includes human remains, the NSW Police Department and the OEH Environmental Line (ph 131 555) should also be notified as soon as practicable.

   Works may not recommence within the designated ‘no-go zone’ until formal clearance to do so has been given by the appropriate authorities.

3) To promote student awareness and appreciation of Birpai culture, the NSW Department of Education should consider applying Birpai language names to the new buildings, where possible. The Registered Aboriginal Parties must be invited to assist with any related naming to ensure that it is accurate and suitable.
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GLOSSARY

ARTEFACT
An object or specimen produced by human agency. An artefact can usually be collected without being destroyed. This is in contrast to features, which are destroyed or dismantled after collection. All lithic debitage and tools are considered artefacts (Andrefsky 2005:252).

CHALCEDONY
A cryptocrystalline variety of silica, having a compact fibrous structure and a waxy lustre. It may be translucent or semi-transparent and occurs in a variety of colours. Chalcedony is often found as a deposit, lining or filling cavities in rocks (Lapidus 1987:99).

CHERT
A dense, extremely hard, microcrystalline or cryptocrystalline siliceous sedimentary rock, consisting mainly of inter-locking quartz crystals, sub-microscopic and sometimes containing opal (amorphous silica). Chert occurs mainly as nodular or concretionary aggregations in limestone and dolomite, and less frequently as layered deposits (banded chert). It may be an organic deposit (radiolarian chert), an inorganic precipitate (the primary deposit of colloidal silica), or a siliceous replacement of pre-existing rocks (Lapidus 1987:102).

CORE
A nucleus or mass of rock that shows signs of detached piece removal. A core is often considered an objective piece that functions primarily as a source for detached pieces (Andrefsky 2005:254).

Cortex
Chemical or mechanical weathered surface on rocks (Andrefsky 2005:254).

DEBITAGE
Detached pieces discarded during the stone reduction process (Andrefsky 2001:254).

FLAKE
A piece of stone detached from a larger mass by the application of force and having a feather, hinge or step termination and a bulb of percussion. A platform may be present if the proximal end is unbroken (Crabtree 1972:64).

FLAKED PIECE
A chipped stone artefact with negative flake scars which cannot be classified as a flake, core or retouched flake (Hiscock 1988:64).

FLAKE TOOL
A flake that has been subsequently modified by intentional retouch and/or by wear resulting from use (Andrefsky 2005:255).

FOOTSLOPE
A moderately to very gently inclined waning lower slope resulting from aggradation or erosion from sheet flow, earth flow or creep (Speight 1990:31).

GREYWACKE
Sedimentary rock. A very hard, dark grey or greenish-grey, coarse-grained sandstone characterised by angular particles and rock fragments embedded in a clayey matrix (Lapidus 1987:265).

HOLOCENE
The most recent epoch of geological time, commencing approximately 10,000 years ago (Lapidus 1987:274).

PHYLLITE
A light silvery-grey metamorphic rock, intermediate in grade between slate and schist. Phyllites are derived from argillaceous (ie clayey) sedimentary rocks (Lapidus 1987:405).

SCARRED TREE
Aboriginal scarred trees are trees that have been scarred by Aboriginal people through the removal of bark or wood for a variety of commonplace tasks, including the construction of bark shelters, watercraft and containers. Other forms of Aboriginal tree wounding include deliberate marking (such as tree carving), the removal of wood for artefact manufacture, and cuttings made to collect food and assist with tree climbing (tree-holds). Early European settlers also stripped bark from trees, though for a more limited range of uses, especially the weather-proofing of buildings and other structures (Long 2005:6-7).

SCHIST
A metamorphic rock that is not defined by mineral composition but instead by the well-developed parallel orientation of more than half of the minerals present (Lapidus 1987:453).
SHELL MIDDEN
An Aboriginal campsite dominated by shellfish remains. Middens may also contain animal bone, stone artefacts, and charcoal and ash from cooking fires. Some middens are thin surface scatters which have constituted little more than a meal for a small group gathering food away from a main camp, while others are well consolidated deposits representing consistent use by large groups of people over hundreds or thousands of years (Byrne 1989:10).

SILCRETE
A siliceous duricrust composed of sand and gravel cemented by opal, chert and quartz, formed by chemical weathering and water evaporation (Lapidus 1987:472).

SILTSTONE
A fine-grained sedimentary rock principally composed of silt-grade material. Intermediate between sandstone and shale, siltstone contains less clay than shale and lacks its fissility and fine laminations (Lapidus 1987:474).

STONE ARTEFACT
Fragment of stone that generally possesses one or more of the following characteristics:
• Positive or negative ring crack
• Distinct positive or negative bulb of force
• Definite erialure scar in position beneath a platform
• Definite remnants of flake scars
These traits are characteristic of the spalls removed by humans using direct percussion. Stone artefacts which have none of the above may be identified as such if they possess ground facet/s characteristic of human industry (Hiscock 1984:128).

STONE TOOL
A stone artefact that has been intentionally modified by retouch and/or modified by usewear (Andrefsky 2005:262).

GLOSSARY REFERENCES


