7. Survey results

7.1 Archaeological survey results

Archaeological survey was conducted from 5 January to 8 January 2015 with one team of two Biosis archaeologists. A total of 24 transects were undertaken throughout the different landforms with the pedestrian transects being undertaken approximately two metres apart (see Figure 2 and Figure 1).

This follows the methodology set out in Burke and Smith (2004: 65) which states that a single person can only effectively visually survey an area of two linear metres. 20 Aboriginal sites were identified in the Project Area. The results from the field surveys have been summarised in Table 1.

Table 1 Sites located and recorded during the survey

Site no.	Site name	Site description
1	OA01	Isolated Artefact
2	OA02	Isolated Artefact
3	OA03	Artefact Scatter; Potential archaeological deposit
4	OA04	Artefact Scatter; Potential archaeological deposit
5	OA05	Artefact Scatter; Potential archaeological deposit
6	OA06	Artefact Scatter; Potential archaeological deposit
7	OA07	Isolated Artefact
8	OA08	Scar tree
9	OA09	Isolated Artefact
10	OA10	Isolated Artefact
11	OA11	Artefact Scatter; Potential archaeological deposit
12	OA12	Artefact Scatter; Potential archaeological deposit
13	OA13	Isolated Artefact; Potential archaeological deposit
14	OA14	Quarry
15	PAD 01	Potential archaeological deposit
16	PAD 02	Potential archaeological deposit
17	PAD 03	Potential archaeological deposit
18	PAD 04	Potential archaeological deposit
19	PAD 05	Potential archaeological deposit
20	PAD 06	Potential archaeological deposit

Table 2 Survey coverage

Survey unit	Landform	Survey unit area (m²)	Visibility %	Exposure %	Effective coverage area (m²)	Effective coverage %
1	Slope	1086	4	10	4.344	0.4
2	Slope (690) and ridge (656)	1346	4	10	5.384	0.4
3	Slope (652) and open depression (138)	790	5	20	7.9	1
4	Slope (254) and open depression (166)	420	50	40	84	20
5	Slope (344) and sloping drainage plain (414)	758	5	5	1.895	0.25
6	Ridge	942	5	10	4.71	0.5
7	Slope (350), ridge (124) and sloping drainage plain (172)	646	5	30	9.69	1.5
8	Slope	196	10	20	3.92	2
9	Slope	342	5	5	0.855	0.25
10	Slope	922	5	5	2.305	0.25
11	Slope	420	5	5	1.05	0.25
12	Slope (174) and ridge (646)	820	5	5	2.05	0.25
13	Slope	1148	5	5	2.87	0.25
14	Slope	830	5	5	2.075	0.25
15	Ridge	360	5	5	0.9	0.25
16	Slope (880) and open depression (144)	1024	10	20	20.48	2
17	Slope	2000	5	5	5	0.25
18	Slope (4100) and ridge (600)	4700	50	40	940	20
19	Ridge (62) and open depression (960)	1022	10	20	20.44	2
20	Slope	1956	5	10	9.78	0.5
21	Slope	3962	5	10	19.81	0.5
22	Slope (2164) and ridge (796)	2960	5	10	1.48	0.05
23	Slope (2438) and ridge (166)	2604	5	10	13.02	0.5
24	Slope	1296	5	10	6.48	0.5

Table 3 Landform summary

Landform	Landform area (m²)	Area effectively surveyed (m²)	% of landform effectively surveyed	Number of Aboriginal sites	Number of artefacts or features
Ridges	274,077	29.16	0.01	2	6
Slopes	2035000	105	0.005	14	73 +
Sloping drainage plain	187,930	3.25	0.0017	0	0
Open depressions (creek lines and associated drainage lines)	402,824	25	0.006	3	7

Plate 1 Example of a Ridge landform (scale = 2 metres)

Plate 2 Slopes and sloping drainage area

Plate 3 Open depressions (scale = 2 metres)

Figure 1 The survey effort

Figure 2 Overview of the survey results within the Project Area

7.2 Site descriptions

7.2.1 OA01

Site location

Site OA01 is located 207 metres north-east of Clergate Road, within the southern portion of the Project Area. The site is also located in close association with site OA11, which is 508 metres to the north-east (see Table 4 and **Error! Reference source not found.**).

Table 4 Grid reference site OA01

Easting	Northing
696528	6320890
696542	6320893
696546	6320878
696531	6320875

Site environment

The site is located on an upper slope above the main drainage line, 128 metres to the east. Site OA01 is also located approximately 2.7 kilometres from Summer Hill Creek.

There is some disturbance within the area, with a vehicle track and fence line dissecting the site. The site has been subjected to considerable livestock disturbance, which has significantly deflated the natural land surface.

Site description

The site consists of a single isolated artefact, a complete quartz flake (see Plate 4). A buffer of approximately 1 metre (north - south) by 1 metre (east - west) was given, creating an area of 1 square metre. The artefact was probably relocated to its current position by taphonomic processes.

Plate 4 View north of site OA01 (scale = 2 metres)

7.2.2 OA02

Site location

Site OA02 is located approximately 1 kilometres east of the Clergate Road, within the north-western portion of the Project Area. The site is also located in close association with site OA03, which is approximately 650 meters to the east (see Table 5 and **Error! Reference source not found.**).

Table 5 Grid reference site OA02

Easting	Northing
696414	6322282
696484	6322279
696483	6322241
696414	6322247

Site environment

The site is located on the upper slopes of a ridgeline overlooking the large flat draining area in the northern of the Project Area. Site OA02 is located in close proximity to a number of permanent and temporary water sources within the landscape. Approximately 3.5 kilometres south east of the site is the main drainage channel and approximately 3 kilometres north-west of Summer Hill Creek (see **Error! Reference source not found.**).

There is also evidence of recent disturbances with evidence of modern rubbish in the area indicating that this are could have been the location of previous dwelling. There has also been recent foresting activity in close proximity to the site.

Site description

The site consists of a single isolated artefact, a quartz single platform core (see Plate 5). A buffer of approximately 1 metre (north - south) by 1 metre (east - west) was given, creating an area of 1 square metre.

Plate 5 View north west of site OA02 (scale = 2 metres)

7.2.3 OA03

Site location

Site OA03 is located approximately 770 metres north-east of Clergate Road, within the northern portion of the Project Area. Site OA03 is located approximately 635 metres to the west and site OA13 is located 317 metres to the south-west (see Table 6 and **Error! Reference source not found.**).

Table 6 Grid reference site OA03

Easting	Northing
697099	6322253
697197	6322296
697213	6322218
697138	6322166

Site environment

The site is situated along the top and upper slopes of a ridgeline, which stretches in a south-west to north-east direction. This ridgeline overlooks a small drainage line.

Site OA03 is also located in close proximity to a number of other permanent and temporary water sources. 803 metres south-east of the site is the main creek line and approximately 2.1 kilometres south-east is the Summer Hill Creek (see **Error! Reference source not found.**).

There is some disturbance within the northern portion of the site, with a modern vehicle track and fence line dissecting the site. There has been no direct impact to the site.

Site description

The site consists of an artefact scatter and PAD, measuring 126 metres (north - south) by115 metres (east - west), with an area of 10, 994 square metres.

A total of 6 artefacts were recorded within the boundaries of the site. The surface artefact scatter recorded consisted of a complete flake (n = 1, 17 %), distal flake fragments (n = 2, 33.3 %), a medial flake fragment (n = 1, 17 %) and single plaform cores (n = 2, 33.3 %). The only lithology recorded was quartz (n = 6, 100 %).

The main area of artefact concentration is located along the ridgeline, although some artefacts were noted along the upper slopes. The site has also been classified as a potential archaeological deposit due to the ridgelines location over looking a drainage line and its soil makeup.

Plate 6 View south-west of site OA03 (scale = 2 metres)

7.2.4 OA04

Site location

Site OA04 is located 930 kilometres east of Clergate Road, within the central portion of the Project Area. The site is also located in close association with site OA14, which is 63 metres to the north, site OA05 74 metres to the south-east and AHIMS site 44-2-0202 approximately 1.2 kilometres to the east (see Table 7 and **Error! Reference source not found.**).

Table 7 Grind reference site OA04

Easting	Northing
697028	6321577
697057	6321624
697156	6321512
697139	6321499

Site environment

The site is located on the banks of the eroded drainage line, which feeds into the main creek line within the Project Area. This site is located along the same drainage lines as a number of other sites within the landscape. This site is also located approximately 2.1 kilometres from Summer Hill Creek (see **Error! Reference source not found.**).

There is some disturbance in the surrounding area, with a modern vehicle track dissecting the site and a modern dam having been constructed. There is also evidence of water erosion, which is probably due to the construction of the dam altering the natural course of the water. Although there is disturbance, there has been no direct impact to the cultural material.

Site description

The site consists of an artefacts scatter and PAD, measuring 218 metres (north - south) by 130 metres (east - west), with an area of 5,325 square metres (see Plate 7).

A total of 3 artefacts were recorded within the boundaries of the site. The surface artefact scatter recorded consisted of a single platform core (n = 1, 33.3 %) and grinding stones (n = 2, 67 %). The only lithology recorded was quartzite (n = 3, 100 %) (see Plate 8). Artefacts were noted eroding out of a subsurface deposit on the southern side of the drainage line, indicating a potential archaeological deposit.

Plate 7 View south-east of site OA04 (scale = 2 metres)

Plate 8 View of an artefact within site OA04 (scale = 9 centimetres)

7.2.5 OA05

Site location

Site OA05 is located approximately 1.1 kilometres east of Clergate Road, within the central portion of the Project Area. The site is also located in close association with site OA06 and OA12, which are approximately 10 metres to the north and east respectively. AHIMS site 44-2-020 is also located approximately 1.1 kilometres to the east (see Table 8 and **Error! Reference source not found.**)

Table 8 Grid reference site OA05

Easting	Northing
697171	6321459
697259	6321405
697357	6321354
697459	6321328
697552	6321339
697556	6321326
697454	6321294
697324	6321310
697226	6321305
697226	6321278
697207	6321269
697160	6321303
697196	6321352

Site environment

The site is located on a spur created from the conjunction of the large drainage line and the main creek line. The northern boundary of the site is the drainage line and the southern boundary in the main creek line. The site is also located approximately 1.7 kilometres west of Summer Hill Creek.

There is some disturbance within the area. Within the creek bed there is a dumped vehicle and other modern items. There is also evidence of some natural erosion occurring, which has probably been caused by altering the natural water flow by the institution of dams. Although there is disturbance, there has been no direct impact to the cultural material.

Site description

The site consists of an artefact scatter and PAD, measuring approximately 180 metres (north - south) by 392 metres (east - west), with an area of 23,665 square metres (see Plate 9).

A total of 15 artefacts were recorded within the boundaries of the site. A quartz knapping event was noted eroding out of the creek. Within this assemblage more than 10 artefacts were noted including complete flakes, medial flake fragments and a multiple platform core (see Plate 10).

The artefacts within the surface artefact scatter which were recorded consisted of a multiple platform core (n = 9, 60 %) and a distal flake fragment (n = 4, 27 %). The lithologies noted included quartz and mud stone.

The main area of artefact concentration is located within the eroding creek bank. It was observed that the artefacts are eroding out of this creek bank, indicating a subsurface deposit (see Plate 11).

Plate 9 View east of site OA05 including rubbish (scale = 2 metres)

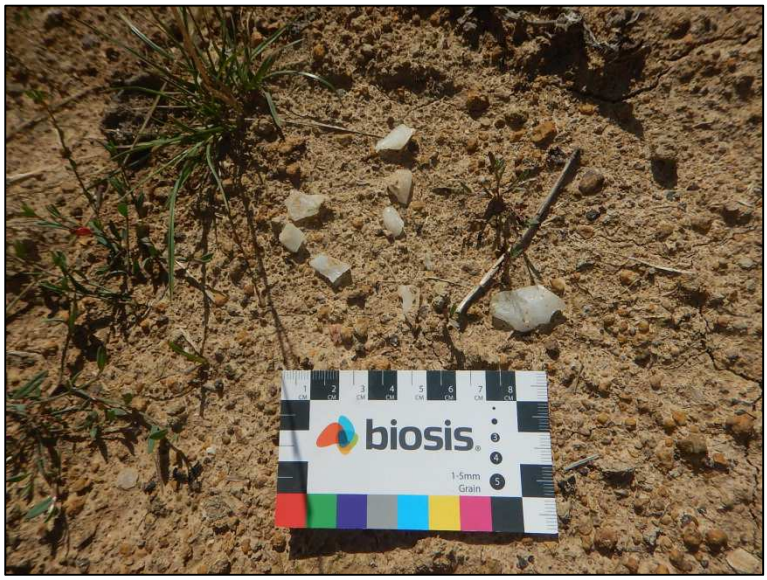

Plate 10 View of quartz knapping event within site OA05 (scale = 9 centimetres)

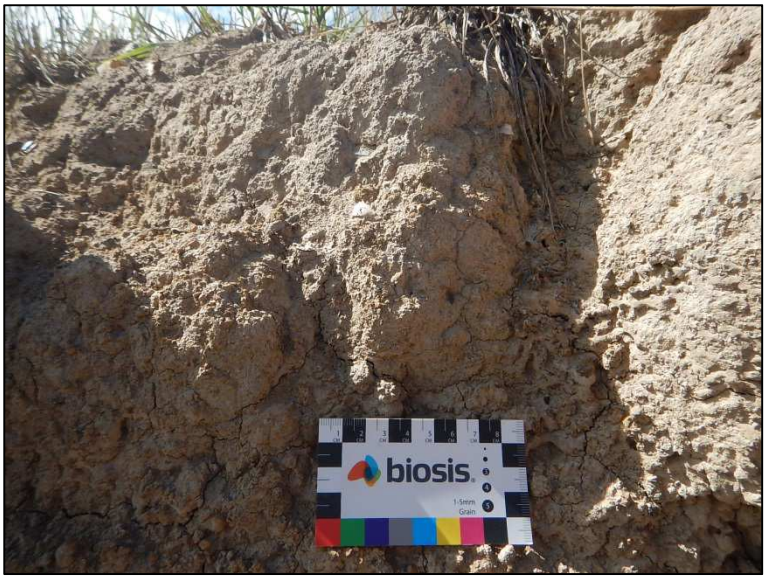

Plate 11 View of subsurface deposit within site OA05 (scale = 9 centimetres)

7.2.6 OA06

Site location

Site OA06 is located 1.3 kilometres east of Clergate Road, within the central portion of the Project Area. The site is located adjacent and approximately 10 metres north of site OA05 and 1.1 kilometres west of site AHIMS site 44-2-0202 (see Table 9 and **Error! Reference source not found.**).

Table 9 Grid reference site OA06

Easting	Northing
697313	6321386
697371	6321399
697387	6321396
697390	6321363
697353	6321361

Site environment

The site is located on the northern creek bank of the main creek line. A large drainage line forms the eastern boundary of the site. The site is also located 1.7 kilometres west of Summer Hill Creek (see **Error! Reference source not found.**). There is some disturbance within the area. Within the creek bed there is a dumped vehicle and other modern items. There is also evidence of some natural erosion occurring, which has probably been caused by altering the natural water flow by the institution of dams. Although there is disturbance, there has been no direct impact to the cultural material.

Site description

The site consists of an artefact scatter and a PAD, measuring 34 metres (north - south) by 73 metres (east - west), with an area of 1,812 square metres.

A total of 2 artefacts were recorded within the boundaries of the site. The surface artefact scatter recorded consisted of a complete flake (n = 1, 50 %) and a distal flake fragment (n = 2, 50 %). The lithologies recorded were quartz (n = 1, 50 %) and basalt (n = 1, 50 %) (see Plate 12). The basalt complete flake showed evidence of retouch, with one lateral side being backed. The artefacts were recorded in the eastern portion of the site, in close association with the large drainage line, which forms its boundary.

It was observed that the artefacts are eroding out of this creek bank, indicating a subsurface deposit. The site is also located adjacent to site OA05, which is located in a similar landform and has a clearly identified subsurface deposit.

Plate 12 Close up of site OA06 (scale = 9 centimetres)

7.2.7 OA07

Site location

Site OA07 is located approximately 2 kilometres south-east of Clergate Road, within the central northern portion of the Project Area. The site is also located in close association with site OA08, which is approximately 120 metres to the south-east (see **Error! Reference source not found.**).

Table 10 Grind reference site OA07

Easting	Northing
697229	6321788
697244	6321782
697235	6321767
697222	6321775

Site environment

The site is an area of dirt spill associated with the construction of a modern dam. The dam has been constructed on a small drainage line, which runs into the larger creek line in the south (see Figure 6). There is also evidence of recent disturbances with the construction of a dam within the site.

Site description

The site consists of a single isolated artefact, a basalt proximal flake fragment (see Plate 13). A buffer of approximately 1 metre (north - south) by 1 metre (east - west) was given, creating an area of 1 square metre. The artefact was probably relocated to its current position by taphonomic processes.

Plate 13 View south-east of site OA07 (scale = 2 metres)

7.2.8 OA08

Site location

Site OA08 is located approximately 1.2 kilometres south-east of Clergate Road, within the central northern portion of the Project Area. The site is also located in close association with site OA07, which is approximately 120 metres to the north-west (see Table 11 and **Error! Reference source not found.**).

Table 11 Grid reference site OA08

Easting	Northing
697250	6321729
697260	6321730
697261	6321717
697251	6321717

Site environment

The site is located along the sloped eastern boundary of a small drainage line, which runs south and joins the main creek line. The site is also located in an area identified to have mature vegetation.

There is some disturbance in the wider area with a modern fence line passing close to the site. However, this disturbance has had no effect on the site. The drainage line has also been disturbed with the construction of a modern dam, which has altered the natural flow of the water.

Site description

The site consists of a single modified tree, which contains one scar. A buffer of 1 metre (north - south) by 1 metre (east - west) was given, creating an area of 1 square metre. The tree itself is a large; approximately 20 metres high mature *eucalyptus spp*.

The scar is located at the base of the tree on the southern face. The scar measures approximately 40 centimetres in height, 5 centimetres in depth and 10 centimetres in width. No other cultural material was located in relation to the tree.

Plate 14 View north of the modified tree within site OA08 (scale = 2 metres)

Plate 15 Close up of the width of the scar within site OA08 (scale = 30 centimetres)

Plate 16 View of depth of the scar within site OA08 (scale = 20 centimetres)

7.2.9 OA09

Site location

Site OA09 is located approximately 2.6 kilometres east of Clergate Road, within the south-eastern portion of the Project Area. The site is located in close association with site OA11, which is approximately 400 metres to the north-west and site OA10 approximately 300 metres to the south-east (see Table 12 and **Error! Reference source not found.**).

Table 12 Grid reference site OA09

Easting	Northing
697281	6321147
697295	6321137
697313	6321144
697311	6321132
697293	6321127
697278	6321139

Site environment

The site is located in an area of exposure created by the creation of a modern dam. The exposure is located on the middle slope overlooking the main creek line, which is approximately 345 metres to the north.

The main disturbance in the area is the modern dam, which is altering the natural flow of water into the main creek line. To the south of the site on the ridge a large basalt outcrop was noted.

Site description

The site consists of a single isolated artefact. The sites measures approximately 21 metres (north - south) by 39 metres (east - west), with an area of 395 square metres (see Plate 17). The isolated artefact consisted of a basalt proximal flake fragment (see Plate 18 and Plate 19). The remanding area was investigated but no other cultural material was located.

Plate 17 View east of site OA09 (scale = 2 metres)

Plate 18 Close up the dorsal surface of the artefact within site OA09 (scale = 9 centimetres)

Plate 19 Close up of the ventral surface of the artefact within site OA09 (scale = 9 centimetres)

7.2.10 OA10

Site location

Site OA10 is located approximately 1.4 kilometres east of Clergate Road, within the south-eastern portion of the Project Area. The site is located in close association with site OA09, which is approximately 300 metres to the north-west. Sites OA11 and OA05 are also located approximately 335 metres to the north-west (see Table 13 and **Error! Reference source not found.**).

Table 13 Grid reference site OA10

Easting	Northing
697380	6320984
697403	6320983
697404	6320954
697380	6320955

Site environment

The site is located in an area of exposure created by a gate along a fence line. The continued foot traffic through this area has created the exposure. The exposure is located on the upper slope overlooking the second main drainage line in the south-east of the Project Area, which joins the main creek line, which is approximately 355 metres to the north. .The main disturbance in the area is the fence line. The site is also located within close proximity to an area identified as having mature vegetation.

Site description

The site consists of a single isolated artefact, a multiple platform core (see Plate 20). A buffer of approximately 1 metre (north - south) by 1 metre (east - west) was given, creating an area of 1 square metre.

Plate 20 View west of site OA10 (scale = 2 metres)

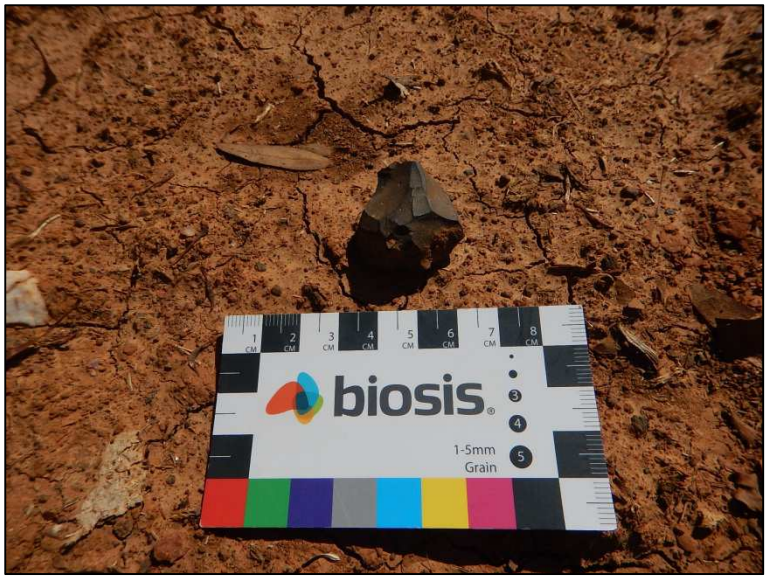

Plate 21 Close up of artefact within site OA10 (scale = 9 centimetres)

7.2.11 OA11

Site location

Site OA11 is located approximately 3 kilometres east of Clergate Road, within the central portion of the Project Area. The site is located adjacent to site OA12, which is approximately 30 metres to the south and is 112 metres south-west of site OA05 (see Table 13 and **Error! Reference source not found.**).

Table 14 Grid reference site OA11

Easting	Northing
697038	6321137
697054	6321147
697067	6321196
697086	6321204
697105	6321228
697126	6321218
697092	6321198
697092	6321146
697082	6321112

Site environment

The site is located on a flat terrace above the main creek line on the southern bank. There is a high level of disturbance associated with this site. Due to the construction of the modern dams along the main creek line, the natural water flow has been changed. The change in water flow has now created the erosion of the creek bank, which has revealed the cultural material. There is also a machine dug trench, or drainage line which dissects the site in the eastern portion. Within the north-eastern portion there is also evidence of the burial of modern rubbish material. Although there is a large amount of disturbance in the area a good portion of the area has remained intact and no harm has been caused to the cultural material itself.

Site description

The site consists of an artefact scatter and PAD, measuring approximately120 metres (north - south) by 95 metres (east - west), with an area of 3,509 square metres (see Plate 22).

A total of 65 artefacts were recorded within the boundaries of the site. The surface artefact scatter recorded consisted of distal flake fragments (n = 19, 29 %), complete flakes (n = 18, 28 %), proximal flake fragments (n = 7, 11 %), debris (n = 7, 11 %), medial flake fragments (n = 5, 8 %), multiple platform cores (n = 4, 6 %), single platform cores (n = 2, 3 %), longitudinal flake fragments (n = 2, 3 %) and a grinding stone (n = 1,1.5%). The lithologies noted included basalt (n = 41, 63 %), quartz (n = 10, 15 %), silcrete (n = 10, 15 %), rhyolite (n = 3, 5 %) and sand stone (n = 1, 1.5 %)

The main area of artefact concentration is located along the eroding terrace near the creek bank, although some artefacts were noted along the terrace further from the creek bank

The site has also been classified as a potential archaeological deposit due to the evidence of artefacts eroding out of a subsurface layer.

Plate 22 View north-east within site OA11 (scale = 2 metres)

Plate 23 Close up of ventral surface of an artefact within site OA11 (scale = 9 centimetres)

7.2.12 OA12

Site location

Site OA12 is located approximately 3 kilometres east of Clergate Road, within the central portion of the Project Area. The site is located adjacent to site OA11, which is approximately 30 metres to the south across the creek line (see Table 13 and **Error! Reference source not found.**).

Table 15 Grid reference site OA12

Easting	Northing
696729	6321190
697088	6321293
697096	6321270
697079	6321240
697043	6321227
697043	6321154
697008	6321145
696985	6321170
696967	6321152
696893	6321165
696880	6321203
696797	6321161

Site environment

The site is located on a flat terrace above the main creek line on the northern bank. There is a high level of disturbance associated with this site. Due to the construction of the modern dams along the main creek line, the natural water flow has been changed. The change in water flow has now created the erosion of the creek bank, which has revealed the cultural material. Although there is a large amount of disturbance in the area a good portion of the area has remained intact and no harm has been caused to the cultural material itself.

Site description

The site consists of an artefact scatter and PAD, measuring 131 metres (north - south) by 366 metres (east - west), with an area of 17,480 square metres (see Plate 22).

A total of 2 artefacts were recorded within the boundaries of the site. The surface artefact scatter recorded consisted of a complete flake (n = 1, 50 %) and a distal flake fragment (n = 1, 50 %). The lithologies noted included quartz (n = 1, 50 %) and crystal quartz (n = 1, 50%).

The main area of artefact concentration is located along the eroding terrace near the creek bank. The site has also been classified as a potential archaeological deposit due to the evidence of artefacts eroding out of a subsurface layer.

Plate 24 Close up of an artefact within site OA12 (scale = 9 centimetres)

7.2.13 OA13

Site location

Site OA13 is located approximately 820 metres east of Clergate Road, within the central north portion of the Project Area. The site is located in close association with site OA04, which is 251 metres to the south (see Table 13 and **Error! Reference source not found.**).

Table 16 Grid reference site OA13

Easting	Northing
697026	6321888
697041	6321880
697040	6321852
697041	6321830
697034	6321826
697019	6321835
697015	6321858

Site environment

The site is located within an area of erosion on a lower slope and base of a small drainage line, which commences in the upper ridges in the north portion of the Project Area. This smaller drainage line drains into the large drainage line, which ends in the main creek line further south.

There is some notable disturbance in the area including the large erosion area within the drainage line. There have also been a number of contour banks, which have been excavated into the lower slopes. Together this altering of the natural water flow has resulted in the large areas of erosion. Although there is this disturbance there has been no harm to the cultural material.

Site description

The site consists of a single isolated artefact and a PAD, measuring approximately 60 metres (north - south) by 32 metres (east - west), with an area of 1,240 square metres (see Plate 20). The isolated artefact consisted of a quartz medial flake fragment (see Plate 25). The artefact was located on the western area of erosion.

It was observed that the artefact eroded out of a possible subsurface deposit, indicating a potential archaeological deposit. Osteological remains were also recorded within the deposit at a depth of approximately 2 metres.

Plate 25 View north-west within site OA13 (scale = 2 metres)

7.2.14 OA14

Site location

Site OA14 is located 916 metres east of Clergate Road, within the central portion of the Project Area. Sites OA07 and OA08 are also located approximately 160 metres to the north east (see Table 13 and **Error! Reference source not found.**).

Table 17 Grid reference site OA14

Easting	Northing
697083	6321695
697092	6321690
697079	6321670
697070	6321679

Site environment

The site is located on quartz outcrop, which is on an upper slope within an area of exposure. The site is located 96 metres north of the large drainage line, which runs into the main creek line. The smaller drainage line is also located 91 metres to the east of the site. There is some disturbance in the area, with a cattle / vehicle track dissecting the site. There has also been a modern dam constructed to the south of the site, which has altered the natural flow of water in the wider area.

Site description

The site consists of a quartsz quarry and associated artefact scatter. Due to time constraints the artefacts were not recorded in detail but complete flakes, flake fragments and debris was noted (see Plate 20). A buffer of approximately 1 metre (north - south) by 1 metre (east - west) was given, creating an area of 1 square metre.

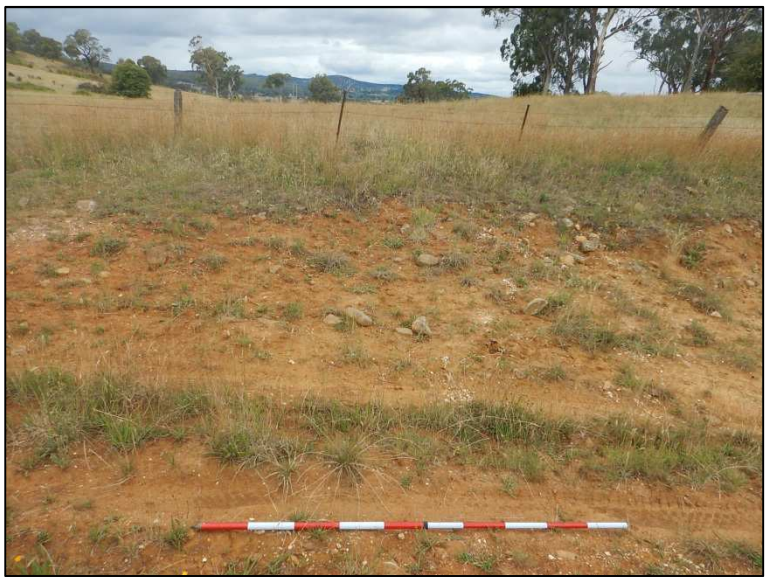

Plate 26 View east of site OA14 (scale = 2 metres)

7.2.15 PAD 01

Site location

PAD 01 is located adjacent to Clergate Road . The site is located in the south west portion of the Project Area. The site is located adjacent to PAD 02 and 568 metres north- west of site OA01 (see Table 18 and **Error! Reference source not found.**).

Table 18 Grid reference PAD 01

Easting	Northing
696275	6321406
696215	6321320
696200	6321221
696065	6321220
696071	6321324
696126	6321562
696187	6321475

Site environment

The site is located on a low lying ridge and associated steady sloped area. A small drainage line forms the northern boundary, a vehicle track the southern and the disturbed dam area in the east. This area has no evidence of disturbance, except the dam.

Although there has been this large scale disturbance in that area, the location of the site has remained intact. The ridges slopes would have stretched to the original water course, before the modern changes to the natural water flow.

Site description

The site consists of a PAD, measuring approximately 330 metres (north - south) by 212 metres (east - west), with an area of 38,951square metres (see Plate 27).

This area has been classified as a PAD because of the areas connection to the original water course and that cultural material has been located in similar landforms within the Project Area. The soil within this area is also classified as good for the preservation of cultural material.

Plate 27 View north of PAD 01 (scale = 2 metres)

7.2.16 PAD 02

Site location

PAD 02 is located adjacent to Clergate Road. The site is located in the south west portion of the Project Area. The site is located adjacent to PAD 01 and approximately 1.3 killometres west of site OA13 (see Table 19 and **Error! Reference source not found.**).

Table 19 Grid reference PAD 02

Easting	Northing
696200	6321832
696290	6321875
696416	6321880
696530	6321817
696424	6321403
696281	6321413
696139	6321557

Site environment

The site is located on a low lying ridge and its associated steady sloped area. A small drainage line forms the southern boundary and a disturbed dam area in the east. This area within the site has little evidence of disturbance, except the dam and an EPA monitoring station.

Although there has been this large scale disturbance in that area, the location of the site has remained intact. The ridges slopes would have stretched to the original water course, before the modern changes to the natural water flow.

Site description

The site consists of a PAD, measuring 464 metres (north - south) by 340 kilometres (east - west), with an area of 136, 049 square kilometres (see Plate 27).

This area has been classified as a PAD because of the areas connection to the original water course and that cultural material has been located in similar landforms within the Project Area. The soil within this area is also classified as good for the preservation of cultural material.

Plate 28 View west of site PAD 02 (scale = 2 metres)

7.2.17 PAD 03

Site location

PAD 03 is located 418 metres east of Clergate Road, within the north western portion of the Project Area. The site is located 34 metres east of site OA02 and 278 metres west of site OA03 (see Table 20and **Error! Reference source not found.**).

Table 20 Grid reference PAD 03

Easting	Northing
696486	6322138
696481	6322206
696523	6322232
696787	6322151
696823	6322095
696703	6322022

Site environment

The site is located on a ridge and its associated steady sloped area. A property boundary forms the northern boundary and the flat drainage area the remainder. The area within the site has little evidence of disturbance, although there has been large scale disturbance in close proximity. A large section of vegetation has been recently cleared in association with the property. The ridges slopes would have stretched to the original water course, before the modern changes to the natural water flow.

Site description

The site consists of a PAD, measuring 367 metres (north - south) by 150 metres (east - west), with an area of 9,515 square metres.

This area has been classified as a PAD because it overlooks the sloping marsh drainage area, which leads into the main creek line. Cultural material has been located in similar landforms within the Project Area. The soil within this area is also classified as good for the preservation of cultural material.

7.2.18 PAD 04

Site location

PAD 04 is located approximately 1 kilometre east of Clergate Road and 411 metres south of Pearce Lane, within the northern portion of the Project Area. The site is located 156 metres south of site OA02 and approximately 150 metres north-east of site OA13 (seeTable 21 and **Error! Reference source not found.**).

Table 21 Grid reference PAD 04

Easting	Northing
697024	6322041
697141	6322040
697157	6321988
697049	6321971
697022	6321999

Site environment

The site is located on a ridge and its associated steady sloped area. The area within the site has little evidence of disturbance. The Pad is located 94 metres to the west of a large drainage line that leads into the main creek line.

Site description

The site consists of a PAD, measuring 86 metres (north - south) by 137 metres (east - west), with an area of 9515 square metres.

This area has been classified as a PAD because it overlooks the sloping marsh drainage area and is on close association to a large drainage line, which leads into the main creek line. Cultural material has been located in similar landforms, in a close proximity within the Project Area. The soil within this area is also classified as good for the preservation of cultural material and was notably different then in other areas.

7.2.19 PAD 05

Site location

PAD 04 is located 1.2 kilometres east of Clergate Road and 770 metres south of Pearce Lane, within the central portion of the Project Area. The site is located 84 metres east of site OA04 and 91 metres north of site OA05 (see Table 22 and **Error! Reference source not found.**).

Table 22 Grid reference PAD 05

Easting	Northing
697250	6321633
697296	6321624
697304	6321544
697236	6321489
697225	6321492
697229	6321576

Site environment

The site is located on a ridge and its associated steady sloped area overlooking the main creek line and the large drainage channel. This area has little evidence of disturbance and is at an elevation that would have allowed decent views of the immediate area.

Site description

The site consists of a PAD, measuring 142 metres (north - south) by 87 metres (east - west), with an area of 9000 square metres.

This area has been classified as a PAD because it overlooks the main creek line and cultural material has been located in similar landforms within the Project Area. The soil within this area is also classified as good for the preservation of cultural material.

7.2.20 PAD 06

Site location

PAD 04 is located approximately 1.6 kilometres east of Clergate Road and 1.3 killometres south of Pearce Lane, within the south eastern portion of the Project Area. The site is located 164 metres south-east of site OA10 and 243 metres south-east of site OA09 (see Table 23 and **Error! Reference source not found.**).

Table 23 Grid reference PAD 06

Easting	Northing
697522	6320991
697543	6321071
697574	6321096
697599	6321078
697597	6321045
697568	6321005

Site environment

The site is located on a terrace area on the western bank of a small creek line, which feeds into the main creek in the north. The small creek line forms the eastern boundary. This area within the site has little evidence of disturbance, except natural erosion processes associated with the creek.

Site description

The site consists of a PAD, measuring 108 metres (north - south) by 63 metres (east - west), with an area of 4,757 square metres.

This area has been classified as a PAD because of its topography and its close association with the small creek line, which leads into the main creek line. Cultural material has been located in similar landforms within the Project Area along the main creek line. The soil within this area is also classified as good for the preservation of cultural material.

8. Analysis and discussion

8.1 Overview of aboriginal heritage sites

Twenty new Aboriginal heritage sites have been identified within the Project Area. Table 24 outlines the stone artefacts recorded during the Aboriginal cultural heritage assessment of the Project Area.

Table 24 Aboriginal archaeological and heritage sites in the Project Area

Site name and AHIMS number	Features	Landform	No. of artefacts
OA01	Isolated Artefact	Slope	1
OA02	Isolated Artefact	Slope	1
OA03	Artefact Scatter; Potential archaeological deposit	Ridge and slope	6
OA04	Artefact Scatter; Potential archaeological deposit	Open depression / Terrace	3
OA05	Artefact Scatter; Potential archaeological deposit	Open depression / Terrace	2
OA06	Artefact Scatter; Potential archaeological deposit	Open depression / Terrace	2
OA07	Isolated Artefact	Drainage line	1
OA08	Scar tree	Drainage line	-
OA09	Isolated Artefact	Ridge and slope	1
OA10	Isolated Artefact	Ridge and slope	1
OA11	Artefact Scatter; Potential archaeological deposit	Open depression / Terrace	65
OA12	Artefact Scatter; Potential archaeological deposit	Open depression / Terrace	2
OA13	Isolated Artefact; Potential archaeological deposit	Slope	1
OA14	Quarry	Slope	/
PAD 01	Potential archaeological deposit	Slope	-
PAD 02	Potential archaeological deposit	Ridge and slope	-
PAD 03	Potential archaeological deposit	Ridge and slope	-
PAD 04	Potential archaeological deposit	Ridge and slope	-
PAD 05	Potential archaeological deposit	Ridge and slope	-
PAD 06	Potential archaeological deposit	Open depression / Terrace	-

Stone artefact analysis

The following analysis has been undertaken for the surface assemblage of the twenty Aboriginal heritage sites located in the Project Area. A total of 86 stone artefacts were identified and recorded on the surface. More were noted but due to time constraints were not recorded in detail. The section will be updated once cultural heritage works are complete.

The artefact analysis addresses a series of themes including:

- Stone raw material procurement
- Stone reduction technology
- Spatial distribution.

Stone artefacts were recorded in the field during the field survey. Artefacts were individually analysed and recorded including all relevant artefact attributes; this enabled a comprehensive typological, technological and metrical analysis of the assemblage to be undertaken. Analysis was undertaken using of a standard digital Vernier caliper and a 10 x hand lense. All measurements were recorded in millimetres to one decimal place.

8.1.1 Surface stone artefact analysis

A total of 86 surface artefacts were recorded in 20 individual Aboriginal heritage sites. The highest density of artefacts were recorded within site OA11 (n = 65, 76 %), a terrace on the southern side of the main creek line. Table 24 shows the number of artefacts recorded from each Aboriginal heritage site.

The analysis of the surface survey has been undertaken as one whole assemblage rather than analysis of each site. In an attempt to determine past land use of the Project Area as a whole, it was determined an analysis of stone artefacts would be most appropriate.

Stone procurement

The cortex (weathered exterior of a rock) provides information about the origin of stone sources. Artefacts with a rough cortex were acquired from a primary source, such as an *in situ* outcrop. Artefacts with a smooth or water-rolled cortex originate from a secondary source, such as a river cobble from a waterway. The amount of cortex on an artefact often indicates the distance artefacts were transported from the source (Hiscock and Mitchell 1993: 12-17).

A high percentage of cortex on an artefact indicates that the source of stone was nearby; while artefacts with less cortex, or no cortex, were transported further from the source. As cores are transported away from the source they are typically highly reduced and the flakes from these cores are smaller.

The basalt artefacts recorded in the Project Area are indicative of being transported a distance from the raw material source with 92 percent (n = 78) of artefacts having 0 percent cortex, while on only 1 percent (n = 1) of artefacts had 50 – 70 percent cortex (see Chart 1). The quartz artefacts also recorded a low percentage of cortex, however quartz , quartzite and silcrete rarely exhibit a well developed cortex.

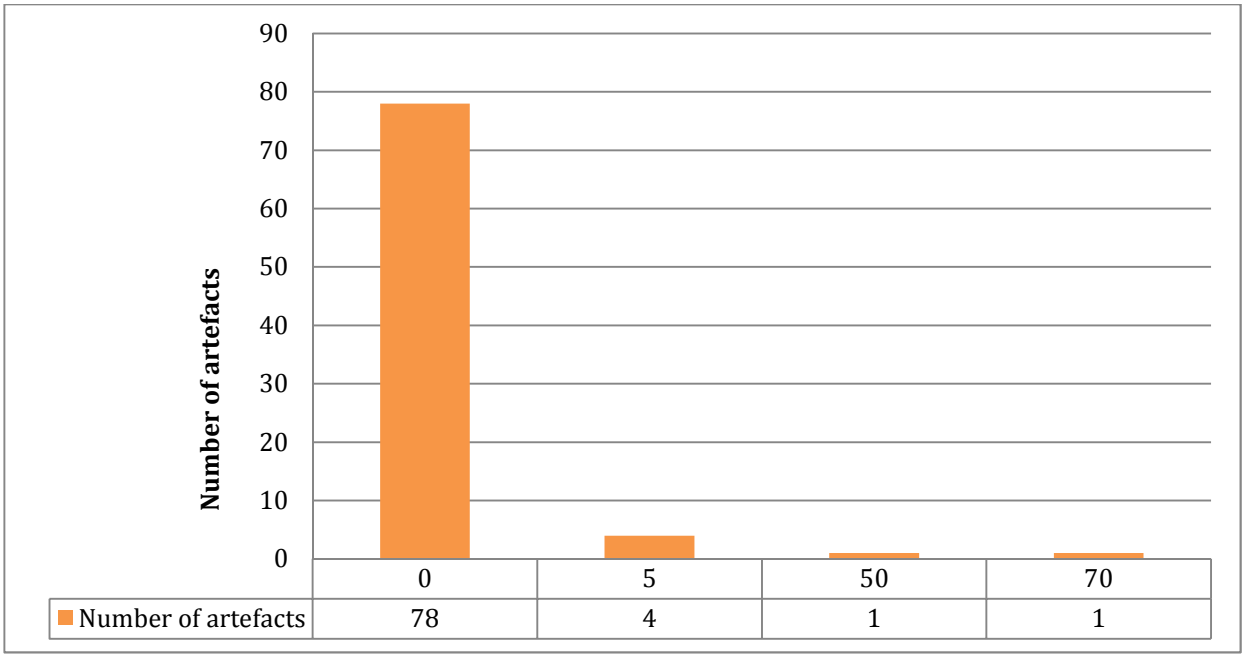

Chart 1 Percentage of cortex on stone artefacts

Eight raw material types were found in the surface survey. The predominant raw material type is basalt (n = 43, 50 %). Less common raw material types include quartz (n = 25, 29 %), silcrete (n = 9, 11 %), rhyolite (n = 3, 3.5 %), quartzite (n = 3, 3.5 %), mud stone (n = 1, 1.2 %), sandstone (n = 1, 1.2 %), and one piece of crystal quartz (n = 1, 1.2 %) (see Table 25 and Chart 2). Site OA11 contains the highest variety of raw materials (n = 5), when compared to the other sites in the Project Area and predominantly basalt.

Rhyolite sources are more common in the Mullions Range Volcanics (Smu) geological formation, which is located just outside of the Project Area. Within the Project Area the geological formation of Oakdale is characterised by both sandstone and basalt. The immediate availability of raw material types in the area could have resulted in the assemblage recorded. Rhyolite, for example, was only located in one site, OA11.

Table 25 Raw material in the surface assemblage

Raw material	Number	Frequency (%)
Basalt	43	50
Quartz	25	29
Silcrete	9	11
Rhyolite	3	3.5
Quartzite	3	3.5
Mud Stone	1	1.2
Sandstone	1	1.2
Crystal Quartz	1	1.2
Total	**86**	**100**

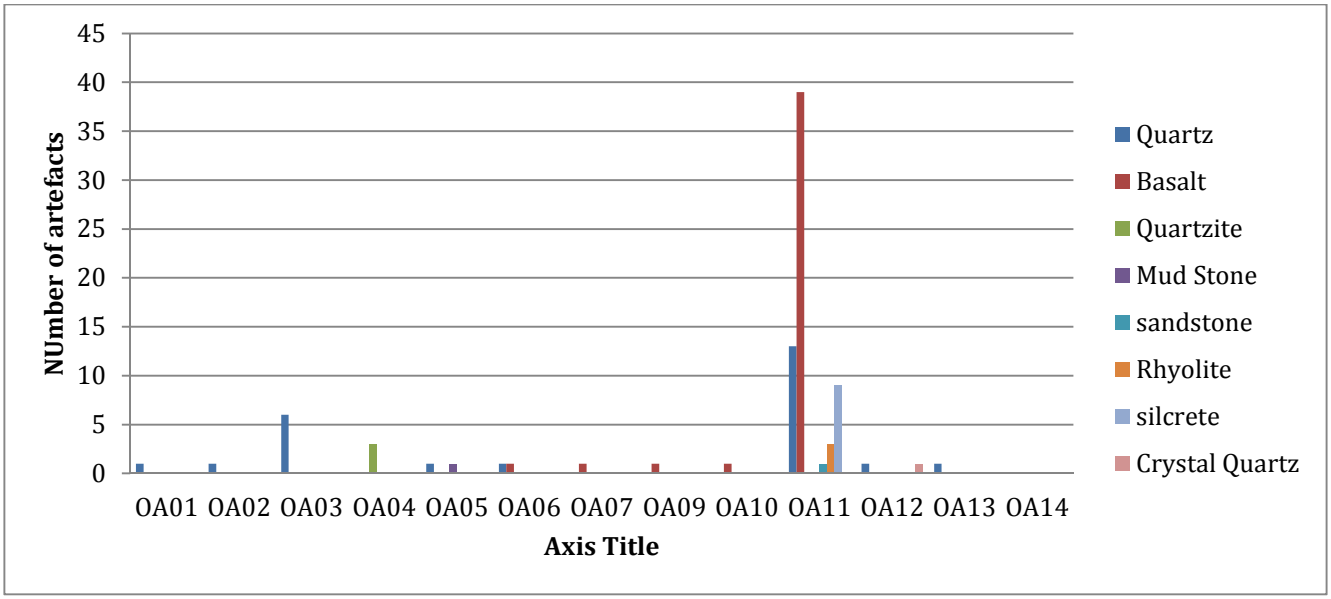

Chart 2 Raw material numbers within the sites

Assemblage composition

The surface assemblage is dominated by distal flake fragments (n = 25, 29 %) (see Table 26). Complete flakes made up 24.4 per cent (n = 20) of the assemblage. Medial flakes accounted for 7 percent (n = 10) of the assemblage, while proximal flake fragments made up 7 per cent (n = 6) of the assemblage. Only a minimal number longitudinally split flakes were recorded (n = 2, 2.2 %). A total of 12 cores were recorded, with 7 percent (n = 6) being single platform cores and 7 percent (n = 6) being multiple platform cores. The majority of tools were made on complete flakes (n=20, 86 %). Other stone artefacts recorded include grindstones (n = 3, 3.5 %), and debris (n = 7, 8 %).

Table 26 Distribution of artefacts by site

Type	OA01	OA02	OA03	OA04	OA05	OA06	OA07	OA09	OA10	OA11	OA12	OA13	OA14	Total
Complete Flake	1		1			1				17	1			21
Proximal Fragment							1	1		8				10
Medial Fragment			1							4		1		6
Distal Fragment			2		1	1				20	1			25
Longitudinally split flake										2				2
Single platform core		1	2	1						2				6
Multi platform core					1				1	4				6
Debris										7				7

Type	OA01	OA02	OA03	OA04	OA05	OA06	OA07	OA09	OA10	OA11	OA12	OA13	OA14	Total
Grind stone				2						1				3
TOTAL	**1**	**1**	**6**	**3**	**2**	**2**	**1**	**1**	**1**	**65**	**2**	**1**	**/**	**86**

Tools

A total of 4 tools were recorded from site OA11 and one from OA06. A scraper, blade, bladelette and geometric microlith were the tool types recorded within OA11 and a backed flake from OA06. The most dominant tool types in the assemblage were blades and bladeletts. The assemblage from site OA11 showed evidence of blade flaking technology being utilised. A number of the artefacts were at least twice as long as they were wide and had parallel or subparallel sides and at least two ridges on the dorsal side. There was one occurrence of possible usewear recorded in the assemblage.

8.1.2 Summary of stone artefact analysis

The stone artefact analysis provides some understanding of the raw material procurement, tool manufacture and occupational patterns in the Project Area particularly as no previous comprehensive archaeological investigations have occurred.

The surface stone assemblage was analysed as a whole assemblage rather than separate assemblages from each of the 20 Aboriginal heritage sites identified during the surface survey. The purpose of this method of analysis was to understand the Project Area as whole, rather than each site individually.

The surface assemblage consisted of 86 stone artefacts of which the majority were basalt (n = 43, 50 %) and distal flake fragments (n = 25, 29 %). The weathering of the surface artefacts indicates multiple, repeated occupations of the Project Area. There is also evidence of tools such as scrapers, blades, bladeletts and geometric microliths. A majority of the tools were noted within one site OA11. The variety and type of tools located during the surface survey, such as scrapers, are indicative of occupation locations.

The variety of cores in the surface assemblage reflects all stages of core reduction. Single platform cores with one flake removed were observed as were completely reduced cores. The majority of cores observed in the surface assemblage were in the later stages of reduction, again indicating that the knapping process was taking place far away from the raw material source.

8.2 Discussion of results

The stone artefact analysis aimed to inform the knowledge of Aboriginal lifeways in the Project Area, specifically by assessing the procurement of raw material, stone reduction technologies and spatial distribution. No distinct patterns were observed in the stone reduction technologies from a majority of the sites, this is most likely due to the small and varied sample recorded in the surface assemblages; for a detailed analysis of stone reduction technologies a larger sample of surface artefacts would be necessary. Site OA11 did indicate the use of blade reduction technology, with the production of blades and bladeletts.

As discussed above, the procurement of raw material for purpose of creating stone tools can be assessed by analysing the surface stone artefact assemblages. The stone artefacts generally show later stages of reduction, this indicates that the stone tool making process happened away from the raw material source. The surface assemblage showed that the patterning of Aboriginal heritage sites in the Project Area was similar to that of the wider region but not the local area.

The dominant site types in the Project Area are artefact scatters and PADs. Stone artefacts are more resilient to the natural environment than most other site types as they exist in the landscape for a much longer period of time and therefore are the most commonly recorded Aboriginal heritage site type.

As well as the type of sites located in an area, the location of those sites relative to the natural environment is important to understanding the lifeways of past Aboriginal people. The footprint the Project Area covers numerous landforms and provides a representative sample of the landscape, ideal for the analysis of spatial relationships between sites and landscape elements. The general pattern indicates that the majority of sites are located in areas that have abundant resources and are close to the main creek line.

Site integrity is influenced by both natural processes and human land use practices. Alluvial terraces and flats have the least site integrity due to repeated flooding events that redistribute sediments both spatially and stratigraphically. Human land use practices have an influence on the site integrity. Past agricultural and pastoral activities cause spatial and stratigraphic movements of artefacts, and significant land modifications, such as deep excavations cause the destruction and removal of cultural material. Vegetation clearance and pastoral activities would have caused spatial, as well as stratigraphical movements of cultural material due to cattle trampling and removal of big trees. Erosion that would have been most likely extensive after the land clearance would have caused post depositional displacement of artefacts.

The archaeological assessment located and recorded 20 Aboriginal sites within the Project Area. If these sites can not be avoided by the proposed development, then an AHIP must be sort under Part 6 of the *Parks and Wildlife Act 1974.* The Project Area is suitable for rezoning once all conditions under the relevant legislation have been meet.

9. Recommendations

The following management recommendations have been developed relevant to the Project Area and influenced by:

- Predicted impacts to Aboriginal cultural heritage
- The planning approvals framework
- Current best conservation practise, widely considered to include:
  - Ethos of the Australia ICOMOS Burra Charter.
  - The *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010).

Prior to any impacts occurring within the Project Area, the following is recommended:

Recommendation 1: Further archaeological assessment

Areas identified as having a Potential Archaeological Deposit (PAD) (OA03, OA04, OA05, OA06, OA11, OA12, OA13, PAD 01, PAD 02, PAD03, PAD 04, PAD05 and PAD 06) should be avoided wherever possible. If impact to these areas cannot be avoided subsurface investigations (test excavations), undertaken in accordance with the code, will be required prior to the commencement of works. Consultation with Aboriginal stakeholders according to the Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW 2010) ('the consultation requirements') will be required for the development to proceed.

Recommendation 2: Application for an Aboriginal Heritage Impact Permit (AHIP) for the entire Project Area

If the proposed works cannot avoid harm to OA01, OA02, OA03, OA04, OA05, OA06, OA07, OA08, OA09, OA10, OA11, OA12, OA13, OA14, PAD 01, PAD 02, PAD03, PAD 04, PAD05 and PAD 06 it is recommended that an application be made to the Office of Environment and Heritage (OEH) for an area based Aboriginal Heritage Impact Permit (AHIP) for the entirety of the Project Area. The AHIP should include the following conditions:

- Impact can occur to the Aboriginal cultural heritage sites OA01, OA02, OA03, OA04, OA05, OA06, OA07, OA08, OA09, OA10, OA11, OA12, OA13, OA14, PAD 01, PAD 02, PAD03, PAD 04, PAD05 and PAD 06. All of the sites occur within the proposed works area.
- The isolated artefacts (Sites OA01, OA02, OA07, OA09 and OA10) should be relocated prior to ground disturbance and moved outside of the impact area, but within their original landscape context.
- At sites OA03, OA04, OA05, OA06, OA11, OA12, OA13 and OA14, the surface artefacts should be relocated prior to ground disturbance and moved outside of the impact area, but within their original landscape context. Any subsurface archaeological material located within the impact area, with the exception of human remains, can be destroyed.
- Impact within the limits of the area based destruction AHIP for any further Aboriginal objects encountered during construction unless human remains are involved.

For information about AHIPs and their preparation, see below.

Advice preparing AHIPs

An AHIP is required for any activities likely to have an impact on Aboriginal objects or Places or cause land to be disturbed for the purposes of discovering an Aboriginal object. The OEH issues AHIPs under Part 6 of the National Parks and Wildlife Act 1974 (NPW Act).

AHIPs should be prepared by a qualified archaeologist and lodged with the OEH. Once the application is lodged processing time can take between 8-12 weeks. It should be noted that there will be an application fee levied by the OEH for the processing of AHIPs, which is dependent on the estimated total cost of the development project.

Where there are multiple sites within one project area an application for an AHIP to cover the entire project area is recommended.

Recommendation 3: Discovery of Aboriginal ancestral remains

Aboriginal ancestral remains may be found in a variety of landscapes in NSW, including middens and sandy or soft sedimentary soils. If any suspected human remains are discovered during any activity you must:

- Immediately cease all work in the vicinity and not further move or disturb the remains.
- Notify the Coroners Office and NSW Police immediately. Following this, contact OEH's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location. The find must also be reported to the Aboriginal parties.
- Not recommence work at that location unless authorised in writing by OEH.

Recommendation 4: Discovery of Unanticipated Historical Relics

Relics are historical archaeological resources of local or State significance and are protected in NSW under the *Heritage Act 1977*. Relics cannot be disturbed except with a permit or exception/exemption notification. Should unanticipated relics be discovered during the course of the project, work in the vicinity must cease and an archaeologist contacted to make a preliminary assessment of the find. The Heritage Council will require notification if the find is assessed as a relic.

Figure 3 Due Diligence Flow Chart

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Appendices

Appendix 1 - AHIMS results

THE FOLLOWING APPENDIX IS NOT TO BE MADE PUBLIC

Appendix 2 - Site data

Table 27 OA01

ID No.	Type	Raw material	Cortex (%)	Platform type	Platform length (mm)	Platform width (mm)	Termination	Retouch type	Retouch location	Length (mm)	Width (mm)	Thickness (mm)	Flake scars	Tool type	Comment
1	Complete flake	Quartz	0	Crushed	10	7	Feather	-	-	15	15	7	1		-

Table 28 OA02

ID No.	Type	Raw material	Cortex (%)	Platform type	Platform length (mm)	Platform width (mm)	Termination	Retouch type	Retouch location	Length (mm)	Width (mm)	Thickness (mm)	Flake scars	Tool type	Comment
1	Single Platform Core	Quartz	0	-	-	-	-	-	-	20	23	11	4	-	

Table 29 OA03

ID No.	Type	Raw material	Cortex (%)	Platform type	Platform length (mm)	Platform width (mm)	Termination	Retouch type	Retouch location	Length (mm)	Width (mm)	Thickness (mm)	Flake scars	Tool type	Comment
1	Single Platform Core	Quartz	0	-	-	-	-	-	-	29	33	28	3	-	LFS 29
2	Complete Flake	Quartz	0	Flacked	7	4	Step	-	-	29	18	10	2	-	
3	Distal Flake Fragment	Quartz	0	-	-	-	Feather	-	-	12	15	8/	1	-	
4	Distal Flake Fragment	Quartz	0	-	-	-	Feather	-	-	14	13	2	2	-	
5	Medial Flake Fragment	Quartz	0	-	-	-	-	-	-	13	15	5	2	-	
6	Single Platform Core	Quartz	0	-	-	-	-	-	-	21	18	8	1	-	LFS 19, Bipolar

Table 30 OA04

ID No.	Type	Raw material	Cortex (%)	Platform type	Platform length (mm)	Platform width (mm)	Termination	Retouch type	Retouch location	Length (mm)	Width (mm)	Thickness (mm)	Flake scars	Tool type	Comment
1	Single Platform Core	Quartzite	0	-	-	-	-	-	-	33	73	33	6	-	LFS 30, Unidirectional
2	Grinding Stone	Quartzite	0	-	-	-	-	-	-	77	56	40	-	-	Two grinding surfaces and pitting
3	Grinding Stone	Quartzite	0	-	-	-	-	-	-	93	70	44	-	-	One grinding surface stratifications

Table 31 OA05

ID No.	Type	Raw material	Cortex (%)	Platform type	Platform length (mm)	Platform width (mm)	Termination	Retouch type	Retouch location	Length (mm)	Width (mm)	Thickness (mm)	Flake scars	Tool type	Comment
1	Distal Flake Fragment	Quartz	0	-	-	-	Step	-	-	17	13	4	-	-	
2	Multiple Platform Core	Mud Stone	0	-	-	-	-	-	-	36	43	31	10 +	-	Multidirectional

Table 32 OA06

ID No.	Type	Raw material	Cortex (%)	Platform type	Platform length (mm)	Platform width (mm)	Termination	Retouch type	Retouch location	Length (mm)	Width (mm)	Thickness (mm)	Flake scars	Tool type	Comment
1	Complete Flake	Basalt	0	Flacked	5	5-	Retouched	Step	Left Lateral Margin	24	13	6	1	Retouched Flake	-
2	Distal Flake Fragment	Quartz	0	-	-	-	-	-	-	17	13	4	-	-	

Table 33 OA07

ID No.	Type	Raw material	Cortex (%)	Platform type	Platform length (mm)	Platform width (mm)	Termination	Retouch type	Retouch location	Length (mm)	Width (mm)	Thickness (mm)	Flake scars	Tool type	Comment
1	Proximal Flake Fragment	Basalt	0	Flacked	12	5	-	-	-	15	23	5	3	-	-

Table 34 OA09

ID No.	Type	Raw material	Cortex (%)	Platform type	Platform length (mm)	Platform width (mm)	Termination	Retouch type	Retouch location	Length (mm)	Width (mm)	Thickness (mm)	Flake scars	Tool type	Comment
1	Proximal Flake Fragment	Basalt	0	Flacked	8	9	-	-	-	33	17	9	2	-	Weathered

Table 35 OA10

ID No.	Type	Raw material	Cortex (%)	Platform type	Platform length (mm)	Platform width (mm)	Termination	Retouch type	Retouch location	Length (mm)	Width (mm)	Thickness (mm)	Flake scars	Tool type	Comment
1	Multiple Platform Core	Basalt	0	-	-	-	--	-	-	29	5	14	-	-	Multidirectional. LFS 21

Table 36 OA11

ID No.	Type	Raw material	Cortex (%)	Platform type	Platform length (mm)	Platform width (mm)	Termination	Retouch type	Retouch location	Length (mm)	Width (mm)	Thickness (mm)	Flake scars	Tool type	Comment
1	Grinding Stone	Sand Stone	0	-	-	-	-	-	-	115	102	32	-	-	One grinding surface
2	Complete Flake	Rhyolite	0	Faceted	19	7	Step	-	-	31	22	6	2	-	
3	Proximal Flake Fragment	Basalt	0	Flacked	10	1	Broken	-	-	10	15	3	3	-	
4	Medial Flake Fragment	Quartz	0	-	-	-	-	-	-	11	14	4	2	-	
5	Multiple Platform Core	Rhyolite	0	-	-	-	-	-	-	30	26	12	10	-	LFS 29, Multidirectional
6	Distal Flake Fragment	Rhyolite	0	-	-	-	Feather	-	-	17	27	6	2	-	
7	Complete Flake Fragment	Basalt	0	Flacked	18	6	Feather	-	-	14	25	3	3	-	
8	Proximal Flake Fragment	Quartz	0	Flacked	14	4	Broken	-	-	12	23	4	2	-	
9	Distal Flake Fragment	Basalt	0	-	-	-	Hinged	-	-	12	11	2	2	-	
10	Distal Flake Fragment	Basalt	0	-	-	-	Hinged	-	-	11	8	4	2	-	
11	Medial Flake Fragment	Basalt	0	-	-	-	-	-	-	9	12	4	2	-	
12	Multiple Platform Core	Silcrete	0	-	-	-	-	-	-	65	45	28	-	-	LFS 35, Multidirectional
13	Complete Flake	Quartz	0	Flacked	26	9	Feather	-	-	21	37	11	3	-	
14	Complete Flake	Basalt	0	Flacked	17	8	Feather	-	-	32	22	6	4	-	
15	Distal Flake Fragment	Basalt	0	-	-	-	Feather	-	-	10	9	2	1	-	
16	Distal Flake Fragment	Quartz	0	-	-	-	Feather	-	-	16	22	5	3	-	
17	Complete Flake	Basalt	0	Focal	4	1	Feather	-	-	15	12	2	3	-	
18	Complete Flake	Basalt	0	Flacked	7	3	Feather	-	-	11	8	3	2	-	
19	Distal Flake Fragment	Basalt	0	-	-	-	Feather	-	-	7	10	1	2	-	
20	Proximal Flake Fragment	Basalt	50	Flacked	21	9	-	-	-	20	23	8	1	-	
21	Complete Flake	Quartz	0	Flacked	6	3	Step	-	-	19	15	7	2	-	
22	Complete Flake	Basalt	0	Flacked	16	3	Hinged	-	-	12	17	3	6	-	
23	Medial Flake Fragment	Basalt	70	-	-	-	-	Step	Right Lateral Margin	41	30	16	6	Scraper	
24	Distal Flake Fragment	Basalt	0	-	-	-	Hinged	-	-	16	25	3	2	-	Refits to artefact 26. Part of Knapping event.
25	Complete Flake	Basalt	0	Flacked	20	7	Feather	-	-	23	29	6	2	-	Part of Knapping event.

ID No.	Type	Raw material	Cortex (%)	Platform type	Platform length (mm)	Platform width (mm)	Termination	Retouch type	Retouch location	Length (mm)	Width (mm)	Thickness (mm)	Flake scars	Tool type	Comment
26	Lateral Flake Fragment	Basalt	0	-	-	-	Hinged	-	-	23	15	2	-	-	Refits to artefact 24. Part of Knapping event.
27	Proximal Flake Fragment	Basalt	0	Gull Winged	13	7	-	-	-	18	31	7	3	-	Part of Knapping event.
28	Distal Flake Fragment	Basalt	5	-	-	-	Feather	-	-	16	16	2	1	-	Part of Knapping event.
29	Complete Flake	Silcrete	0	Flacked	12	3	Feather	-	-	11	15	3	4	-	Part of Knapping event.
30	Proximal Flake Fragment	Quartz	0	Flacked	14	4	-	-	-	16	24	4	3	-	
31	Complete Flake	Basalt	0	Flacked	13	3	Step	-	-	14	13	6	3	-	
32	Complete Flake	Basalt	0	Flacked	5	2	Feather	-	-	38	11	3	4	Bladelett	
33	Proximal Flake Fragment	Basalt	0	Flacked	5	3	-	-	-	17	12	6	5	-	
34	Distal Flake Fragment	Basalt	0	-	-	-	Feather	-	-	17	10	4	2	-	
35	Complete Flake	Silcrete	0	Crushed	4	2	Feather	-	-	8	7	1	2	-	
36	Multiple Platform Core	Basalt	0	-	-	-	-	-	-	11	18	18	-	-	Total Exhausted Core, LFS 10
37	Complete Flake Fragment	Basalt	0	Retouched	-	-	Retouched	Scalar	Right Lateral Margin	10	9	4	1	Geometric Microlith	
38	Distal Flake Fragment	Basalt	5	-	-	-	Feather	-	-	26	37	7	6	-	
39	Distal Flake Fragment	Basalt	0	-	-	-	Feather	-	-	11	15	3	1	-	
40	Distal Flake Fragment	Basalt	0	-	-	-	Feather	-	-	8	5	2	1	-	
41	Single Platform Core	Basalt	0	-	-	-	-	-	-	34	22	11	10	-	LFS 22, Unidirectional
42	Complete Flake	Quartz	0	Flacked	12	4	Feather	-	-	16	24	6	4	-	
43	Complete Flake	Quartz	0	Flacked	10	6	Feather	-	-	23	19	7	4	-	
44	Distal Flake Fragment	Basalt	0	-	-	-	Feather	-	-	13	15	2	4	-	Weathered
45	Distal Flake Fragment	Basalt	0	-	-	-	Broken	-	-	36	25	5	4		Weathered
46	Medial Flake Fragment	Basalt	0	-	-	-	-	-	-	8	11	2	2	-	Weathered
47	Complete Flake	Basalt	0	Flacked	7	3	Feather	-	-	20	12	2	3	-	Weathered
48	Distal Flake Fragment	Quartz	0	-	-	-	Feather	-	-	5	12	1	-	-	
49	Longitudinal Flake Fragment	Basalt	0	Flacked	4	4	Hinged	-	-	16	13	4	4	-	Weathered. Refit to artefact 51.
50	Distal Flake Fragment	Basalt	5	-	-	-	Feather	-	-	49	22	10	2	Blade	

ID No.	Type	Raw material	Cortex (%)	Platform type	Platform length (mm)	Platform width (mm)	Termination	Retouch type	Retouch location	Length (mm)	Width (mm)	Thickness (mm)	Flake scars	Tool type	Comment
51	Proximal Flake Fragment	Basalt	0	Faceted	13	4	-	-	-	13	15	15	-	-	Refit to artefact 49.
52	Debris	Silcrete	-	-	-	-	-	-	-	18	-	-	-	-	
53	Debris	Silcrete	-	-	-	-	-	-	-	15	-	-	-	-	
54	Debris	Silcrete	-	-	-	-	-	-	-	10	-	-	-	-	
55	Debris	Silcrete	-	-	-	-	-	-	-	9	-	-	-	-	
56	Single Platform Core	Basalt	0	-	-	-	-	-		34	29	14			Unidirectional. LFS 23.
57	Distal Flake Fragment	Basalt	0	-	-	-	Feather	-	-	18	17	15	2	-	
58	Debris	Silcrete	-	-	-	-	-	-	-	14	-	-	-	-	
59	Debris	Silcrete	-	-	-	-	-	-	-	13	-	-	-	-	
60	Debris	Silcrete	-	-	-	-	-	-	-	12	-	-	-	-	
61	Distal Flake Fragment	Basalt	0	-	-	-	Feather	-	-	10	12	13	2	-	
62	Distal Flake Fragment	Basalt	0	-	-	-	Feather	-	-	12	11	4	2	-	
63	Medial Flake Fragment	Basalt	0	-	-	-	-	-	-	12	13	3	2	-	
64	Complete Flake	Quartz	0	Flacked	32	23	Feather	-	-	121	134	47	-		Also a multiple platform core LFS 45.
65	Multiple Platform Core	Basalt	0	-	-	-	-	-	-	42	35	23	-	-	Weathered. Multidirectional LFS 36

Table 37 OA12

ID No.	Type	Raw material	Cortex (%)	Platform type	Platform length (mm)	Platform width (mm)	Termination	Retouch type	Retouch location	Length (mm)	Width (mm)	Thickness (mm)	Flake scars	Tool type	Comment
1	Complete Flake	Crystal Quartz	5	Flacked	25	9	Feather	-	-	16	27	96	2	-	
2	Distal Flake Fragment	Quartz	0	-	-	-	Feather	-	-	10	19	6	2	-	

Table 38 OA13

ID No.	Type	Raw material	Cortex (%)	Platform type	Platform length (mm)	Platform width (mm)	Termination	Retouch type	Retouch location	Length (mm)	Width (mm)	Thickness (mm)	Flake scars	Tool type	Comment
1	Medial Flake Fragment	Quartz	0	-	-	-	-	-	-	15	10	4	-	-	