

Part B:

Technical Report

B1 Introduction

A cultural heritage assessment was undertaken for a proposed resort to be developed by QRE Pty Ltd (QRE) in the vicinity of Black Head, eastern Curtis Island, located between Gladstone and Rockhampton, Calliope Shire, (hereafter referred to as the study area) (Figures A1 and A2). See Part A for maps of the study area and property descriptions.

ARCHAEO Cultural Heritage Services facilitated the development of an agreement between QRE and the Aboriginal Parties and provided technical advice during the cultural heritage assessment. Part B is a report on the technical aspects of the assessment.

This assessment covered Lots 8 and 11 on CP 860464, Parish of Curtis. A description of the project is provided in Part A of this report. Most of the accommodation structures will be located on the slopes and headland of Black Head, adjacent to Turtle Street Beach. Accommodation structures will constitute development of only a very small fraction of the total area available and the majority of the property will remain as native bushland. Within the study area are significant areas of native vegetation, which are avoided by planned development.

The project will have an impact on areas of land that are currently native bushland, particularly in the area gazetted for water storage at Hobble Gully. Elsewhere, access roads will largely follow existing corridors to minimise impacts. Construction of the project will involve the use of heavy machinery to remove existing ground covers and some 123 hectares of trees, the construction of roads and building foundations; the provision of walking tracks and trails, drainage and runoff, storage and treatment of sewerage and the potential later impact of human activities from accommodation guests or transient population.

B2 Scope of Assessment

This cultural heritage assessment is required to define Aboriginal cultural heritage in the study area, and to make recommendations for management of the cultural heritage duty of care that can provide a basis for the development of an agreement between the developer (QRE) and the Aboriginal Party (PCCC). The outcome of the assessment will be a technical report, outlining the environmental context, previous studies, the methodology and constraints to the survey, survey outcomes and potential impacts, and management strategies and recommendations.



Outcomes will be provided in Part A: Report by the Aboriginal Parties; Part B: Technical Report; and Part C: Recommendations that sum up the views on management of Aboriginal cultural heritage of the Aboriginal Parties in association with the technical adviser.

B3 Relevant Legislation

The assessment was undertaken to advise the project on its cultural heritage duty of care. The *Aboriginal Cultural Heritage Act 2003* states that a person who carries out an activity must take all reasonable and practicable measures to ensure the activity does not harm Aboriginal cultural heritage (the "cultural heritage duty of care") (Section 23[1]). This is discussed in full in Section A2.

B4 Description of Study Area

The study area contains the prominent features of Black Head and Turtle Street Beach, together with spectacular sea cliffs and native vegetation. In addition to these coastal features are a series of gullies and creeks, including Hobble Gully and Logbridge Creek that drain extensive areas of open eucalypt forest into mangrove lined estuarine wetlands. The centre of the development is characterised by low hills that form a part of the Ramsay Range, the backbone of Curtis Island (see A1).

The study area consists of 700 hectares, described as Lots 8 and 11 on CP 860464 Parish of Curtis, Calliope Shire, which was previously part of Monte Christo Station, a cattle grazing property. Recently, other parts of the property outside of the study area were returned to the Queensland Government for gazettal as national park under an agreement to allow the current development to continue. Almost the entire study area is uncleared native bushland with only a few huts and access bush tracks that provide 4WD access to the Monte Christo homestead and the National Park.

The current project involves tree clearing and the removal of vegetation over an area of approximately 123.9 ha., located on Hobble Gully (construction of the water storage facility); between Hobble Gully over Logbridge Creek towards Black Head (access roads and an airstrip) and the northern flank of Black Head (future villa development). An area of mangrove interface with open forest adjoining Hobble Gully was also surveyed where a boat ramp will be located.



B5 Biogeographical Context

B5.1 Introduction

The landscape is an important part of identifying the interface between humans and their environment, and this is particularly true of Aboriginal Australia where a close relationship has always existed between people and their surroundings. Environmental factors can have considerable influence upon the distribution of people (and thus the archaeological remains of their sites) across the landscape. Hence a study of vegetation, geomorphology and geology is important to establish an interpretative framework for the archaeological record. These factors influenced the organic and inorganic raw materials, water, suitable campsites, landforms, and rock surfaces upon which rock art could be executed. Environmental factors also affected the ease with which people could travel across the land.

Natural features in the landscape contribute to predictive modelling; predictions made, based upon the attributes within a landscape, concerning where archaeological material and/or places are most likely to exist. Topography, geology, the availability of fresh water, vegetation, and faunal resources should all be taken into consideration. Many studies (ARCHAEO 2005; Gillieson 1982; Hall 1982; Hughes and Sullivan 1984; Lilley 1978, 1982, 1984; Pickering 2003; Rowlands and Connelly 2002 are examples) have discussed natural parameters that appear to be associated with sites containing Aboriginal culture heritage. Lilley (1982) in particular undertook a seminal study that identified site parameters. ARCHAEO (2005) has reassessed these parameters, and made some additions based on a more recent understanding of Regional Ecosystems (REs) and the way that they influence choice of site location. The parameters may vary from area to area and are fairly coarse-grained in their relevance, but overall can be summarised as:

- the presence of fresh water, i.e., creeks, waterholes and swamps;
- sandy well drained soils;
- a preference for sites associated with stream cut terraces or ridges in proximity to water;
- a preferred vegetation habitat, e.g., open eucalypt woodland;
- the proximity of ecotones between vegetation communities;
- the proximate availability of stone material suitable for the production of stone artefacts;
- the proximate availability of preferred faunal and/or vegetative resources.



B5.2 Topography and geomorphology

The eastern portion of Curtis Island consists of a range of topographical features. Within the survey area a spectacular headland – Black Head (54 metres high) – juts out into the Coral Sea with steep sea cliffs on the eastern side and sloping on the northern aspect towards the long curve of Turtle Street Beach. A series of ridges stemming from the central Ramsay Range that forms the backbone of Curtis Island are located in the north western part of the proposed development. The remaining area is relatively flat or with low rolling ridges. A series of Holocene sand ridges and swales stretch along in a northeast direction behind Turtle Street beach and partially extend into the development at the base of Black Head.

The hydrology predominantly drains towards the west. Graham Creek is a large mangrove wetland that almost dissects Curtis Island from The Narrows. Two named and one unnamed gullies drain into Graham Creek. Hobble Gully, the most northern creek (where the water storage facility is proposed) is a steep-banked ephemeral creek for much of its length within the study area. Outside of the study area, it becomes a deep tidal mangrove lined creek with rich resources. However, a little to the west of the main channel of Hobble Gully and within the area proposed for the dam are a series of necklace pools that possibly may be spring fed and contain relatively permanent water. Logbridge Creek is the major drainage creek with steep banks and flows into Graham Creek further to the south. Between them is a short gully with some permanent pools of water. Thus there was ample surface water to sustain a population of Aboriginal people.



Photo B1: Hobble Gully from
near Site VC 2



Photo B2: Necklace ponds
near Hobble Gully on the site
of the proposed water storage.

Photo B3: Adequate surface
water was available from
small bush ponds.



B5.3 Geology

Curtis Island and Facing Island were once an extension of the Mount Larcom outliers, before higher sea levels drowned the valley that today forms The Narrows and Port Curtis (McIver *et al* 1991). The outliers are thought to result from tectonic uplift in the Late Tertiary. Geomorphological change and development through the Quaternary period, as demonstrated by fluctuations of sea level, have affected the coastal plain, which comprises a large part of the study area. Gladstone's coastline is considered to be a 'drowned coast', with coastal valleys flooded during the end of the ice age roughly 8000 to 6000 years ago. At the postglacial marine transgression of 15000 to 12000 years before present (BP), the sea level was estimated to be at least 150 metres and possibly 180 metres below the present level (Flood 1989; Veech and Veevers 1970;). The ocean was many kilometres east of the current coastline and the study area would have been dry hills similar to those found around western Gladstone today. The Narrows and Port Curtis possibly existed as a river draining creeks from mainland features we now know as Curtis Island and Mount Larcom.

Heavier soils are associated with the Curtis Island Group Wandilla Formation, which is of Late Devonian-Early Carboniferous age, containing largely sedimentary mudstones, lithic sandstones, siltstone, jasper, chert, slate and schist (Kirkegaard *et al* 1970). The Wandilla Formation outcrops at Black Head; indeed, almost all the hills and ridgelines may be assumed to be Wandilla Formation. There are deposits of schist suitable for axe manufacture in Hobble Gully and the unnamed gully and it is possibly from these sources that the two axe fragments are derived.

There are major outcrops of white quartz eroding from the ridges in the western part of the development forming massive blocky fragments of mixed quality. However, the superior veins possibly are suitable for flaking into stone tools. Burke (1982) reports a silcrete quarry near Monte Christo; most of the stone tools found are made of silcrete suggesting there may be a local source.



Photo B4: Outcropping massive white quartz on the low ridge dissected by the access track to the water storage area



Soils on Curtis Island ranges from heavy clay duplex soils in the hills, ridges and open forest to marine sands and muds along the beach dunes.

B5.4 Flora

From an archaeological viewpoint, an understanding of flora habitats provides information about the resources available to Aboriginal people in more recent times, and the location of archaeological sites (ARCHAEO 2005; Strong 2000). While many vegetation communities have been severely fragmented or lost, there are often indicator species in remnant roadside verges that provides an indication of earlier biodiversity. This is particularly relevant in an urban landscape where much of the original vegetation has been destroyed.

Vegetation also provides indicators as to ground surface integrity. For example, a landscape archaeologist can identify that certain species of plants and grasses are susceptible to ploughing or disturbance and determine whether the landscape has been modified. Knowledge of ethnobotany is thus a major advantage when looking at a hunter-gatherer or archaeological landscape. A substantial relationship exists between the various patterns of geology, elevation, soil types and fresh ground water.

The Study Area

The study area covers a range of diverse habitats and Regional Ecosystems (Sattler and Williams 1999). Each of these REs would have contributed to Aboriginal resources. A flora and fauna study commissioned by the developer identified 17 plant communities within the Black Head resort area.

Beach strand RE

The beach dunes contain species dominated by Horsetail She-oak *Casuarina equisetifolia* var. *incana* and occasional Pandanus *Pandanus tectorius* and Coast Tuckeroo *Cupaniopsis anacardioides* with an understorey of species such as Beach Spinifex *Spinifex sericeus*, Coastal Jack bean *Canavalia rosea*, Angular Pigface *Carpobrotus glaucescens*, Beach Morning Glory *Ipomoea pes-caprae* and similar scrambling plants.

Coastal scrub and low closed forest RE

Behind the foredunes, there is either a dense sub-littoral microphyll/notophyll vine forest, or mangrove lined claypans. The microphyll/notophyll vine forest is dominated either by Carbeen *Corymbia tessellaris* in the drier areas or *Melaleuca* in the wetter areas. It contains a diversity of species including some useful food species or plants with a cultural use, including Coast Tuckeroo *Cupaniopsis anacardioides*, Broad-leaved Brush Cherry *Exocarpus latifolius*, White Fig *Ficus virens*, Chain Fruit *Alyxia ruscifolia*, Currant Bush *Carissa ovata* and Coffee Bush



Breynia oblongifolia. Other species include *Acronychia* spe., Blush Cudgerie *Euroschinus falcata*, Foambark *Jagera pseudorhus*, Yellow Tulip *Drypetes australasica*, Coast Canthium *Canthium caprosmoides*, Kamala *Mallotus phillippensis* and Small-leaved Plum *Planchonella cotinifolia* to name but a few. Vines include Wait-a-while *Smilax australis*, Native jasmine *Jasminium volubile*, Tape Vine *Stephania japonica* and other vines. This RE tends to follow the sand dunes along the edges of swamps and inland away from the littoral areas where the soils are sandy and deep.

Eucalypt, paperbark and cabbage palm open forest RE

This occurs on the sandy soils behind the coastal scrub. The dominant species include Carbeen *Corymbia tessellaris*, Pink Bloodwood *Corymbia intermedia* and Queensland Peppermint Eucalyptus *exserta*, Forest Red Gum *Eucalyptus tereticornis* with Cabbage tree Palm *Livistonia decipiens* occurring as single trees or in groves. Palms were an important species for Aboriginal people, providing materials for baskets and netting, and food from young shoots. These areas contain an understorey including such cultural species as Wombat Berry *Eustrephus latifolius*, Devil's twine *Cassytha glabella* and Dysentery Bush *Grewia latifolia*.

Paperbark open forest RE

Melaleuca quinquenervia dominated forests occur near the airstrip along with She-oaks *Casuarina glauca* and merge into Milky Mangrove *Excoecaris agallocha* along the saltwater channels. Paperbarks also occur as the dominant species along Hobble Gully within the dam site.

Swamp Mahogany and Forest Red Gum open forest RE

This RE has particular interest as it has been identified as contained a wide range of food species (both plant and animal) and material culture resources. It occurs in the dam site. Mature Forest Red Gum *Eucalyptus tereticornis* and Swamp Mahogany *Lophostemon suaoveolens* along with some Forest She Oak *Allocasuarina tortulosa*, Peppermint *Eucalyptus exserta* and with a low thin understorey of native grasses and herbs.

Gum-topped Box open forest RE

This is another RE which has been shown to contain one of the highest proportions of Aboriginal sites (ARCHAEO 2005) of all REs. It is dominated by Gum-topped Box *Eucalyptus moluccana* and interfaces into Eucalypt Open Forest with other species such as Ironbark *Eucalyptus crebra* and Peppermint *Eucalyptus exserta*.

Bloodwood open forest RE

Occurs on the airstrip. Dominant species is the Pink Bloodwood *Corymbia intermedia* with other scattered eucalypts and a sparse ground cover.



Lemon-scented Gum Open Forest RE

Occurs as the dominant species in the stonier ridges, especially where quartz outcrops. This RE has one of the lowest occurrences of Aboriginal sites recorded although on Curtis Island its association with the quartz outcrops differs from its preferred mainland habitat. This RE interfaces with other eucalypts especially Narrow-leaved Ironbark *Eucalyptus crebra* and peppermint or bloodwood. Grass trees (*Xanthorrhoea* spe.) form the dominant understorey.

Photo B5 and 6. Contrasting Regional ecosystems within the study area. Top: Cabbage Palm grove within Eucalypt open forest.

Below: Grass trees (*Xanthorrhoea* spe.) in Lemon-scented Gum open forest.



B5.5 Fauna

Fauna does not play such a crucial role in cultural heritage modelling as vegetation (ARCHAEO 2005) as the evidence is transient and information relies heavily on historical accounts, such as the account by Matthew Flinders published in 1814 after his visit to the northern end of Curtis Island in 1802. Aboriginal groups living on Curtis Island would have targeted a wide range of freshwater, terrestrial and avian fauna. The beaches and mudflats provided a range of shellfish, including eugaries *Donax deltoides*, various and numerous species of venus clams, Hercules club mud whelk *Pyrazus ebeninus* and Telescope Mud creeper *Telescopium telescopium*, and Mud Ark *Andara trapezia*. Flinders (1814) noted that the oysters at Cape Keppel did not adhere to the rocks but formed large groups on the banks. However, the shell midden (Site C4) produced numerous Sydney Rock Oyster *Saccostrea glomerata* (previously *commercialis*). All these were used as food and it is surprising that larger shell middens were not encountered within the survey. Flinders (1814) recorded during his visit in 1802 that fish was plentiful; numerous species would have included the significant winter mullet *Mugil cephalus* runs and tailor *Pomatomus saltatrix* along with Stingrays *Dasyatis fluviorum*, flathead *Platycephalus* spe. and whiting *Silago* spe. caught off the beach. Tidal creeks produced Mud Crab *Scylla serrata* and Mangrove Jack *Lutjanus argentimaculatus*. Flinders (1814), while at Port Curtis, wrote that the inhabitants existed partly on turtle. These would have included Green Turtle *Chelidonia mydas* and Loggerhead *Caretta caretta* which use the ocean beaches as rookeries and are plentiful in the waters around Curtis Island. There is a turtle breeding ground along Turtle Street Beach about 200 metres from the study area. Freshwater turtles (several species including *Chelodina longicollis*) would have been caught in the swamps, along with snakes (various species) and other reptiles. Carpet Python *Morelia spilota variegata* was a favourite food species. Goannas *Varanus gouldii* and *varius* are both found on Curtis Island. Flinders carefully notes the presence of several birds, including ducks caught by Aboriginal people, and Bustard *Ardeotis australis* which he saw several near Cape Keppel. Other birds would have included parrots and cockatoos, emus, brolgas, quail and pigeons. Flinders records the presence of kangaroos (Grey kangaroos *Macropus giganteus*) (other reports that red kangaroos were present on the island (McDonald 2001) and Swamp Wallaby *Wallabia bicolor* is also present today. Other mammals include koalas, bandicoots, pademelons, possums, gliders, echidnas, bats and flying foxes. Flinders does not specifically mention Dugong *Dugong dugon*, but it is regarded traditionally as an important food species. The explorer does refer to the bones of a 'porpoise' found near a fire, which may perhaps have been a dugong, although dolphins may also have been hunted or made their way into the food chain from beach-washed specimens.



B6 The Cultural Landscape

B6.1 Ethnographical and historical accounts

Our understanding of the cultural heritage of Curtis Island can be assisted by assessing various relevant historical accounts that provide some indication of Aboriginal traditional culture and lifestyles at the time of the first European contact (ARCHAEO 2005; Flinders 1814; McDonald 1988, 2001, etc). Many of the early explorers were keen observers of natural history; they had on board botanists and collectors and artists. Caution must be exercised in reading these accounts due to the imperfect understanding that Europeans had of Aboriginal people, and that contact may have been influenced by seasonal patterns of behaviour. In the case of Flinders, who spent over a week at Curtis Island, and whose men spent time with the Aboriginal people in their camps, several details are recorded that provide information about the construction of huts, weapons, and appearance. Flinders's account of Curtis Island, from his stay there in 1802, was published in 1814. Flinders wrote:

Traces of inhabitants were found upon all the shores where we landed, but the natives kept out of sight after the little skirmish on the first day of our arrival; they subsist partly on turtle, and possess bark canoes and scoop nets. We saw three turtle lying on the water, but were not so fortunate as to procure any. Fish seemed to be plentiful, and some were speared by Bongaree, who was a constant attendant in my boat; and yet our efforts with the seine were altogether unsuccessful. Towards the evening about twenty [Indians] were observed in company with a party of the sailors. They had been met with near Cape Keppel, and at first menaced our people with their spears; but finding them inclined to be friendly, laid aside their arms, and accompanied the sailors to the ship in a good natured manner. Wherever we landed there had been Indians; but it was near the ship only, that any of them made their appearance. They were described by the gentlemen who saw them, as stout, muscular men, who seemed to understand bartering better than most, or perhaps any people we had hitherto seen in this country.

Upon the outer bone of the wrist they had the same hard tumour as the people of Hervey's Bay, and the cause of it was attempted, ineffectually, to be explained to one of the gentlemen; but as cast nets were seen in the neighbourhood, there seems little doubt that the manner of throwing them produces the tumours. These people were not devoid of curiosity; but several things which might have been supposed most likely to excite it, passed without notice.

Of their dispositions we had every reason to speak highly, from their conduct to our sailors. It was scarcely necessary to say, that these people are almost black, and go entirely naked, since none of any other colour, or regularly wearing clothes, have been seen in any part of Terra Australis. About their fire places were usually scattered the shells of large crabs, the bones of turtle, and the remains of a parsnip-



like root, apparently of fern, and once the bones of a porpoise were found; besides these, they doubtless procure fish, and wild ducks were seen in their possession.

There are kangaroos in the woods, and several bustards were seen near Cape Keppel. The mud banks are frequented by curlews, gulls, and some lesser birds. Oysters of a small, crumple kind, are tolerably plentiful; they do not adhere to the rocks, but stick to each other in large masses on the banks; here are also pearl oysters, but not so abundantly as in Port Curtis." (Flinders 1814), Vol 2)

Flinders' comments on the use of the tow-row seine fishing net used by coastal Aboriginals in southeast Queensland is one reference to the process employed by Aboriginal people on Curtis island to catch fish. Another ethnographer, Walter R. Roth, writing as Protector of Aborigines in the late 1800s, of the Curtis Coast Aborigines, recorded their dependence on marine resources. Roth (1898; 1901) recorded a wide range of fishing methods was utilised, including nets made of bark fibre (commonly *Hibiscus* spe.), hook and line fishing, harpooning and spearing. He noted the use of tortoise shell or coconut shell fish hooks and triangular hand nets (Roth 1901).

The frame consist of two switches, usually of a species of Acacia, overlapped and bound together at their thinner extremities, and tied to the cross-junction of the two thicker ends which are left projecting....The mesh proper, woven like the ordinary netting stitch, is worked onto an initial row of slip knots and, fixed on a corresponding small frame, is allowed to have considerable depth. Two such nets, one in each hand (which holds the thicker ends of the frame), are employed simultaneously (Roth 1901).

Flinders comments that a parsnip like root which he thinks is a fern root was also eaten. This perhaps is a reference to bungwall fern *Blechnum indicum*, much used by coastal Aboriginal people in southeast Queensland, although there are numerous other plant foods it could be referring to.



Figure B1: William Westall's pencil drawing from Curtis Island of a gnyah made from bark, utilizing a tree to hold the roof (courtesy of the National Library of Australia).



A drawing by Flinders's artist, William Westall, of a gunyah made from square bark sheets over a timber frame is our only indication of the use of these shelters in the Gladstone region (Figure B1). Westall's drawings show men, all with beards, one wearing perhaps a possum skin 'cloak' and another, an amulet of animal teeth.

Richard Mitchell, son of the noted Surveyor General Sir Thomas Mitchell, during a sojourn at Gladstone of several weeks in 1855, noted material culture items such as boomerangs, spears, nulla nullas, waddies (club) and shields. By that time, hoop iron from barrels had replaced stone as spear points, demonstrating the ability of rapid technological change when needed. Mitchell's diary notes that between two or three hundred Aborigines were camped at Barney Point, and had already adopted the use of European food and tobacco. Mitchell witnessed a dance corroboree involving about 300 people. This ceremony was held each month to celebrate the appearance of the new moon, according to Mitchell's informant. The men decorated their bodies with white pipe clay in long cross and lateral lines. The fringe camp at Barney Point close to European settlement continued to practice ceremonial and traditional living despite decimation of local Aboriginal people by disease, massacres, and dispossession by the Native Police (Calliope Shire 1979; McDonald 1988; Skinner 1975).

A local resident, Huepeden, who was born in the Gladstone area after 1873 described how Aboriginal people would go to Barney Point Beach in the mullet season. When a school of mullet came by, they would stir up the mud with branches and make the water so muddy the fish would come to the surface to breathe. The women would be waiting on the beach with the camp fires to roast the mullet (Huepeden quoted by Gorman 2002).

While to Aboriginal people, the land was the spiritual world to which human beings had responsibilities, the advent of white settlement altered and modified the landscape. Land clearance, the introduction of stock, trampling of waterways and springs, destruction of native grasses, ploughing of land, exotic weed importation and the shooting and poisoning of native fauna, changed the character of the landscape.

The establishment of no less than seven Native Mounted Police stations in the Curtis coast area followed calls by squatters to 'solve the Aboriginal problem'. A police station at Callandoon was established as early as 1849 and by 1859 the black police were employed ruthlessly to hunt down and disperse groups of Aborigines (Skinner 1970). After the Mt Larcom massacre in 1855, several Aboriginal people were pursued until they took refuge on Curtis Island (McDonald 2001). Curtis Island may have become a safe haven for Aboriginal people for a short time.



B7 Archaeological Context

For Aboriginal people, visibly identifiable archaeological sites, such as stone scatters, scarred trees, axe-grinding sites, quarries, burials, rock shelters and stone arrangements, account for a part of their cultural heritage. Other sites, places and landscapes of spiritual, ceremonial or social significance, such as landscapes, pathways, totem place, food resource places, and Dreaming places, may not always be defined archaeologically. These can only be identified through the knowledge of the Traditional Owners of the area (Bell 1986).

Aboriginal cultural heritage can be separated broadly into pre- and post-contact history, both of which are recognised as having significance for Aboriginal Parties. Historical heritage takes into account the items, sites, places and complexes associated with the post-contact history of Queensland.

Archaeology offers information derived from scientific analysis, which, when linked to cultural information, can provide detailed and valuable insights about the past. Archaeology employs techniques that include assessment of significance, recording of sites and places; spatial analysis, residue analysis, excavation and documentation. Used correctly and in partnership, archaeology can provide a valuable tool for Aboriginal people in research and a greater understanding of their past (Bowdler 1984).

B7.1 Previous Research

Considerable archaeological research has been conducted within the northern Calliope Shire, most of it relating to consultancy work resulting from industrial development.

Archaeological surveys previously conducted in the Gladstone area include those of Alfredson 1989, 1991, 1992; Ann Wallin and Associates 1995a, 1995b, 1995c, 1997, 1998a, 1998b, 1999a, 1999b, 1999c, 1999d), ARCHAEO 2000, 2005, 2006, Barker 1993; Burke 1993; Gorman 2002; Hall 1980, 1981; Hill 1978a, 1978b; Lilley 1980,1994; Rowland 1987; Sinclair Knight Merz 1998). Most surveys have occurred as specific cultural resource assessment projects for major industrial proposals, including the Rundle and Stuart oil shale project, Aldoga development area, Materials Transport and Services Corridor, the Queensland Cement plant at Fishermans Landing, the Orica gas pipeline, the Comalco refinery and the Awoonga Dam raising. Of these the most relevant to the present study are the Stuart Oil Shale surveys (ARCHAEO 1997-2005); the Enertrade pipeline survey that located the source of the



so-called 'greenstone' (ARCHAEO 2006) and Burke's pioneering study (Burke 1993) along the Curtis Coast.

The general consensus of archaeological opinion prior to the Stuart Oil Shale Stage 2 Project surveys in 1997-2005 by ARCHAEO Cultural Heritage Services was that, while the offshore islands were archaeologically rich, the mainland around Gladstone did not support a large Aboriginal population (Alfredson 1989; Barker 1993; Hill 1978a, 1978b; Hall 1980a, 1981b; Lilley 1994). These surveys failed to uncover any evidence indicative of the known population existing at the time of first European contact. By 1992, Alfredson had decided that the 'scant archaeological record in the Gladstone area presents an enigma since it does not adequately represent a population density reflected in the recording of camps of two to three hundred at Barney Point in 1855' (Alfredson 1992).

Burke (1993) located some 93 Aboriginal sites along the Port Curtis coast, from Hummock Hill to Agnes Waters and the town of 1770. Extensive middens and artefact scatters are located on off-shore islands, including Curtis, Facing, South Trees and Hummock Hill Islands together with a quarry at Monte Christo Creek on Curtis Island. To the north of Gladstone, nearer to the study area, further middens are located on the mainland in The Narrows between Curtis Island and the coast. These large middens demonstrate the importance of marine resources to local people.

Hill (1978a) collected between two and ten stone artefacts from the banks of Telegraph Creek, Kerosene Creek, Munduran Creek, Ti Tree Gully, Clay Gully and Black Swan Creek in the area of the Rundle deposit, north of the current Stuart project area.

Hill (1978b) recovered a discoid flaked axe from the southern end of South Trees Island.

Hall (1980) collected five artefacts from ephemeral watercourses 5 km south of the Mining Lease 80003 and a core scraper from a ploughed hillside between the creeks.

Hall (1981) did not locate any archaeological sites during his survey of the proposed Aldoga Services Corridor at Boat Creek.

Alfredson (1987) undertook a considerable volume of survey work in the late 1980s and early 1990s. A basalt flake was located about 700 metres from the Parana end of the realignment of the railway.

Alfredson (1989) also located five stone artefacts near a natural drainage channel in land owned by Queensland Cement Limited. The scatter comprised what are described as four flakes and a core of siltstone and meta-sedimentary material.



Fragmented oyster shells, at a maximum density of two per square metre, which were defined as possibly disturbed midden material, was also located in a pile of sandy soil near an erosion bank. Further north, within land owned by Gladstone Port Authority, two flakes and three cores were located 100 metres from the previous site near a second drainage channel where a natural rocky seam provides a crossing. A small fragment of weathered oyster was recorded in marine couch nearby. A third site was found by Alfredson (1989) about 150 metres north on the intertidal zone about ten metres from the tree line. These included two small flakes, described as 'greenstone'. Thick fragments of old black glass gin bottles were located near to this site. About 300 metres south of the first site located by Alfredson in land owned by Queensland Cement Limited, a possible scarred tree, being a fallen Swamp Mahogany *Lophostemon suaveolens*, (elsewhere referred to in the report as a Crows Ash) was located. The scar is described as being 1.8 metres x 40 cm (Alfredson 1989). This site was not located ten years later and may have been burnt in bushfires. Alfredson did not consult with people with traditional links to the Gladstone area.

Alfredson (1992), in another study, further defined several small artefact scatters in the Aldoga area near Sugarloaf Mountain, and at the south western base of Mount Larcom.

Ann Wallin & Associates (1997) located a midden site with associated stone artefacts on Bashford's sand ridge, between the Queensland Cement Limited plant and the railway line and Fishermans Road. Other stone tools, including a microlithic backed blade in green chert – a type that suggests some antiquity for the Gladstone area – were located in the sand ridge during an excavation of the proposed Orica gas pipeline within the Aldoga Service Corridor.

Ann Wallin and Associates (1998): Three other sites, including an extensive artefact scatter with a quartz backed blade, were located by Strong along Boat Creek.

Ann Wallin and Associates (1999) located two artefact scatters south of Gladstone in the Awoonga area during a survey for a water pipeline route. Both are located close to semi-permanent creeks and contained a variety of lithic materials including chert, silcrete and petrified wood.

ARCHAEO 2000 (4 vols.) This major study was undertaken prior to the raising of the Awoonga Dam (ARCHAEO 2000 and Gorman 2002) on the Boyne River, approximately 15 kilometres south of the present survey. The study identified the significance of the Boyne Valley as a conduit for human movement and a major occupation area for the Gladstone region. Large artefact scatters totalling in some sites tens of thousands of artefacts were located. A total of 333 sites, including dreaming sites, good and bad places, rockshelters, stone arrangements, bora rings/ceremonial sites, burials, massacre sites, open camp sites, artefact scatters,



water holes, food resources, scarred trees, quarries and ochre sources were documented. Stone artefacts included cores, core tools, flake blank cores, anvils, grinding stones, millstones, polishers, ground stone artefacts, pebble, unifacial, bifacial and edge-ground axes, a possible ritual cyclon, burrens, tulas, retouched flakes, backed flakes, blades, eloueras and microliths.

The Awoonga study also found that there was a higher resource base available in Box Woodland and that artefacts along riverine and associated alluvial plains tended to be focussed around permanent waterholes, utilising localised river gravels for the manufacture of stone tools. Materials particularly used along the Boyne River included andesite for the manufacture of axes, argillite, chert and silcretes for making of flaked stone tools, although a wide variety of stone types were utilised from fluvial gravels.

Gorman (2002) was appointed by the Gladstone Area water Board to oversee mitigation of the sites located by ARCHAEO (2000). Over a year she undertook training programs and excavated a small number of sites. In addition, several new sites were located. All other sites remain unmitigated.

ARCHAEO (1997-2006) conducted three seasons of archaeological surveys in the Targinie area as part of an EIS for the Stuart Oil Shale Project. The study located 89 sites, including some possibly previously identified by Alfredson (1989). The majority of the sites were small artefact scatters and scarred trees. However, the most significant finds included an extensive silcrete quarry at Phillipies Landing from which prepared cores were located in diminishing quantities away from the quarry site over much of the Targinie area east of the Mt Larcom Range (Eastern ridgeline). A second important find was the first sacred site currently known from the Gladstone region; an intertidal stone arrangement, perhaps representing a crocodile. The arrangement is 10 metres long and located on a bank where it would be covered in very high tides. McNiven (2004) has described similar arrangements from the Durumbal country to the north around Rockhampton. Another find of interest was a rock well, carefully hollowed out and covered with a stone slab. During the 1997 season, a ball of white pipeclay was located in Gladstone Port Authority land close to The Narrows. The study commented on the preponderance of small pockets of rainforest food trees, such as figs, plums, etc, and speculated whether this could have been the result of deliberate plantings (as has been recorded south for bunya nuts) rather than the result of bird dispersal. The proximity of artefact sites to these so-called 'permaculture' pockets was noted. The study brought together a range of ethno-historical and archaeological information to create a tentative seasonal movement map for Port Curtis Aboriginal people north of the Calliope River towards the Durumbal boundaries by Raglan Creek. The movement saw the presence of Aboriginal people on Curtis Island during the winter and early spring mullet runs along the ocean beaches when mosquitoes might not have been so prevalent. People



would move across The Narrows from Curtis to the mainland, and either follow the coastline down towards Auckland Creek and Barney Point where a major ceremonial area was reported (McDonald 1988) and ceremonies apparently held every month. Alternatively they would follow inland that contained permanent water, such as Munduran Creek, Humpy Creek and Boat Creek, inland to access the huge green chert quarries along the Rundle Range, located during the Enertrade survey (ARCHAEO 2006).

ARCHAEO (2006) undertook a survey of a proposed Enertrade gas pipeline from Raglan Creek to Gladstone. Two routes were surveyed; one crossed the Mt Larcom Range (eastern and western ridges), while the other crossed Larcom Creek near the location of the old Mt Larcom Homestead. A number of small artefact scatters were located along the route, all, but one in Gum-topped Box regional ecosystem. The most valuable find was the discovery of a massive lustrous fine-grained greenish chert source in the Mt Larcom Range near the Munduran Valley. Aboriginal people were accessing river cobbles in the creek bed, assaying them with the removal of a flake knocked off on end, and then either discarding the cobble or reducing it to a prepared core. Thousands of cores, flakes and debitage were located at and in proximity to this site. 'Greenstone' (as it is locally known) artefacts have been found along the coastline in the Stuart Oil Shale Mine development, but not at Awoonga Dam. A large core of this material was located on Curtis Island (Site C5) during the present survey.

ARCHAEO (2006) most recently conducted a cultural heritage assessment of a proposed resort/residential development at North Curtis Island in the vicinity of Cape Keppel. Seven archaeological sites were located. One of these was a major quartz quarry located on Cape Keppel. The remaining sites included shell middens and artefact scatters. The Traditional Owners also requested that a number of mature plum and fig trees be considered to be culturally significant. The most surprising factor in this study was the dearth of sites considering the ample food resources available. The reason for this was not obvious from the field study, but perhaps relate to the heavy European traffic through North Curtis Island to the goldfields that occurred in the late 1800s. Quartz figured predominantly in the artefact scatters as the most common material, although silcrete and red chert were also identified.

B8 Search of Indigenous Sites Register and Database - Natural Resources, Mines and Water

QRE Pty Ltd conducted a search of the Indigenous Sites Register held by the Department of Natural Resources, Mines and Water (DNRMW), responsible for



maintaining a site register and database of Aboriginal sites in Queensland. The Environmental Protection Agency previously compiled the database, which includes a large number of archaeological sites recorded through a range of approaches, including site assessments done under permit under the former *Cultural Record (Landscapes Queensland and Queensland Estate) Act 1987*.

The Register is a compilation of information required by the *Aboriginal Cultural Heritage Act 2003*. It contains information on sites that are found through notified cultural heritage surveys and Cultural Heritage Management Plans, as well as any sites and places that are designated Aboriginal areas under the Act.

Two sites were recorded for the general area (see below) in proximity to the area of proposed development.

Table B1: Previously Recorded Cultural Heritage Sites

File No	Attribute
JF: A57	Shell Midden
JF: B54	Artefact scatter

The former site (JF: A57) is located on the northern side of Black Head and was re-identified during the present survey. The second site (JF: B54) was not identified despite several attempts to locate it.

B9 Field Survey Approach

ARCHAEO undertakes the following fieldwork as part of the cultural heritage assessment, including:

- Surveying to identify areas and objects of cultural heritage;
- Evaluation of constraints relating to ground integrity (GI) and ground surface visibility (GSV) that determine the need for further work;
- Site assessment and evaluation of significance;
- Recording and documentation;
- Impact evaluation and mitigation strategy.

B9.1 Methodology

ARCHAEO provided a technical advisor (archaeologist) to assist with the management of cultural heritage issues and to give archaeological support in the field. Prior to fieldwork, representatives of the Aboriginal Parties were encouraged to



provide oral information about any culturally sensitive areas of which they had knowledge and voice any concerns they felt during the fieldwork.

As noted in Part A, the survey was restricted to the 123.9 hectares impacted on by the proposed tree clearing and proposed development and an area around the perimeters of Hobble Gully on the western boundary of CP 860464. The survey was carried out on foot. The entire area was surveyed using transects where possible with people walking 10 metres apart.

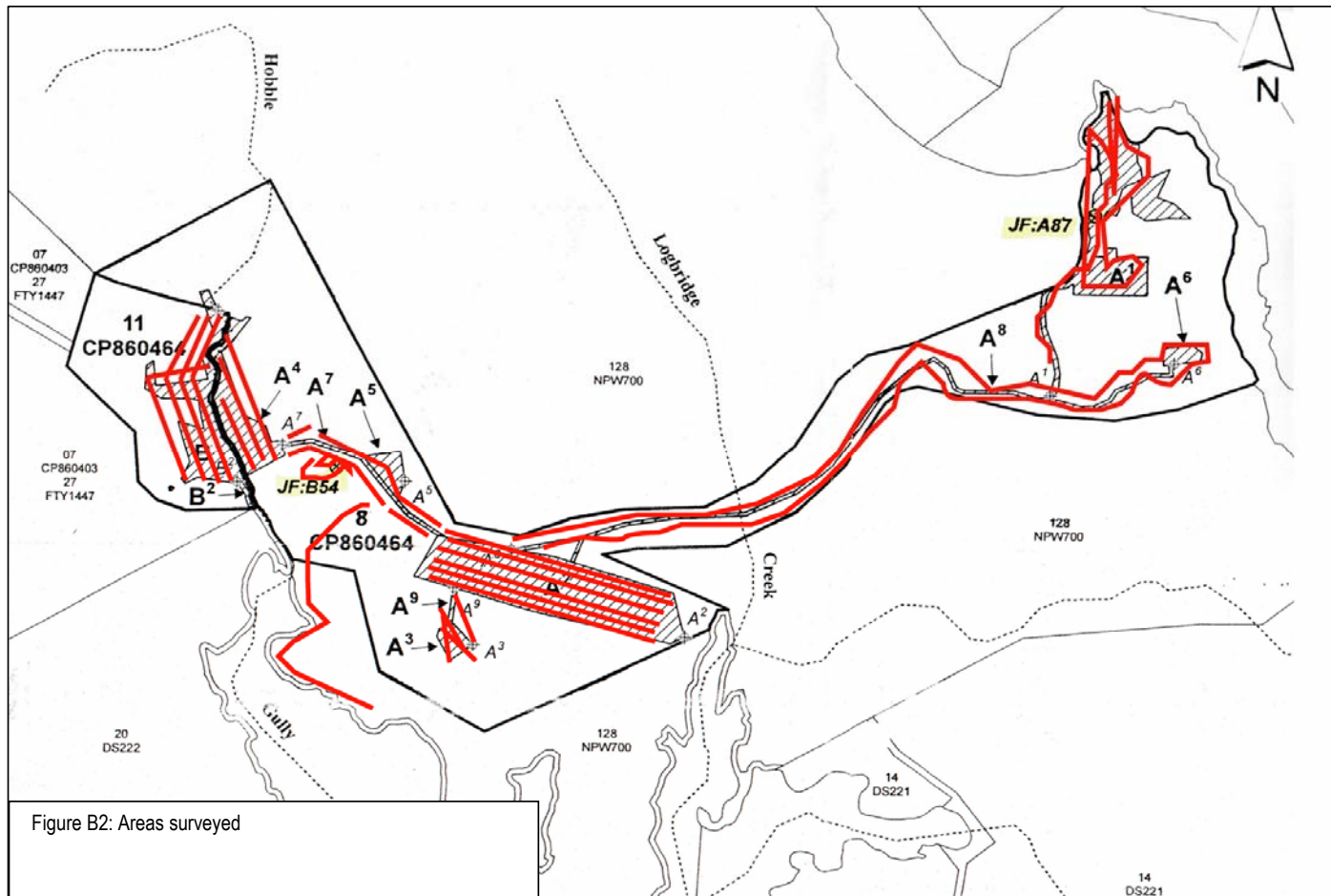
All survey data was recorded in a field notebook and locations taken using a hand-held Garmin global positioning system (GPS) unit, accurate to ± 4 metres. Areas of interest were photographed using a digital camera (*Nikon CoolPix 5400*), with 5.1 effective mega-pixels. All photographs were downloaded to a laptop computer for initial storage. Upon completion of the report these photographs are stored on disk (CD) in the ARCHAEO office.

B9.2 Sampling Strategy

The sampling strategy (where to look) employed was based on standards as described and used by others (Dunnell and Dancey 1983; Gaffney and Tingle 1984; Plog and Wait 1978; Robins 1997; Sullivan and Bowdler 1984; Schofield 1991). These sampling strategies can be either purposive, where specific areas are targeted (for whatever reason), as is done with predictive modelling; or probabilistic, where decisions are made to survey without any prior knowledge or predictive model of what heritage resources might exist in the landscape to be surveyed. Archaeological survey strategies in Queensland usually involve transects across the study area chosen at random (probabilistic) to avoid bias in the results; or transects within areas (purposive) known to be culturally sensitive, or designated areas specifically earmarked for development.

In this case, a purposive strategy was employed with specific areas targeted to assess all areas of proposed development. In addition, certain areas outside the areas marked for development were also examined if it was thought that these might have an impact or could be useful to the study. Areas surveyed are shown on Figure B2.





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B9.3 Constraints to the Survey

Two major environmental constraints affect archaeological surveys:

- ⇒ Ground integrity (GI) - which provides an indicator of: the degree of disturbance the ground surface has been subjected to; whether or not the landscape has been modified, and to what degree this modification might influence the context (and therefore integrity) of any sites located.
- ⇒ Ground surface visibility (GSV) – which determines how much of the ground surface can be seen, and therefore, by implication, what cannot be seen.

The proponent's representative offered no constraints to the project and assisted where possible to make the survey as transparent and useful as possible.

B9.3.1 Ground Integrity (GI)

An assessment of ground integrity provides an indicator of whether or not the land surface has been modified or not, and if so the degree of disturbance (to a depth of 1 metre) encountered. From this assessment it becomes possible to gauge to what degree modification might influence the context (and therefore integrity) of any Aboriginal cultural heritage located.

Where the land surface has been distorted or heavily modified the possibility of archaeological material surviving, especially in the location in which it was originally deposited, may be reduced. The recorded historical use of Curtis Island as a pilot station, quarantine station and cattle property may all have caused previous disturbance to Aboriginal cultural heritage.

Levels of GI are determined using a percentage range between 0-100% where 0% indicates all GI is gone, and 100% represents excellent preservation of the original context. Thus: **Zero to Poor - 0-25%; Moderate to Fair - 25-75 %; Good - 75-100%.**

Within the study area, ground integrity was considered **Fair to Good**. Integrity was demonstrated by the presence of mature trees and indicator plant species. Changes in integrity have occurred due to:

- Selected vegetation clearing to enable approved survey work;
- Disturbance by cattle and wild pigs;



- Construction of access tracks used to reach Monte Christo homestead and holdings, and the northern National Park; and,;
- Logging of some areas for bush timber.

In all cases but one, archaeological sites were located in areas that had been previously disturbed by land clearing or on access tracks.

B9.3.2 Ground Surface Visibility (GSV)

Assessments of ground surface visibility determine how much of the ground surface can actually be seen and, therefore by implication, what cannot be seen.

Ground surface visibility (GSV) is most commonly inhibited by vegetation, such as grasses, crops, or humus, but other inhibitors may include concrete, gravels and bitumen. Levels are determined using a percentage scale similar to that used for the calculation of GI, in that 0% represents zero visibility and 100% represents maximum visibility (bare ground). Therefore: **Zero to Poor - 0-25%**; **Fair to Medium - 25-75 %**; **Good - 75-100%**. The better the visibility, the more potential there is for locating surface artefact scatters – the most common indicator of Aboriginal heritage.

Within almost the study area, GSV was considered **Poor to Fair**, between 0-30%. In most areas, ground surface visibility was almost non-existent due to native ground cover and leaf debris. The only areas where visibility was improved were access tracks and the area of clearing on the slope of Black Head previously mentioned.

B10 Defining Significance of Aboriginal cultural heritage

B10.1 The Burra Charter

Cultural heritage management in Australia at a national level has been guided by the Burra Charter (Marquis-Kyle and Walker 1992), adopted by Australia ICOMOS (International Council on Monuments and Sites). This charter, primarily designed for the conservation of historical heritage, defines *conservation* as ‘the processes of management looking after a place so as to retain its cultural significance’ (Article 1.4). The cultural heritage significance of a place or object indicates its *aesthetic, historic, scientific* or *social values* for past, present and future communities.

Aesthetic value includes aspects of sensory perception for which criteria can and should be stated. Such criteria may include consideration of the form, scale, colour, texture and material of the fabric.



Historic value encompasses the history of aesthetics, science and society, and therefore to a large extent underlies all of the terms set out in this section. A place may have historic value because it has influenced, or has been influenced by, an historic figure, event, phase or activity. It may also have historic value as the site of an important event. For any given place the significance will be greater where evidence of the association or event survives *in situ*, or where the settings are substantially intact, than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of subsequent treatment.

Scientific research value of a place will depend upon the importance of the data involved, on its rarity, quality, and on the degree to which the place may contribute further substantial information.

Social value embraces the qualities for which a place has become a focus of spiritual, political, national or other cultural sentiment to a majority or minority group.

Article 2.6 of the Guidelines notes that other categories of cultural significance may become apparent during the course of assessment of particular sites, places or precincts. A range of cultural significance values may apply. Article 5 of the Burra Charter states that:

Conservation of a place should take into consideration all aspects of its cultural significance without unwarranted emphasis on any one aspect at the expense of others (Marquis-Kyle and Walker 1992).

B10.2 Definitions of significance and significant areas

The *Aboriginal Cultural Heritage Act 2003* defines significance in association with an Aboriginal Area or Aboriginal Object.

Sections 9 and 10 define a significant Aboriginal area or object as 'an area [or object] of particular significance to Aboriginal people, because of either or both of the following:

- (a) Aboriginal tradition
- (b) the history, including contemporary history, of any Aboriginal party for the area.

For an area to be considered significant it is not necessary to contain physical evidence indicating Aboriginal occupation or otherwise denoting the area's



significance. Examples of such places would be a massacre site, birthing place, or a ceremonial area.

Section 12 (4) notes that if significant Aboriginal objects exist in an area and are linked to their location, it is enough to make the area a Significant Aboriginal Area on its own merits.

In decision-making about the significance of an area or object, regard may be had for authoritative anthropological, archaeological, biographical or historical information to be used in identifying such significance. The role of technical adviser provides such authoritative advice to a project.

It should also be noted that the Cultural Heritage Duty of Care Guidelines provide that natural landscape features, such as rock outcrops, caves, foreshores and dunes, sand hills, wetlands and other biographical areas of significance, types of native vegetation and some hill and mound formations, may also hold cultural significance (Guidelines 6.2). Beyond this, the Act and its Guidelines offer no further advice on the definition of significance. Archaeologists draw on guidelines for determining significance from the Burra Charter (Marquis-Kyle 1992) and the guidelines provided by the Australian Heritage Commission's (1990) explicit criteria for establishing significance for Aboriginal cultural heritage. In all cases, the Aboriginal Parties were asked as to their cultural perception of an area's significance.

As noted above, the definition of Significant Aboriginal Area may be given to places that contain Aboriginal cultural heritage (including non-physical evidence). The Aboriginal Parties considered all artefactual sites located during the assessment to qualify as Significant Aboriginal Areas as defined by the Act, citing as evidence their knowledge of the significance of Curtis Island as a refuge and place where people came for the winter mullet runs. They noted that very few significant Aboriginal areas have been identified on Curtis Island and as such any area that provided information about the cultural and archaeological use of the island by Aboriginal people should be considered significant.

From an archaeological perspective, the context, condition and potential of a site can also be used to provide an indication of scientific significance or not.

Figure B3 shows location of the findings.



B10.3 Definition of sites

The Act does not provide any definition or acknowledgement of the archaeological concept of a 'site'. However, in the assessment of scientific significance, this is an important consideration, as the term is used to define the external boundary of an area containing Aboriginal cultural heritage.

According to Dunnell and Dancey (1983) "distinguishing a site and setting its boundaries is an archaeological decision, not an observation". This *a priori* decision by the archaeologist is perhaps the most important factor in the identification of patterns and/or trends that might become apparent when observing the location of sites found across the landscape. This decision might even outweigh obvious physical variables such as ground surface visibility (GSV) and ground surface integrity (GI). These two concepts (GSV and GI) are described in more detail in Section 9.3.1 and 9.3.2.

The most inclusive definition of a prehistoric archaeological 'site' in Australia refers to *all* physical traces of Aboriginal occupation. Using this definition, isolated artefacts (isolates or individual finds) and clusters of artefacts are considered sites and as such, all cultural heritage material is recorded in what can be referred to as a 'landscape approach'. This approach is favoured by artefact reduction analysts as it captures all processes of deposition.

It is usually impossible, given budgetary and time constraints, to record every isolate in areas where limited development and semi arid environmental conditions have provided optimum conditions for the archaeological record. Australian archaeologists have frequently used a term 'background scatter' to indicate the presence of waste flakes, where there is no other evidence of occupation, or the isolate has little further significance. However, along the eastern coast, where lower numbers of artefacts have survived, single artefacts do provide a record of Aboriginal presence and need to be mapped. Isolates are nominated as a 'site' when they are within five metres of each other.

Sites found consisted stone artefact scatters, a possible stone arrangement and a shell midden. Site size was defined as soon as a site boundary became obvious and measuring the area by determining width and length. In some cases, this was not required as sites were small enough to gauge approximate visible parameters. In other cases, vegetation cover precludes establishing exact boundaries.



B11 Field Survey Outcomes

B11.1 Discussion

The study resulted in seven Significant Aboriginal Areas as defined by the *Aboriginal Cultural Heritage Act 2003* being located. Details of each are provided below (Figure B3, 4, 5 and 6).

The most significant finding was the re-location of the shell midden and artefact scatter (VC 5) on a track leading to Black Head and in the vicinity of Turtle Street Beach. This site had already been previously identified as JF: A87. It consists of a wide range of stone artefactual material, predominantly quartz, silcrete and chert, and including cores, broken fragments of axes, possible grindstone, hammerstone, and a blade-like flake. It probably forms an occupation extension of Sites VC 6 and VC 7, and perhaps indicates that Aboriginal people were utilising the lower slopes of Black Head as a camping place to access Turtle Street Beach.

The 'stone arrangement' (Site VC 2) is probably not Aboriginal; however it contains no identifiable non-indigenous evidence to show it has been constructed by local fishermen. It is located on an intertidal mudflat near a deep water bend of Hobble Gully outside the study area. McNiven (2004) has identified that Aboriginal people constructed stone arrangements on intertidal flats in the Rockhampton/Port Alma region, and while most are larger than the example at Hobble Gully, VC 2 should not be dismissed until further examination is made to see if it contains sub-surface European material. Such work would be outside of the requirements of QRE in the present study and would be in the nature of a voluntary examination during a period of fieldwork.

The other finding that has some bearing on understanding the nature of artefact scatter composition are the lodes of quartz that are present on the low ridges between Hobble Gully and the airstrip. Quartz of desirable quality for the making of artefacts is not always easy to find. Because of a geological history of having been subjected to considerable pressures and heat, quartz commonly is found with numerous flaws and its microcrystalline composition also means that when struck it tends to shatter rather than follow clean conchoidal cleavage patterns. As a result, diagnostic features such as bulb of percussion and reduction features, such as hinge fractures and platforms, are not always retained (Dickson 1977). Quartz was commonly reduced by a 'blow-on-blow' bipolar technique, using a heavy hammerstone and anvil to shatter the quartz core (Moore pers. com 2006). This results in considerably more debitage than occurs at silcrete or quartzite quarries (Dickson 1977), with many unrecognizable pieces of quartz, along with fragments and flakes that could be secondarily worked and small polygonal cores. Useful pieces of quartz would then be picked out and secondary flaking would occur either at the quarry or elsewhere. In contrast to silcrete and chert, quartz rarely creates a

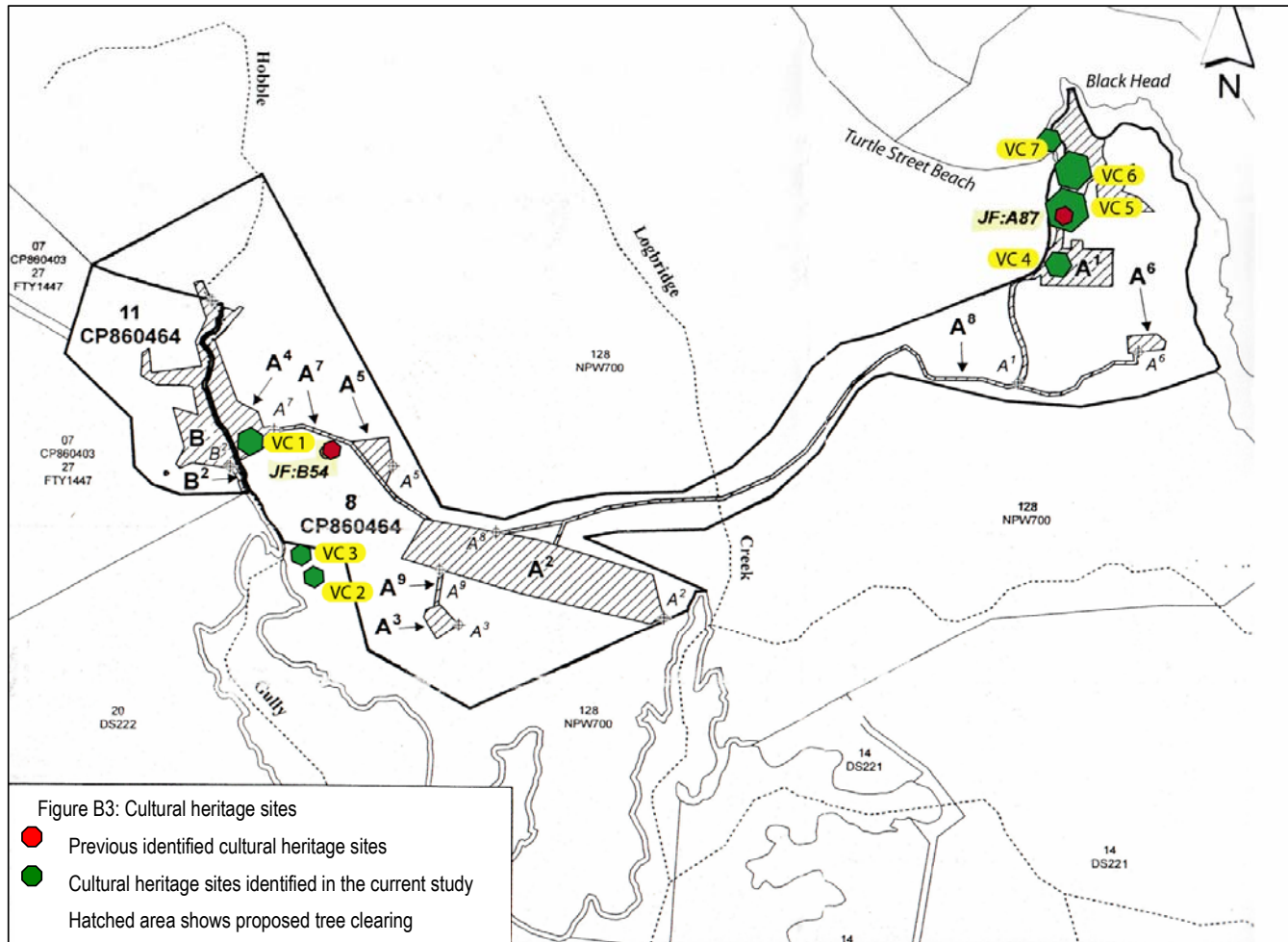


cortex, so early reduction flakes to remove this cortex as commonly found in silcrete or quartzite quarries are absent (Dickson 1977). One diagnostic feature that results from bipolar flaking process using hard hammerstones is that flakes frequently have 'crush' features on both distal and proximal ends.

As noted earlier, Burke (1993) reported a silcrete quarry near Monte Christo suitable for flaking into stone tools; however, silcrete is less common in artefact scatters in the stud area than quartz. The quartz lodes would have provided a useful source of local stone, where no other was present. There are several outcrops where the quartz is of relatively high quality, free from veining and of a milk-white consistency (Photo B4). Because quartz also exfoliates after bushfires, removing the knapping evidence, it is hard to be certain whether Aboriginal knappers were utilising quartz from these large outcrops. As they are protected under the present development, further study is possible.

Details of VC 1-7 are appended below: 'VC' pertains to *Villas on Curtis*, the name of the project.





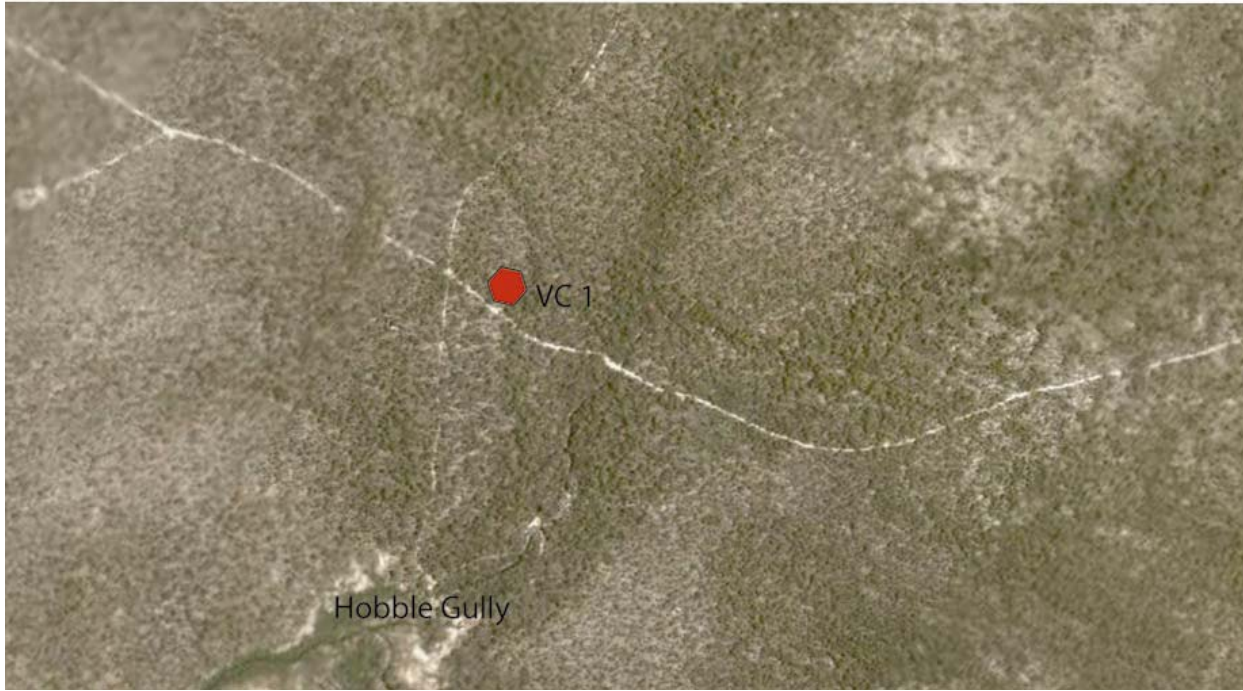


Figure B4: Site VC 1





Figure B5: Hobble Gully sites outside study area





Figure B 6: Black Head cultural heritage sites



Site VC 1

Artefact scatter/reduction site

LOCATION

Hobble Gully, proposed water storage area
E: 56 K 0318490 N 7379961

COMPONENTS

Stone artefacts

ENVIRONMENT CONTEXT

Located approximately 10 metres from northern bank of Hobble Gully and about 30 metres from access track. Gum-topped Box (*Eucalyptus moluccana*) woodland. Sandy alluvium.

SITE DESCRIPTION

Surface reduction site.

SITE FINDS

Reduction site consisting of a white quartz core, debitage, 1 flake with bulb and platform, a blade-like flake and a retouched quartz flake.

GSV AND GI

GSV: POOR TO MODERATE; GI = GOOD.

IMPACT ASSESSMENT

Inside development area

ARCHAEOLOGICAL SIGNIFICANCE

Medium Significance but possibly higher if sub-surface material is present. Potential for sub-surface material and other artefacts currently obscured by ground cover.

COMMENTS

This site has retained its integrity from time of deposition and affords an opportunity to recover in situ the process of knapping and reduction used by the Aboriginal knapper.



Photo B7: Quartz artefacts from Site VC 1

Site VC 2

Possible stone arrangement

LOCATION	Hobble Gully, outside study area E 56 K 0318605 N 7378744
COMPONENTS	Stone arrangement
ENVIRONMENT CONTEXT	Located on intertidal eastern bank of Hobble Gully about 30 metres from bank. The creek at this point forms a deepwater bend with fringing mangroves and a mudflat to the north. There are outcrops of pure white quartz within 50 metres.
SITE DESCRIPTION	Half circle or U-shaped pattern of 51 small fist-sized stones, linked or overlapping, 1.5 m by 800 mm wide.
SITE FINDS	None
GSV AND GI	GSV: HIGH; GI = FAIR to GOOD.
IMPACT ASSESSMENT	Outside development area
ARCHAEOLOGICAL SIGNIFICANCE	Low archaeological significance if non-indigenous but much higher if it is of cultural origin.
COMMENTS	This stone arrangement is most likely the result of a fireplace built by European fishermen camping after accessing the island via Graham Creek and Hobble Gully. However, there are also some contradictory indications. It is located on an intertidal mud flat – possibly an unlikely location to camp when a grassy bank is located 30 metres away; such locations however used by Aboriginal people and are known from Rockhampton and The Narrows (ARCHAEO 2005; McNiven 2004). The stones are smaller than commonly used in stone arrangements; however there is little stone material available. Fishermen are known to have used the area for landing for many years. Aboriginal artefact located about 50 metres away.



Photo B8: Possible intertidal stone arrangement or European fire place? Site VC 2.



Site VC 3 Artefact scatter.

LOCATION	Hobble Gully, outside study area E: 56 K 0318636 N 7378747
COMPONENTS	Stone artefacts
ENVIRONMENT CONTEXT	Located on mudflat approximately 10 metres from bank of mainland and about 100 metres from Hobble Gully, and about 30 metres from access track. Mangrove closed forest. Quaternary muds and clays.
SITE DESCRIPTION	Surface finds on mudflats
SITE FINDS	Chert retouched flake, heavily patinated. Butt end of basalt stone axe with shallow groove around body..
GSV AND GI	GSV: HIGH; GI = GOOD.
IMPACT ASSESSMENT	Outside development area
ARCHAEOLOGICAL SIGNIFICANCE	Medium Significance given that no other axes have reportedly been found on the island
COMMENTS	George Wilson, manager of Monte Cristo Station, reported that he has found no stone axes on the island during his tenure of over thirty years.



Photo B9: Butt end of basalt stone axe.
Site VC 3. Found on mudflat near Hobble Gully.



Site VC 4

Stone axe

LOCATION

West of Black Head, within study area
E: 56 K 0323277 N: 7381216

COMPONENTS

Stone artefact

ENVIRONMENT CONTEXT

Located on access track to Black Head approximately 10 metres from mudflat adjacent to a drainage gully behind Turtle Street Beach. Open eucalypt forest with extensive grove of *Livistona* palms nearby.

SITE DESCRIPTION

Surface find

SITE FINDS

Butt end of greywacke stone axe. Made on a pebble and broken about $\frac{1}{3}$ across body. Traces of polish near broken end.

GSV AND GI

GSV: HIGH; GI = POOR

IMPACT ASSESSMENT

Inside development area

ARCHAEOLOGICAL SIGNIFICANCE

Medium Significance given that no other axes have reportedly been found on the island

COMMENTS

See comments on Site VC 3. Possibly should be linked to Site VC 5.



Photo B10: Broken greywacke stone axe. Site VC 4.



**Site VC 5 and
5a. Previously
identified as
JF:A87**

Shell midden and artefact scatter

LOCATION

West of Black Head, within study area

Start point: E: 56 K 0323263 N: 7381422

Finish point: E: 56 K 0323263 N: 7381462

Secondary midden site: VC 5a: E: 56 K 0323271 N: 7381466

COMPONENTS

Stone artefacts/ shell scatter

**ENVIRONMENT
CONTEXT**

Located on and in proximity to the access track to Black Head on low sandy ridge, probably a Holocene sand dune, approximately 10-20 metres from mudflat adjacent to a drainage gully behind Turtle Flat Beach. Dense sub-littoral microphyll/notophyll vine forest, with Ironbark Eucalyptus crebra, Cabbage palm *Livistona spe.*, and an understorey of bushes including Chain Fruit *Alyxia ruscifolia*, Currant Bush *Carissa ovata* and Coffee Bush *Breynia oblongifolia*.

SITE DESCRIPTION

Located on low sandy ridge dissected by access track. Artefacts and shell on both sides of track. Main deposition is approximately 50 x 20 m with a secondary deposition (VC 5a) located about 20 metres further towards Black Head. It is likely that the two sites are linked but impact from vehicles and track construction has destroyed or concealed the linking artefacts.

SITE FINDS

Areas of density of food shell, almost 90% oyster but with some mud ark (cockle) in VC 5 and oyster and pearl shell in VC 5a. Numerous stone artefacts including several green chert flakes possibly derived from Munduran chert quarry on the mainland, 1 blade-like flake, broken fragment of greywacke stone axe; basalt axe-trimming flake, possible grindstone fragment; numerous quartz flakes; silcrete and chert flakes and debitage.

GSV AND GI

GSV: HIGH; GI = POOR TO FAIR

**IMPACT
ASSESSMENT**

Inside development area but owners have indicated a new track will be constructed away from site and track closed.

**ARCHAEOLOGICAL
SIGNIFICANCE**

Medium to High Significance

COMMENTS

An important site, especially given its proximity to Turtle Street Beach, and sites VC 4, 6 and 7. It is likely that there are sub-surface artefactual material present.





Photo B11: Access track to Black Head dissecting sand ridge and shell midden site (VC 5).



Photo B12: Oyster shell eroding from shell midden site (VC 5).



Photo B13: Oyster shell eroding from shell midden site (VC 5).



Site VC 6 Shell midden and artefact scatter

LOCATION	West of Black Head, within study area Start point: E: 56 K 0323339 N: 7381742 Large retouched flake: E: 56 K 0323340 N: 7381669
COMPONENTS	Stone artefacts/ shell scatter
ENVIRONMENT CONTEXT	Located on lower flanks of Black Head about 10-30 metres above access track to Black Head. Approximately 30 metres from Turtle Street Beach. Gentle northern slope cleared for survey work for development. Previously would have been continuation of open eucalypt forest predominantly Ironbark <i>Eucalyptus crebra</i>
SITE DESCRIPTION	Intermittent surface scatter with areas of density located on gentle northern slope of Black Head extending over 150 metres by about 40 metres in arc following lie of land.
SITE FINDS	Scattered and broken oyster shell. Numerous stone artefacts predominantly chert, including several green chert flakes possibly derived from Munduran chert quarry on the mainland, 2 yellow chert flakes, 1 chert 'backed' flake; 1 red chert flake and debitage; basalt axe-trimming flake. One large (75 x 60 mm) well-formed reddish silcrete retouched flake with possible use wear (Figure B7)
GSV AND GI	GSV: HIGH; GI = POOR. The site has been lightly bulldozed recently.
IMPACT ASSESSMENT	Inside development area and approved for construction of accommodation.
ARCHAEOLOGICAL SIGNIFICANCE	Medium Significance
COMMENTS	Probably continuation of occupation/camping area from VC 5. Potential for sub-surface artefactual material present.

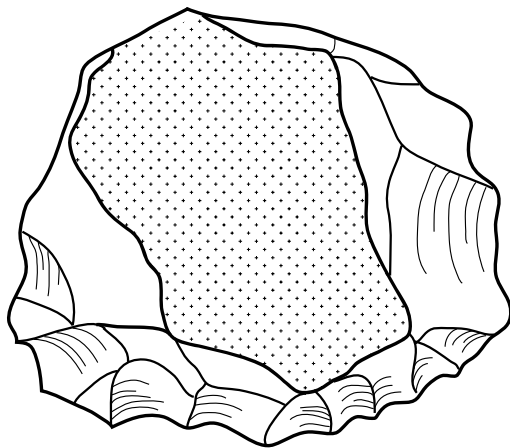


Figure B7: Large silcrete retouched flake (approximately life size). Site VC 6.



Site VC 7

Artefact scatter

LOCATION

West of Black Head, within study area
E: 56 K 0323323 N: 7381658

COMPONENTS

Stone artefacts

ENVIRONMENT CONTEXT

Located on ecotone between mangrove fringing forest and former eucalypt open forest on rock slab protruding from lower flank of Black Head 3 metres below access track to Black Head. Approximately 10 metres from Turtle Street Beach.

SITE DESCRIPTION

Surface finds on rock slab, 1 x 2 metres

SITE FINDS

Green chert flakes almost positively derived from Munduran chert quarry on the mainland, and including retouched flake with possible use wear.

GSV AND GI

GSV: HIGH; GI = GOOD

IMPACT ASSESSMENT

Just outside development area but may be disturbed by construction of access track

ARCHAEOLOGICAL SIGNIFICANCE

Low archaeological significance by itself but probably higher in association with VC 6.

COMMENTS

Probably continuation of occupation/camping area from VC 6. Evidence of importation of Munduran chert from mainland at least 25 km to the west.



B12 Impact Assessment

The proposed development will impact on Aboriginal cultural heritage (Table B5). Specifically, it will impact on surface finds at VC 1, 4, 5, 6 and possibly 7.

Site VC 1 is located within the proposed water storage. It is not considered significant enough to retain in situ.

Sites VC 2 and VC 3 are outside the study area and will possibly never be impacted on.

VC 4 has limited further potential for scientific study and it is unlikely that the area will produce further artefacts.

The most significant site is VC 5 which will not be directly impacted on by construction of accommodation or other infrastructure but has the potential because of its proximity to be affected by human traffic and vandalism. The proponents have indicated that the current track through the midden will be closed off and the area revegetated.

VC 6 and 7 are already impacted on by previous land clearing. This has confused the spatial distribution of artefacts and perhaps has scattered what may have been discrete deposition areas. Without further investigation, especially to explore sub-surface potential, the significance of these sites is difficult to assess.

Table B2: Impacts on cultural heritage finds

SITE NO	SITE TYPE	LOCATION	SIGNIFICANCE	IMPACT
VC 1	Artefact scatter/reduction site	Hobble Gully	Low to medium	Major
VC 2	Stone arrangement	Hobble Gully	Low to potentially High	None
VC 3	Artefact scatter	Hobble Gully	Medium	None
VC 4	Stone axe	Track to Black Head	Low	High
VC 5	Artefact scatter/shell midden	Track to Black Head	Medium to High	Major, until track re-routed
VC 6	Artefact scatter/shell scatter	Base of Black Head	Low to Medium	Major
VC 7	Artefact scatter	Base of Black Head	Low	Low, but potential for impact during road construction



B13 Managing Aboriginal Heritage Values

B13.1 Discussion

Management options for threatened sites and values vary according to the level of impact and the ability of the developer to adjust proposed works to avoid heritage sites.

Management is dependent on consultation occurring between all stakeholders enabling each to gain an understanding of the relevant issues. It is important to note here that the proponent has been extremely sensitive to cultural heritage issues and have facilitated a visit by representatives of the Aboriginal Parties and their archaeologist to determine the location and extent of any impacts.

Advice from the proponent is that, given the scope of the proposed development, avoidable to not impact on VC 1, 4, 6 and 7 would be difficult. As noted, VC 6 has already been impacted on by selected vegetation clearing for survey work.

Site VC 1 lies within the water storage area, which cannot be placed elsewhere. The recommendation for this site is to undertake collection of all cultural heritage material, as well as test pitting, and, if required, excavation in the vicinity to recover any sub surface material. Justification for this management regime is that the site has not been subject to any erosional disturbance and so is relatively in situ within an open forest environment, something that is comparatively rare to find. These factors make the site scientifically significant.

Sites VC 2 and 3 are outside of impact and thus do not require mitigation. The proponent should make sure that no development, including tree clearing, occurs in the vicinity of these two sites into the future.

Site VC 4 should be collected. It does not have potential for providing further scientific and cultural information beyond evidence of the presence of axes on Curtis Island and the manufacture of stone axes from a greywacke outcrop near Hobble Gully.

Site VC 5 has major potential for further scientific study, and may have high levels of scientific significance. Best management is through avoidance and the proponent has already indicated this is a priority. A specific conservation plan is recommended as the best way of managing this site. The plan should address matters such as the construction of the new access track and where this should be in the local landscape; where monitoring should occur during construction as VC 5 may extend



further than the surface deposition indicates; how re-vegetation should be undertaken to avoid further disturbance to the shell midden.

Site VC 6 has already been impacted on and the original place of deposition may have been disturbed or altered. All surface artefacts should be collected and analysed. Test pitting across the curve of the slope at intermittent intervals approximately 20-35 metres above the access track will ensure that risk to potential sub surface heritage is reduced before housing construction starts. Any initial earthworks activity on the site should have monitors present.

Site VC 7 should be managed through avoidance. During road construction in the area, the site should be pegged off, so that no further impacts from development will occur.

B13.2 Zones of sensitivity

In order to assist with management of the survey area we propose that there are three **Zones of Sensitivity**. These are shown in Figure B8.

Zone Red is recommended as requiring avoidance. The only area requiring a Zone Red is VC 5 with archaeological and cultural values. Management of this site requires fencing off and regeneration of native vegetation.

Zone Yellow covers areas that are recommended for monitoring after the removal of trees. These areas are considered to have potential for sub-surface artefacts and/or are currently obscured by thick grass cover. Zone Yellow covers the water storage area adjacent to Hobble Creek; a zone on each side of Logbridge Creek, and at Site V6. These areas should be monitored during any initial grass clearance and topsoil earthworks.

Zone Pink covers all other areas that do not require further cultural heritage work.

In keeping with the results of the study outlined in this report, the following recommendations are made in Section C.



