#### AXE-MAKING AND AXE DISTRIBUTION FROM TWO QUARRIES IN EAST AUSTRALIA

VOLUME 2

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#### **VOLUME TWO**

#### TABLES

#### Chapter 2

Table 2.1	Output of the production trajectory classified by symmetry2-	·1
Table 2.2	Output of the production trajectory classified by distribution2-	·2

### Chapter 3

Table 3.1   Axes quarries in NSW	2-3
Table 3.2    Size of axe quarries in NSW	2-4
Table 3.3 Distribution of McBryde's grouping of axes in the Wilcannia area and Currabubula	2-5
Table 3.4 Australian Museum axes from tribal areas around Gulgong and         Warren	2-6
Table 3.5 Stone axes from Warren district and Lower Macquarie River in theAustralianMuseum	2-8

Table	4.1	Attributes on flakes	2-9
Table	4.2	Surface surveys at Gulgong and Warren	.2-10
Table	4.3	Gulgong: Transect stone count	.2-11
Table	4.4	Gulgong: Transect #12 stone count	.2-12
Table	4.5	Gulgong: Stone density along transects	.2-13
Table	4.6	Warren: Rock outcrops along transects	2-14
Table	4.7	Warren: Axe preforms along transects	2-15
Table	4.8	Warren: Flake scatters along transects	.2-16
Table	4.9	Warren: Hammerstones along transects	.2-17
Table	4.10	Warren: Grinding grooves along transects	.2-18
Table	4.11	Warren: Cores along transects	.2-19
Table	4.12	Gulgong: Surface stone density per square metre	.2-20
Table	4.13	Warren: Surface stone density per square metre	.2-21
Table	4.14	Excavations at Gulgong and Warren	.2-24

Table 4.15 Gulgong: Stone from excavation at rock outcrops 22 and 25	.2-25
Table 4.16 Gulgong: Archaeological features recorded on stone in GFM1	.2-26
Table 4.17 Gulgong: Stone attributes recorded from excavation in GFM1	.2-27
Table 4.18 Gulgong: GFM1 stone greater than 20mm length from 4 squares asworked or not worked: summary from Table 4.17	.2-28
Table 4.19 Gulgong: GFM1 flake LWT measures	2-29
Table 4.20 Gulgong: summary of GFM1 flake LWT measures	2-30
Table 4.21Gulgong: GFM1 stone greater than 20mm length from 4 squares in classes	.2-31
Table 4.22       Gulgong: GFM1 flake size in 3 categories	.2-32
Table 4.23 Gulgong: GFM1 squares density of stone in cubic metres	.2-33
Table 4.24 Gulgong: GFM1 square 4C stone by weight in kilos:Greater than 20mm length compared with less than 20mm length	2-34

Table 5.1 Axes from the Gulgong and Warren areas at the Australian Museum2-33
Table 5.2 Summary of preforms recorded where maximum measures are greater than axial measures at Gulgong and Warren
Table 5.3 Symmetry in preforms from all transects (A, B, C) at Gulgong by the stages of reduction
Table 5.4 Symmetry in preforms on transects at Warren by the stages of reduction2-38
Table 5.5 Symmetry in all preforms from Gulgong by the stages of reduction2-39
Table 5.6 Symmetry in all preforms from Warren by the stages of reduction2-4
Table 5.7 Edge damage and mass removal at Gulgong in symmetry and stages of reduction2-4
Table 5.8 Edge damage and mass removal at Warren in symmetry         and stages of reduction

Table 6.1	Tests used in rock mechanics research suitable for evaluating the selection of stone for axes	2-43
Table 6.2	Measures of rock mechanics on raw material for axe making	.2-44
Table 6.3	Raw material type found at axe quarries in east Australia	.2-44
Table 6.4	Ranking of rock outcrops at Gulgong by stoneworkers in prehistory:	

summary of Table 6.5	2-46
Table 6.5 Rock outcrop survey of Gulgong Areas A, B, C, D	2-47
Table 6.6 Extraction and archaeological material at Gulgong rock         outcrops	2-48
Table 6.7 Fine-grained rock outcrops in flake mound Area B.X atGulgong: summary of Table 6.8	2-49
Table 6.8 Rock outcrops in flake mound Area B.X at Gulgong	2-50
Table 6.9 Rock outcrops along transects at Warren	2-51
Table 6.10         Flake scatters along transects at Warren	2-52
Table 6.11 Flake scatters along four transects at Warren	2-53
Table 6.12 Random metre square surface stone density atWarren: summary of 6.13	2-54
Table 6.13 Random metre square stone density at Warren	2-55

Table 7.1 Characteristic flakes found in axe reduction stages
Table 7.2 Features recorded on preforms from Gulgong and Warren
Table 7.3 Attributes recorded for archaeological material from the excavation2-60
Table 7.4 Experimental stone reduction at Gulgong2-61
Table 7.5 Attributes recorded in the experimental stone reduction of Gulgong material at UNE
Table 7.6 Experimental trials on Gulgong material at UNE2-63
Table 7.7 Events recorded in experimental trials2-65
Table 7.8 Experimental trials for extraction of raw material at Gulgong2-66
Table 7.9 Experimental extraction of raw materal at Warren commercial quarry2-67
Table 7.10 Experimental trials on raw material at Gulgong of stone detachedabove 80mm in length
Table 7.11 Shape of flakes in the experimental axe making on Gulgong material2-69
Table 7.12 Experimental stone flakes classified by shape for the total of events in each experiment
Table 7.13 Large flakes and blocks (>180mm) from experimental trials with material from Gulgong2-72

Table 7.14 Experimental stone flakes from extraction to the blocking out stage of

reduction2-73
Table 7.15 Experimental stone flakes from the blocking out stage of reduction2-74
Table 7.16 Experimental stone flakes from the shaping stage of reduction
Table 7.17 Experimental stone flakes from the thinning stage of reduction2-76
Table 7.18 Experimental flaking of Gulgong stone: Squat and thick flakes2-77
Table 7.19 Experimental stone from Gulgong: Squat and thick flakes in the      extraction    stage
Table 7.20 Experimental stone from Gulgong: Squat and thick flakes from the blocking out stage of reduction
Table 7.21 Experimental stone from Gulgong: Squat and thick flakes in the shaping stage of reduction
Table 7.22 Hinge fractures by reduction stage in experimental trials on materialfrom Gulgong
Table 7.23 Hinge flake measures from experimental trials with Gulgong raw      material
Table 7.24Reason for abandonment of preforms at Gulgong and Warren2-83
Table 7.25 Reason for abandonment of axe preforms by stages of reduction, along transects in Areas A,B and C at Gulgong2-84
Table 7.26 Reason for abandonment of axe preforms by stage of reduction along transects at Warren, Little Mount
Table 7.27Summary of stepped and hinge fractures on preforms from Gulgong and Warren
Table 7.28 Number of hinge fractures on preforms from all recording at Gulgong and Warren
Table 7.29 Hinge flakes count by the stages of reduction, recorded from transects at Gulgong (Areas A,B,C) and at Warren2-88
Table 7.30 Percentage of hinge flakes grouped by stages of reduction from transects at Gulgong on Areas A,B,C and at Little Mount, Warren2-89
Table 7.31    Flaking control features from GFM12-90
Table 7.32 Comparison of square GFM1 2C with total of GFM12-91
Table 7.33 Hinged flakes from the 10x5 metre surface area at Gulgong2-92

Table 8.1	Tool kits in relation to the	ne production trajectory	and use-life for stone axes2-93
Table 8.2	Hammerstones from	Gulgong in total	2-94

Table 8.3 I	Hammerstones from transects at Gulgong	2-95
Table 8.4	Hammerstones from Warren in total	2-96
Table 8.5 I	Hammerstones from transects at Warren	2-97
Table 8.6 Su hamme	mmary of all hammerstones from Gulgong and Warren compared to erstones from the transects	.2-98
Table 8.7	Battering on hamerstones	.2-99
Table 8.8 H	Hammerstones compared with axe preforms	2-100
Table 8.9 I	Large hammerstones recorded at Gulgong	2-101
Table 8.10	Hammerstones grouped by the weights	2-102
Table 8.11	Trajectory of all hammerstones recorded at Gulgong	2-103
Table 8.12	Trajectory of all hammerstones recorded at Warren	2-104
Table 8.13 H produc	Hammerstones from transects by type of material and point in the         ction       trajectory	2-105

#### FIGURES

### Chapter 2

Figure 2.1	Production t	trajectory	for	axes			 2-106
Figure 2.2	Production tra	ijectory for	axe	es from	the	quarry	 2-107

Figure 3.1 Stone axe quarries and axe distribution in tribal areas2-108
Figure 3.2 Stone axe distribution and quarries in south-east Australia2-109
Figure 3.3 Stone axe quarries and axe distribution in Wilcannia area and Currabubula
Figure 3.4 Stone axe collections housed in the Australian Museum2-111
Figure 3.5 Ground and unground axes in the Australian Museum from the Warren area2-112
Figure 3.6 Axes on pebbles in the Australian Museum from the Warren area2-113
Figure 3.7 Edge ground axes of hard rock material from the Warren area2-114
Figure 3.8 Grinding grooves at Little Mount, Warren2-11:

Figure 3.9 Axes from the Gulgong area2-116
Figure 3.10 Axes on cobbles from the Gulgong area2-117
Figure 3.11 Archaeological material around axe quarries at Gulgong and Warren2-118
Figure 3.12 Stone axe quarries at Warren: Mount Harris; Mount Foster; Little Mount2-119
Figure 3.13 Axe of granitic material2-120
Figure 3.14 Axes of Warren material from near Macquarie Marshes, Western NSW2-121
Figure 3.15 Edge ground axe of Warren material from 'Wirroona' property at Carinda, Western NSW2-122
Figure 3.16 Flakes of Warren material from 'Wirroona' property at Carinda, Western NSW2-123
Figure 3.17 Edge ground axe of hard rock with anvil pitting from 'Wirroona' property at Carinda, Western NSW2-124
Figure 3.18 Discoid axe from Gongolgon, Western NSW2-125
Figure 3.19 Whetstones and edge grinders in the Australian Museum found in the Warren district from: (a) New Year Range; and (b) Yambacoona2-126
Figure 3.20 Cairnstones on Little Mount, Warren2-127
Figure 3.21 'Twenty stone' near the Warren Mounts2-128
Figure 3.22 Edge ground and symmetrically shaped axes of Warren material from the Dubbo-Narromine area, NSW2-129
Figure 3.23 Tia, near Walcha, NSW: (a) axe quarry; (b) axe preforms on site2-130

Figure 4.	1 Gulgong quarry2-131
Figure 4.	2 Warren, Little Mount quarry2-132
Figure 4.	3 Blocks of axe material2-133
Figure 4.	4 Preform for axe making2-134
Figure 4.	5 Flakes from axe making2-135
Figure 4.6	Gulgong quarry: contour survey of Areas A, B, and C with transects2-136
Figure 4.	7 Little Mount axe quarry, Warren2-137
Figure 4.8	3 Surface on transects at Gulgong and Warren2-138
Figure 4.9	Survey of surface by random metre squares2-139

Figure 4.10 Rock outcrops at Gulgong and Warren	2-140
Figure 4.11 Survey area for flakes eroding from the hillside at Warren	2-141
Figure 4.12 Warren test pits	2-142
Figure 4.13 Gulgong test pits in surface hollow	2-143
Figure 4.14 Gulgong anvil stone excavation	2-144
Figure 4.15 Gulgong extraction face excavation	2-145
Figure 4.16 Gulgong quarry: contoured survey of Areas A, B, C, and D	2-146
Figure 4.17 Gulgong quarry: Areas A, B, C, with rock outcrops and flake mounds	2-147
Figure 4.18 Gulgong quarry hillslope profile along transect #10	2-148
Figure 4.19 Gulgong quarry showing site Areas A, B, C, D	2-149
Figure 4.20 Gulgong quarry: Areas A, B, C, with rock outcrops, flake mounds and transects	2-150
Figure 4.21 Gulgong quarry surface density of stone contoured from transect data	2-151
Figure 4.22 Gulgong quarry surface stone in Area B.X	2-152
Figure 4.23 Gulgong excavation at GFM1	2-153
Figure 4.24 Gulgong stone mounds GFM1 area gridded for excavation	2-154
Figure 4.25 Gulgong GFM1 square 1C excavation	2-155
Figure 4.26 Gulgong GFM1 square 2C excavation	2-156
Figure 4.27 Gulgong GFM1 square 4C excavation	2-157

.

Figure 5.1 Measures used in evaluating symmetry in shape on preforms from Gulgong and Warren	2-158
Figure 5.2 Preforms from Gulgong and Warren where symmetry can still be attained	.2-159
Figure 5.3 Preforms from Gulgong and Warren where not possible for shaping to symmetry	.2-160
Figure 5.4 Symmetrical shaped axes of Warren stone	2-161
Chapter 6	
Figure 6.1 Rock outcrops at Gulgong	2-162

Figure 6.2 Rock outcrops at Area B.X, Gulgong2-162
Figure 6.3 Gulgong: rock outcrops across the site2-164
Figure 6.4 Gulgong: rock outcrop in Area B.X2-165
Figure 6.5 Extraction and flaking on rock outcrops in Area B.X at Gulgong2-166
Figure 6.6 Coarse and fine grained raw material at Gulgong2-167
Figure 6.7 Rock outcrops and flake scatters at Little Mount, Warren2-16
Figure 6.8 Rock outcrops and excavation sites at Gulgong2-169
Figure 6.9 Raw material in fissured blocks at Warren2-170
Figure 6.10 Gulgong: base of extraction face EG42-17
Figure 6.11 Extraction from bedrock at Warren2-172

Figure 7.1 Axe preforms with transverse snap	2-173
Figure 7.2 Axe preforms with edge damage	2-174
Figure 7.3 Axe preforms with mass removal	2-175
Figure 7.4 Raw material flaw in Gulgong stone	2-176
Figure 7.5 Preforms and flakes with hinge fractures	2-177
Figure 7.6 PFA on flake	2-178
Figure 7.7 Reduction sequence for manufacturing at Gulgong and Warren	2-179
Figure 7.8 Flakes characteristic of the reduction sequence for Gulgong and Warren	2-180
Figure 7.9 Flake squat and thick	2-181
Figure 7.10 Flake long and thin	2-182
Figure 7.11 Experiment on extraction at Gulgong	2-183
Figure 7.12 Experiment on extraction at Warren commercial quarry	2-184
Figure 7.13 Experimental work at Gulgong	2-185
<ul><li>Figure 7.14 Experiment on knapping at UNE on Gulgong material:</li><li>(a) the team; and</li><li>(b) the work and set-up</li></ul>	2-186 2-187
Figure 7.15 Flaked material from experiment at UNE on Gulgong material	2-188

Figure 7.16 Experimental stone flakes from extraction to the blocking out stage of reduction2-189
Figure 7.17 Experimental stone flakes from the blocking out stage of reduction2-190
Figure 7.18 Experimental stone flakes from the shaping stage of reduction2-191
Figure 7.19 Experimental stone flakes from the thinning stage of reduction2-192
Figure 7.19A Angular block flakes produced during experiments for the various stages of reduction at Gulgong2-193
Figure 7.19B Flat thin flakes produced during experiments for the various stages of reduction at Warren2-194
Figure 7.20 Hinge flakes from knapping trials at UNE on Gulgong material2-195
Figure 7.21 Flake with PFA crushed2-196
Figure 7.22 Flakes from knapping trials at UNE on Gulgong material2-197
Figure 7.23 Flake features at Gulgong as a percentage of all preforms recorded2-198
Figure 7.24 Flake features at Warren as a percentage of all preforms recorded2-199

Figure 8.1 Battered edges on hammerstones	2-200
Figure 8.2 Irregular shape on hammerstones	2-201
Figure 8.3 Recognition criterion for hammerstones: battering along margins and at ends	2-202
Figure 8.4 Recognition criterion for hammerstones: heavy reduction damage	2-203
Figure 8.5 Battering at 1, 2, or 3 points on hammerstones	2-204
Figure 8.6 Hammerstones from Warren rounded by use	2-206
Figure 8.7 Reduction sequence for Gulgong revised to include the trajectory for hammerstones	2-207
Figure 8.8 Reduction sequence for Warren revised to include the trajectory for hammerstones	2-208
Figure 8.9 Hammerstones from Gulgong adopted from stages of reduction	2-209
Figure 8.10 Hammerstones from Warren adopted from stages of reduction	2-210
Figure 8.11 Hammerstones from cores at Warren	2-211
Figure 8.12 Hammerstone from Gulgong of type of material not used for axe making	2-212
Figure 8.13 Hammerstone from excavation at Gulgong	2-213

Figure 91	Major ide	ntified axe	trading b	locs in	eastern	Australia	2-214
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Table 2.1	Output of the production trajectory classified by symmetry2	- 1
Table 2.2	Output of the production trajectory classified by distribution2	-2

State of symmetry	Attained	Lost and not attainable	Possible but not attained
Product use	Into exchange system	Into local distribution	Into local distribution
		Hammerstone	Hammerstone
			Rejuvenation to symmetry and in the exchange system

Table 2.1	Output	of the	production	trajectory	classified	by s	symmetry
	Output	or the	production	in ajector y	ciubbilicu	~ J \	Jy manager y

Distribution	Into exchange system;	Into local distribution	Hammerstone
	Rejuvenation to symmetry and in the exchange system		
State of symmetry	Attained	Lost and not attainable	Lost and not attainable
	Possible but not attained	Possible but not attained	Possible but not attained

### Table 2.2 Output of the production trajectory classified by distribution

Table 3.1   Axes quarries in NSW	2-3
Table 3.2    Size of axe quarries in NSW	2-4
Table 3.3 Distribution of McBryde's grouping of axes in the Wilcannia area and Currabubula.	2-5
Table 3.4 Australian Museum axes from tribal areas around Gulgong and      Warren	2-6
Table 3.5 Stone axes from Warren district and Lower Macquarie River in theAustralianMuseum	2-8

## Table 3.1 Axes quarries in NSW

Quarry	Raw material type
Gulgong	actinolitic schist
Lowes Mount	amphibolised metabasalt
Cudgegong River, Tallawang	'basalt'
Arthurville	andesitic greywacke
Tumut	cambrian greenstone
Mount Oberon	metavolcanic
Warren: Mount Harris; Mount Foster; Little Mount	quartz feldspar porphyry
Tia	laminated amphibolite
Gragin Peak	metamorphosed bole
Tweed volcano	'volcanic material'
Moore Creek	andesitic greywacke
Salisbury Creek	siltstone
Aberfoyle	siltstone
Brewarrina	quartzite
Tibooburra	hornsfels

Table	3.2	Size	of	axe	quarries	in	NSW

Quarry	Surface m2	Depth cm
Moore Creek	1500	<100
Gulgong	800	>50
Salisbury Court	300	0
Tia	800	<50
Brewarrina	1000	0
Arthurville	700	0
Lowes Mount	4000	<20
Little Mount	N/A	0

McBryde group	Number of axes	Number in Wilcannia area	Number in Currabubula area
2 A	25	2	5
2B Moore Creek	87	4	11
2C	7	1	0
3B	17	1	2
3C	11	0	1
5 A	38	2	1
5B	16	0	2
5D	4	3	0
5E	11	0	1
8 A	14	2	0
9	9	11	1
10 Gulgong	6	1	3
UG	63	10	2
Total %	<b>308</b> 100	<b>37</b> 12	<b>2</b> 9 9

Table 3.3Distribution of McBryde's grouping of axes inthe Wilcannia area and Currabubula

Table 3.4AustralaroundGulgongar	ian Museum axes Id Warren	from tribal areas
Tribal area around Gulgong quarry	Axe location	Number of axes
north part of Wiradjuri	Dunedoo Cobborah Talbragar River Macquarie River County Lincoln Dubbo Hill End Cudgegong River Oxley Mudgee/Cooyal Arthurville Geurie Molong Orange Blayney	$ \begin{array}{c} 9\\1\\5\\10\\4\\9\\1\\1\\1\\1\\1\\1\\1\\2\\1\\1\\1\\1\\1\\1\\1\\1\\1\\1\\1$
south part of Kamilaroi	Uarbry Currabubula Breeza Quirindi Willow Tree Gunnedah Boggabri Mullaley Carrol Gap Curlewis Nemingha	$ \begin{array}{c} 3 \\ 43 \\ 6 \\ 5 \\ 11 \\ 6 \\ 2 \\ 1 \\ 1 \\ 1 \end{array} $
Geawegal/ Wonnarua	Murrundi Merriwa	4 1
Gulgong area total		138
Tribal area around Warren		
north and east of Wongaibon	Narromine Nyngan	6 3

.

	Coolabah Tullamore Fifield	1 5 2
Ngemba	Bogan River	18
Weilwan	Lower Macquarie R Brewarrina	22 1
Kawambarai	Warren district	55
Warren area total		113
Total		251

Table 3.5Stone axes from Warren district and LowerMacquarieRiver in the Australian Museum

Raw mate	rial Warren stone(QFP)	Other hard rock	Total
edge ground	d 18	35	53
% edge grou	ınd 53	81	69
not ground	16	8	24
% not groun	ed 47	19	31
Total	34	43	77
% of total	44	56	100

Table 4.1   Attributes on flakes	2-9
Table 4.2 Surface surveys at Gulgong and Warren	2-10
Table 4.3    Gulgong: Transect stone count	2-11
Table 4.4    Gulgong: Transect #12 stone count	2-12
Table 4.5    Gulgong: Stone density along transects	2-13
Table 4.6    Warren: Rock outcrops along transects	2-14
Table 4.7    Warren: Axe preforms along transects	2-15
Table 4.8    Warren: Flake scatters along transects	2-16
Table 4.9    Warren: Hammerstones along transects	2-17
Table 4.10 Warren: Grinding grooves along transects	2-18
Table 4.11 Warren: Cores along transects	2-19
Table 4.12 Gulgong: Surface stone density per square metre	2-20
Table 4.13    Warren: Surface stone density per square metre	2-21
Table 4.14 Excavations at Gulgong and Warren	2-24
Table 4.15       Gulgong: Stone from excavation at rock outcrops 22 and 25	2-25
Table 4.16 Gulgong: Archaeological features recorded on stone in GFM1	2-26
Table 4.17 Gulgong: Stone attributes recorded from excavation in GFM1	2-27
Table 4.18 Gulgong: GFM1 stone greater than 20mm length from 4 squares asworked or not worked: summary from Table 4.17	2-28
Table 4.19    Gulgong:    GFM1    flake    LWT    measures	2-29
Table 4.20 Gulgong: summary of GFM1 flake LWT measures	2-30
Table 4.21Gulgong: GFM1 stone greater than 20mm length from 4 squares in classes.	2-31
Table 4.22    Gulgong: GFM1 flake size in 3 categories	2-32
Table 4.23 Gulgong: GFM1 squares density of stone in cubic metres	2-33
Table 4.24 Gulgong: GFM1 square 4C stone by weight in kilos: Greater than 20mm length compared with less than 20mm length	2-34

# 4.1 Attributes on flakes

Feature		1		2		3	4	5	6	7	8	9	10	11	12
Flake size L	*		*		*		*			*					
Size classes								*	*			*	*	*	
LWT flakes	*		*		*		*			*		*	*	*	
PFA crushed	*		*							*				*	
PFA width			*							*			!	*	
Angular/Flat	*		*		*		*			*					1
Hinge	*		*							*					
Step/Hinge											*		;		*
Ripples	*		*						•	*					1
Flaws			*								*				*
Small stone	*		*				•		1	i <b>*</b>	l			*	
	Ī					1					1				

Column	Data source
1	Gulgong Experimental Archaeology
2	Gulgong Flake Mound Excavation
3	Gulgong Extraction Face Excavation
4	Gulgong Anvil Excavation
5	Gulgong Surface Transects
6	Gulgong Random Squares
7	Gulgong Small Flake Surface Survey in10x5m Square
88	Gulgong Axe Preforms and Hammerstones
<u> </u>	Warren Transects
10	Warren Random Squares
11	Warren Surface Flakes
12	Warren Axes and Hammerstones

.

## Table 4.2 Surface surveys at Gulgong and Warren

Type of survey	Quarry	Survey
1 Random transects for site description	Gulgong and Warren	SGW1
2 Random squares for density	SGW2	
3 Output of reduction sequence and in extraction area	Gulgong and Warren	SGW3
4 Raw material at rock outcrops	Gulgong and Warren	SGW4
5 in extraction area	Gulgong and Warren	SG5
6 and 7 Small flake study area	Gulgong and Warren	SGW6 SGW7

Stone size L	>250mm	<250mm	<80mm	<40mm	Total						
Station/square	Э										
Ga50at12.3m	1	7	121	20	149						
Ga50at15.3m	17	37	18	0	72						
Ga50at31.3m	10	4	0	0	14						
Ga50at35.6m	10	12	4	0	26						
Ga60at12.2m	3	78	59	15	155						
Ga60at15.5m	0	90	44	17	151						
Ga50at19.3m	15	39	0	0	54						
Ga30at28.8m	6	66	160	35	267						
Ga70at17.1m	12	66	10	3	91						
Ga60at20.8m	5	160	9	0	174						
Ga60at29.9m	13	33	3	0	49						
Ga60at36.8m	20	16	2	0	38						
Ga70at12m	9	157	64	13	243						
Ga70at19.5m	23	37	5	0	65						
Ga70at24m	31	19	2	0	52						
Ga10at20.3m	7	14	4	6	31						
Ga10at26.3m	3	11	5	0	19						
Ga10at28.8m	8	19	6	0	33						
Ga30at10.1m	1	77.	98	215	391						
Ga30at17.3m	3	38	150	446	637						
Ga30at22.4m	11	76	0	0	87						
			1								
Total	208	1056	764	770	2798						
Total %	7.4	37.8	27.3	27.5	100						
			1								
n=21		5 									
Stone size by	tone size by length:										
>250mm	250mm o	r more th	an 250m	m							
<250mm	less than	250mm	or 80mm	or more							
<80mm	less than	80mm or	more tha	n 40mm							
<40mm	less than	40mm									

# 4.3 Gulgong: Transect stone count

Flake Mound Summary Sheet for Transect #12													
Total Stone in eac	h metre	e square	2										
MetreSquare	a	b	с	d	е								
TransectMetre													
73	9	10	14	17	20								
74	5	5	15	23	12								
75	6	9	6	17	21								
76	9	8	10	39	26								
77	10	13	22	21	0								
78	0	0	0	0	22								
79	20	9	6	39	32								
80	28	20	5	0	0								
81	16	14	2	0	0								
82	13	20	14	12	7								
83	18	17	22	18	19								
84	29	30	7	27	32								
85	12	7	15	40	27								
86	33	23	17	16	15								
87	38	35	100	32	18								
		1	1										
Total	246	220	255	301	251	1273							

## 4.4 Gulgong: Transect #12 stone count

# 4.5 Gulgong: Stone density along transects

Transec	cl# #1	1	2	#3	# 4	# 5	# 6	#7/8	# 9	#10	#11	#12	#13	#14	#15	#16	#17	#18/19	#20
Transo	ctMetres	1			1				1							1			
East	100				A set there are a set of								1	26					
	95							1	!				1	39	1	1			
	90				1				1	26				12				:	
	85				1				1	26			1	3		1			1
	80									34				4	1				
	75								1	33		1		15					
	70								1	56				13	1	1	1	1	
	65'					(			1	56			1	1 10	1	1	1		
	C 0								i i	24				19	3	1			
	5.5									23			1	9	6	1			1
1	50						1		1	32		i .	i	22	1 10	2	3		1
	45								1	36	1		1	23	8	10	7		i
	40						1			22		2	1	30	12	2	4		
	35									23	!	1	1	37	14	7	10		1
	30	:				•	1		,	1 14	4	5	1	29	18	9	11		
	25	;				3	,	3	· · · · · ·	29	1 6	1 7	2	35	20	3	9		i
	20				1	8	4	11		11	14	11	3	54	42	3	12	, , ,	1
	1.5	1			1	12	4	16	5	20	7	28	8	24	18	10	9		
	10	10		3	8	16	13	4		39	22	41	19	23	30	19	19		
	5	10	4	10	4	32	28	31	+	57	26	108	12	61	35	23	17		
Transor	cinaseline				· · · · ·					1					1	1	<u>''</u>		·
Most	1	20.	6	13	10	40	31	5.5		44	36	137	21	50	42	35	23	14	
11051	10	7	6	14	10	41	30	37		31	74	150	43	41	38	37	57	1.4	
	1.5	7		7	10	48	22	33		58	53	57	41	52	40	51	22	24	
	- 13		e		10	40	27	52	· · · · · · · · · · · · · · · · · · ·	52	37	35	27	113	61	60	12		
	20				10	40	21	22		55	15	70	117	100	55	42	10	24	
	25				10		21		<u>.</u>	1 44	20	1 90	95	100	42	42	50	23	
	301	5			10	41	20			- 44	30	09	107	100	43	30	52	23	
	35	- 4		14	15	30	19	20	· · · · · · · · · · · · · · · · · · ·	30	110	65	137	109	67	04	70	26	8
	40	- 6	6	14	15	39	21	46		/1	199	61	170	103	58	51	/9	26	12
	45	0.	5	4	6	13	10	49	· · · · · · · · · · · · · · · · · · ·	89	162	86	112	65	42	37	84	18	16
	50	10	4	4	6	14	10	55		150	377	89	175	56	31	23	102	19	10
	55	50	1	13	12	50		40		212	209	/ 5	94	99	79	67	49	52	
	60	25	22	12	12	50	20	51	1	239	304	202	85	49	59	56	87	53	55
	65	25	22	22	13	19	13	37		460	128	222	118	88	37	34	56	/9	58
	70	50	C	23	13	19	12	26		246	156	2/9	114	1/0	49	39	23	79	59
I	75	20	1	16	5	25	10	24		1120	220	298	109	406	212	108	30	96	37
	80		1	16	. 5	25	6	18	-	1 1545	360	416	125	988	331	4/	87	96	38
	85		1	6	5	39	7	21	<u> </u>	179	142	442	170	631	193	301	72	37	53
{	90		1.	7	21	40	5	14		110	96	434	147	506	87	112	70	37	54
	9.5		1	5	21	2.4	4	17	10	17	80	379	82	361	77	89	123	46	80
	100		1	5	30	25	3	12	10	39	63	178	118	154	94	97	102	461	80
	105					23	2	9	1 10	52	67	1	98	96	71	62	76	82	38
	110					23	6	8	10	84	21		75	43	31	23	30	83	38
	115					19	8	7	25	79	12		112	60	42	34	11	371	38
	120					19	4	8	25	50	8		76	41	37	49	6	37	38
	125					2	2	11	25	9	6		44	42	22	37	3	55	25
	130					2	1	9	25	7	27	l 	18	27	18	12	14	55	25
	135					0	1	5	25	14	41		8	18	6	2	2	32	14
	140					0	1	4	25	13	17		7	12	2	2	1	33	15
	145					0		1	25	5	6		5	3	2	2	1	11	13
	150					1		1	25	4	3		8	16	1		l	11	14
	155							·	<u>.</u>	0	0		5		<u> </u>			9	4
	160								1	0	2		5	2		1		10	5
	165									5			19	1	<u> </u>	1		6	4
	170						· · · · · · · · · · · · · · · · · · ·			5			20		l	I		5	5
	175								1	24			10		<u> </u>	l		91	4
	180								-	24			1					10	3
	185									35						i		51	2
	190									35								2 i	1
	195									36			, i					i	1
	200									36						1		1	1
	205									2.5								i	1
	210									25						1		1	
• • • • • • • • • • • • • • • • • • • •																			

# 4.6 Warren: Rock outcrops along transects

ROCK OUTCROPS	S								
TransectMetres	0-50	51-100	101-150	151-200	201-250	251-300	301-350	351-400	Total
Transect#									
# 1			1						1
#2			2	2	3				7
#3		1	1	1	2	·			5
#4	2			3		1	The state of the second st		6
#5	2	2	5	1	1	2	2	1	16
#6	1	1	3	1	3	1	2		12
#7	1	1	3	2	2	2	2	6	19
#8	2	1		2			2		7
#9	1	2	2	1	1	2		3	12
# <b>1</b> 0	2	3	2	4	2	3	3		19
#11		5	3	2	3	2	2	1	. 18
#12		1	1	1	1	1	1		6
#13	2	1	2	3	2	2	2	1	15
#14		3	3	2	3	2			13
# <b>1</b> 5			2	1	1	1			5
Total	13	21	30	26	24	19	16	12	161

# 4.7 Warren: Axe preforms along transects

PREFORMS								1	
TransectMetres	0-50	51-100	101-150	151-200	201-250	251-300	301-350	351-400	Total
Transect									
#1					2				2
#2			3	2	1				6
#3				5	3				8
# 4	1		4	1	10	3			19
# 5	4	5	1	1	8	1			20
#6	3	3	8	1	1	1	1		18
#7				2	2	and the second sec	1	1	6
# 8	1	4	4	12	6	5	4	5	41
#9			1		2	1	1	3	8
#10					3	2	4	2	11
#11					1	5	118 MAX 7 1 1 1 1		. 6
#12		3	2	3	2	1	5	1	17
#13	3		5	5	1	2		5 AAA	16
#14			2	2					4
#15			1	2					3
Total	12	15	31	36	42	21	16	12	185

# 4.8 Warren: Flake scatters along transects

FLAKE SCATTER	IS								
TransectMetres	0-50	51-100	101-150	151-200	201-250	251-300	301-350	351-400	Total
Transect								``	
# 1			1						1
#2			2	2	2				6
#3			2	1					3
#4	1					1	1		2
#5	1	1	3		1	1			7
#6			1	2			2		5
# 7		2	2		1		1	1	7
#8			1	1					2
# 9						1		2	3
#10	1	1	1		2		2		7
#11		2					2		· 4
#12	1	1					1		3
#13	1	1	1	2	1	2	2		10
#14		1	1	2	3				7
#15				2	1				3
Total	5	9	15	12	10	5	11	3	70

## 4.9 Warren: Hammerstones along transects

HAMMERSTONES	3								
TransectMetres	0-50	51-100	101-150	151-200	201-250	251-300	301-350	351-400	Total
Transect									
#1									
#2									
#3									
#4				1					1
#5						1			1
#6								1	1
#7		1	1						2
#8			1						1
#9	· · · · · · · · · · · · · · · · · · ·				1	• • • • •		1	2
#10							1	•••=•••••••••••••••••••••••••••••••••••	1
#11			1	2		1			. 4
#12	1								
#13			1	2		1			4
#14	• • • • • • • • • • • • • • • • • • •			1		•			1
#15	•		1						1
Total	0	1	5	6	1	3	1	2	19

## 4.10 Warren: Grinding grooves along transects

GRINDING GROOV	VES	1							
TransectMetres	0-50	51-100	101-150	151-200	201-250	251-300	301-350	351-400	Total
Transect									
#1			1						1
#2					And the second sec			······································	0
#3			1		1				2
#4			1	2	1				4
#5		1	1	1					3
#6		3	1	1			1		6
#7					2	1			3
#8	1		1	1	3		1		6
#9						2			2
#10				2	1		1		4
#11		3							· 3
#12			1						1
#13		1							1
#14									0
#15			1						1
Total	0	8	8	7	8	3	3		37

## 4.11 Warren: Cores along transects

CORES									
TransectMetres	0-50	51-100	101-150	151-200	201-250	251-300	301-350	351-400	Total
Transect									
#1					1	}			0
#2									0
#3									0
#4									0
#5					1				1
#6									C
#7		1							1
#8	!								C
#9									C
#10			1			1			2
#11									· C
#12							1		1
#13									C
#14									C
#15						1			1
Total	0	1	1	0	1	2	1	0	6

# 4.12 Gulgong: Surface stone density per square metre

Transact			* 7		1 # 4	#5	1#6	#7/8		#10	#11	#12	#13	#14	:#15	1#16	1017	#18/10	#20
Transect	Hotros					1								<u>.</u>	•		1	1-10/19	
Fact	100								-+				1	1.2			1		
Last	95					·	l		• • · · · · · · · · · · · · · · · · · ·		,			1,6				· · · · · · · · · · · · · · · · · · ·	
	90;	÷								1.1	•			0.5	1			•	•
	85								1	1.1			1	0.1					
	80				1.					1 3				0.2					
	75	-								1.3			1	0.6	i				
	70									2.2				0.5			1		
	65				L		l			2.2				04		1			
	60									1		:	·	0.8	<u>C.1</u>		1		
	55	· · ·								0.9				04	0.2	2		<u>.</u>	
İ	50			i	<u> </u>					1.3	•			0.9	0.4	0.1	0.1	·	
	45									1.4			<u> </u>	0.9	0 3	04	0 2	i	·
	40									<u> </u>				1.2	0.	0.1	0.2	·····	
	35				· · · · · · · · · · · · · · · · · · ·					0.9		0	<u> </u>	1.5	0.6	0.3	0.4		
	30									0.6		0.2	0.1	1.4	0.7	0.4	0.4		
	25					0.1		0.			0	0.3	0.1	1.4	0.6	0.1	0.4	·	
	20				· ·	0.3	0.2	0.4		0.4	0.0	0.4	0.1	1 1		0.1	J.5		
	15	0.4		0.1	0.1	0.5	0.2	1-		1.6	0.0	1.1	0.3	1		0.4	3.4	<u>+</u> .	
		0.4	0.2	0.1	04	1 2	11		,	2.3		A 3	0.5	2.4	1.4	0 0	3.8		
Transport		0.4	0.2	0.4	0.2	1.5		<u> </u>	·		'		0.0		·	0.5			
Mact	1	0.8	0.2	0.6	0.4	1.6	12	2 2	······	1.9	1.4	5.5	0.8	2	1 7	1 1 4	0.0	0.6	0.2
irest	10	0.0	0.2	0.5	0.4	1.6	1.2	1 6		1 2		6.4	1 7	16		1.5	2.3	0.0	0.3
	15	0.3	0.2	0.3	0.4	1.0	0.9	1	·	2 3	2 1	2.3	17	21	1.6	2			0.3
·	20	C.2	0.2	0.3	04	1.9	1.1	2.1	·	2.1	1 5	5 1.4	. 1.1	4.5	2.4	2.4	0.5	· · · · · ·	0.5
	25	0.2	0.2	0.1	0.4	1.6	0.8	0.9	)	2.2	0.6	2.9	. 47	4	2.2	1 17	0.8	0.9:	0.5
	301	0.2	0.3	0.1	0.4	1.6	0.8	1.5	P 1	1.8	1.5	3.6	3.4	3.5	1.7	1.6	2.1	0.9,	0.3
	35	0.6!	0.3	0.5	0.6	1.5	0.8	1 1		23	4 6	3.4	5.5	7.6	2.7	2.6	2.7	1	0.3
1	40	0.2	0.2	0.5	0.6	1.5	0.8	1.8		2.8	3	2 4	6.8	4	2.3	. 2	. 3.2	· 1·	0.5
	45	0	0.2	0.2	0.2	05	0.4	2		3.6	6.5	3 4	4 5	2 6	: 7	1.5	3 4	0.7	0.6
	50	0.4	0.2	0.2	0.2	0.5	0.4	2.2		6	15.1	3.6	7	2 2	1 2	0.9		0.8	0.4
	55	2	0 1	0.5	0.5	2	0.9	1.5		10.9	:1.2	3	3 3	4	3 2	2.6	2	2 1	2.2
	60	1	0.9	0.5	0.5	2	0.8	2		9.6	12.2	9.1	34	2	24	2.2	3 5	2.1	2.2
	65:	1 :	0.9	0.9	0.5	0.8	0.5	1.5		19.4	5.1	3.9	4.7	3 5	1.5	14	2.2	3.2	2.3
	70:	2	0	0.9	0.5	0.8	0.5	1 1		93	5.2	11.2	4 6	6.8		1 6	0.9	32	2.3
	75	8.0	0.1	0.6	0.2	1	0.4			44.8	9.8	11.9	44	16.2	8.5	43	12	3.8	1.5
	30		0.1	0.6	0 2	1	0.2	07		61.8	14.4	16 6	5	39.5	32	1.9		3.8	15
	35		0.1	0.2	0.2	1.6	0.2	0.8				17 /	6 5	20.2		12.1			2.1
	90:		0.1	0.2	0.8	1.0	0.2	0.0	~ ~ ~		3.0		2 3		3.5	4 5			
	95		0.1	0.2	1.0	1	0.2	0.7	0.4	1.6	2.0	7 1				3.0	9	1.0	
	105		0.1	0.2	1.2	1	0.1	0.0	0.4	21	2.3		39	3.8	2.9	25		1.0	1.5
	110.					1	0.2	0.4	0.4-	2.4	0.8		3	1 7	• 2	0.9		3 3	1.5
	115					0.8	0.3	0.3		3.2	2.5		4.5	2.4	1.7	1 4	. 4	1.5	1.5
	120	:				C.8	0.2	0.4	1	2	0.3		31	1.6	1 5	2	0.2	1 5	1 5
	125					0.1	0.1	0.4	1.	0.4	0.2		1.8	1.7	0.9	1.6	I C 1	2.2	1
	1301	1			1	0.1	0.1	04	1	03	1.1		0.7		07	0 5	0.6	2.2	!
	135					0	0.1	0.2	1	0.6	1.6		0.3		0.2	0.1	0.1	1.3	0.6
	140:					0	0.1	0 2	1	05	0.7		0.3		01	0 1	0.1	1.3	0.6
	145					0		0 1	1.	0 2	C 2		0.2		01	0.1	0.1	0.4	0.6
I	150	1				0.1		0.1	1	0.2	C.1		0.3		01			0.4	0.6
	155										0		0.2					0.4	0.2
L	160										0.1	:	0.2			·		0.41	0.2
	165									0.2			0.8				•	0.2	0.2
	170									C.2			0.8				·	0.2	0.2
	175									1		<u></u>	04					0.4	0.2
	180											·						0.4	0.1
	185				·····													0 1	0.1
	190																	0.1	0.1
	1951																	·	0 1
	200																·		0.1
	200																<u> </u>		
L	210									3									

# 4.13 Warren: Surface stone density per square metre

1	2	3	4	5	6	7	8	9	10
240	12	40	1	19	0		1		2
240	16	10	4	9	0				1
240	31	30	2	18	0				2
240	36	0	6	19	0				
240	43	40	0	16	7				
240	55 68	40	3	14	2				2
240	69	60	2	19	8				9
240	100	10	5	9	1				
240	126	20	0	19	0			1	1
240	133		0	27	3				
50	12	50			2				
50	16	40	4	5	0			1	
50	31	10	4	6	0				
50	36	50	2	8	0				
50	43	20	2	17	0				
50	55	80	3	9	2				
50	69	40	1	23	1			1	
50	100	0	3	23	1			1	
50	126	40	2	7	3				
50	133	30	3	12	0				
50	151	0	7	0	0				
50	186	0	1	16	0	1			
30	5	40	3	8	0				
30	12	40	4	8	0				
30	16	10	11	15	0 -				1
30	31	20	2	4	0.	1	i	11	
30	43	30	1	11	0.	·····		:	
30	55	40	2	5	0				
30	68	10	3	13	0				
30	69	30	6	20	0				
301	126	201	51				1		
30	133	201	4	6	0;			· · · · · · · · · · · · · · · · · · ·	
30	151	01	1	15	0				
30	170	0	2	9	0	i			1
30	186	01	1	25	14				
30	203	0	6	17	2				
30	217	70!	1	12	2		;	i	
30	229	10	7	5	2			11	1
30	238	10	4	31	4	1			
320	5	20	1	4	0	1	2		
320	121	30	- 9	- 3	0				
320	31	40	3	15	1				
320	36	20	4	8	0		1		
320	43	50	5	7!	0				
320	55	0	5	14	0				
320	80	20	0	8					2
320	100	30	3	4	0.		1		'
320	120	30	2	1	01				
320	133	80	1	8	10				
320	151	40	3	6	0;				
320	186	10	3	19  al	0				
320	199	60	3	6	0	i			'
320	203	10	1	17	25				
320	217	0	5	15	1				2
320	229	0	2	14	2				
10	238	201		12			;		
10	12	40	4	7	<u>0</u> ;				
10	16	0	6	12	0				
10	31	10	1	20	0				
10	36	20	3	9	1		;		
10	55	10	1	2	0				
10	68	30	1	5	0				
10	69	40	0	6	3	1			
10	100	10	3	6	0				

Column	
1.7	Fransect degrees
2.1	Metre square distance along transect
3 . F	Percent of bedrock in metre squares
4 .5	Stone greater than 250mm in length
5.5	Stone less than 250mm in length
6.5	Stone less than 40mm in length
7 ' V	Vorked stone -Preform
8 V	Vorked stone -Block
9 V	Vorked stone -Hammerstone
101	Vorked stone -Flake

4.0	100	70	0	2	<u>م</u>		1	ł	. I	
10	120	70	1	3	0					
10	100	70			0					
10	151	/0	0		0					
10	170	40	0	9	2					
10	186	70	0	4	0					
10	199	40	1	8	0			! •		
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270	126	0	5	10	3				2	
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220         100         10         7         8         3            220         126         50         1         8         0            220         170         40         0         12         4            350         5         30         3         1         0          1           350         12         30         1         4         0             350         16         60         1         5         0             350         68         0         2         5         0             350         68         0         2         4         0             350         126         10         0         2         0          1           350         133         0         0         0         0             350         170         20         3         11         1          1           350         126         10         12         2	220	69	40	1	3	0			1	
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220       170       40       0       12       4       1         350       12       30       1       4       0       1         350       16       60       1       5       0       1         350       16       60       1       5       0       1         350       36       80       2       12       0       1         350       36       80       2       5       0       1         350       55       40       2       5       0       1         350       68       0       2       4       0       1         350       133       0       0       0       1       1         350       126       10       2       0       1       1         350       133       0       0       0       1       1         350       168       30       1       23       2       1         350       203       20       1       2       1       1         70       18       3       1       1       1       1         70       12 </td <td>220</td> <td>151</td> <td>100</td> <td>1</td> <td>9</td> <td>7</td> <td></td> <td>1</td> <td></td> <td>4</td>	220	151	100	1	9	7		1		4
350         3         1         0         1           350         12         30         1         4         0         1           350         16         60         1         5         0         1           350         31         0         4         10         0         1           350         331         0         4         10         0         1           350         36         80         2         12         0         1           350         68         0         2         4         0         1           350         69         0         2         4         0         1           350         151         20         0         8         1         1           350         151         20         0         8         1         1           350         198         0         12         2         1           350         199         0         3         4         2         1           350         217         30         3         0         1         1           70         5         20	220	170	40	0	12	4				
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350 $16$ $60$ $1$ $5$ $0$ $1$ $350$ $31$ $0$ $4$ $10$ $0$ $1$ $350$ $36$ $80$ $2$ $12$ $0$ $1$ $350$ $43$ $20$ $2$ $5$ $0$ $1$ $350$ $55$ $40$ $2$ $4$ $0$ $1$ $350$ $68$ $0$ $2$ $4$ $0$ $1$ $350$ $130$ $0$ $0$ $1$ $1$ $1$ $350$ $151$ $20$ $0$ $8$ $1$ $1$ $350$ $156$ $20$ $0$ $12$ $2$ $1$ $350$ $238$ $0$ $2$ $1$ $1$ $1$ $70$ $520$ $5$ $6$ $0$ $1$ $1$ $70$ $14$ $0$ $1$ $1$ $1$ $1$	350	12	30	1	4	0				
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350       31       0       4       10       0       1         350       36       80       2       12       0       1         350       43       20       2       5       0       1         350       68       0       2       4       0       1         350       69       0       2       4       0       1         350       100       0       3       9       0       1         350       133       0       0       0       0       1         350       151       20       0       8       1       1         350       151       20       0       8       1       1         350       170       20       3       11       1       1         350       203       20       0       12       1       1         350       229       30       0       4       0       1       1         70       12       10       4       9       0       1       1         70       36       0       4       3       0       1       1	250	21	0		10	0			1	
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350 $68$ $0$ $2$ $4$ $0$ $1$ $350$ $100$ $0$ $3$ $9$ $0$ $1$ $350$ $126$ $10$ $0$ $2$ $0$ $1$ $350$ $133$ $0$ $0$ $0$ $1$ $350$ $151$ $20$ $3$ $11$ $1$ $1$ $350$ $151$ $20$ $3$ $11$ $1$ $1$ $350$ $168$ $30$ $1$ $23$ $2$ $1$ $350$ $203$ $20$ $0$ $12$ $2$ $1$ $350$ $217$ $30$ $0$ $3$ $0$ $1$ $350$ $229$ $30$ $0$ $4$ $0$ $1$ $70$ $16$ $30$ $1$ $7$ $0$ $1$ $70$ $16$ $30$ $1$ $7$ $0$ $1$ $70$ $16$ $30$ $1$ $7$ $0$ $1$ <t< td=""><td>350</td><td>55</td><td>40</td><td>2</td><td>5</td><td>0</td><td></td><td></td><td></td><td></td></t<>	350	55	40	2	5	0				
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350 $217$ $30$ $0$ $3$ $0$ $1$ $350$ $229$ $30$ $0$ $4$ $0$ $1$ $350$ $238$ $0$ $2$ $3$ $1$ $1$ $70$ $5$ $20$ $5$ $6$ $0$ $1$ $70$ $16$ $30$ $1$ $7$ $0$ $1$ $70$ $31$ $40$ $3$ $9$ $0$ $1$ $70$ $36$ $0$ $4$ $3$ $0$ $1$ $70$ $43$ $50$ $0$ $13$ $18$ $1$ $1$ $70$ $69$ $80$ $4$ $4$ $2$ $1$ $1$ $70$ $126$ $80$ $3$ $6$ $0$ $1$ $1$ $70$ $133$ $0$ $4$ $7$ $0$ $1$ $1$ $160$ $5$ $30$ $6$ $4$ $4$ $1$ $1$ $160$ $12$ $50$	350	203	20	0	12	2			· 1	1
350 $229$ $30$ $0$ $4$ $0$ $1$ $350$ $238$ $0$ $2$ $3$ $1$ $1$ $70$ $5$ $20$ $5$ $6$ $0$ $1$ $70$ $12$ $10$ $4$ $9$ $0$ $1$ $70$ $16$ $30$ $1$ $7$ $0$ $1$ $70$ $36$ $0$ $4$ $3$ $0$ $1$ $70$ $43$ $50$ $0$ $13$ $18$ $1$ $1$ $70$ $68$ $20$ $4$ $8$ $0$ $1$ $1$ $70$ $68$ $20$ $4$ $8$ $0$ $1$ $1$ $70$ $126$ $80$ $3$ $6$ $0$ $1$ $1$ $70$ $133$ $0$ $4$ $7$ $0$ $ 160 12 50 7 8 1 $	350	217	30	0	3	0				
350 $238$ 0       2       3       1       1 $70$ $5$ $20$ $5$ $6$ 0       1 $70$ $12$ $10$ $4$ $9$ 0       1 $70$ $16$ $30$ $1$ $7$ $0$ 1 $70$ $31$ $40$ $3$ $9$ $0$ 1 $70$ $36$ $0$ $4$ $3$ $0$ 1 $70$ $36$ $0$ $4$ $3$ $0$ 1 $70$ $68$ $20$ $4$ $8$ $0$ 1 $70$ $68$ $20$ $4$ $8$ $0$ 1 $70$ $100$ $0$ $5$ $22$ $4$ $ 70$ $133$ $0$ $4$ $7$ $0$ $ 70$ $133$ $0$ $4$ $7$ $0$ $ 70$ $133$ $0$ $1$ $7$ $0$ $ 160$ $5$	350	229	30	0	4	0				
70 $5$ $20$ $5$ $6$ $0$ $1$ $70$ $12$ $10$ $4$ $9$ $0$ $1$ $70$ $31$ $40$ $3$ $9$ $0$ $1$ $70$ $36$ $0$ $4$ $3$ $0$ $1$ $70$ $43$ $50$ $0$ $13$ $18$ $1$ $1$ $70$ $43$ $50$ $0$ $13$ $18$ $1$ $1$ $70$ $43$ $50$ $0$ $13$ $18$ $1$ $1$ $70$ $68$ $20$ $4$ $8$ $0$ $1$ $1$ $70$ $128$ $80$ $3$ $6$ $0$ $1$ $1$ $70$ $133$ $0$ $4$ $7$ $0$ $-1$ $7$ $70$ $133$ $0$ $4$ $7$ $0$ $-1$ $7$ $70$ $131$ $80$ $1$ $7$ $0$ $-1$ $7$ $1$	350	238	0	2	3	1			1	
70 $12$ $10$ $4$ $9$ $0$ $1$ $70$ $16$ $30$ $1$ $7$ $0$ $1$ $70$ $36$ $0$ $4$ $3$ $9$ $0$ $1$ $70$ $36$ $0$ $4$ $3$ $0$ $1$ $1$ $70$ $43$ $50$ $0$ $13$ $18$ $1$ $1$ $1$ $70$ $68$ $20$ $4$ $8$ $0$ $1$ $1$ $70$ $69$ $80$ $4$ $4$ $2$ $1$ $1$ $70$ $126$ $80$ $3$ $6$ $0$ $1$ $1$ $70$ $126$ $80$ $3$ $6$ $0$ $1$ $1$ $70$ $151$ $0$ $0$ $16$ $0$ $1$ $1$ $160$ $12$ $50$ $7$ $8$ $1$ $1$ $1$ $160$ $13$ $10$ $0$ $1$ $1$ <	70	5	20	5	6	0				
70 $16$ $30$ $1$ $7$ $0$ $70$ $31$ $40$ $3$ $9$ $0$ $1$ $70$ $36$ $0$ $4$ $3$ $0$ $1$ $1$ $70$ $43$ $50$ $0$ $13$ $18$ $1$ $1$ $70$ $68$ $20$ $4$ $8$ $0$ $1$ $1$ $70$ $68$ $20$ $4$ $8$ $0$ $1$ $1$ $70$ $68$ $20$ $4$ $4$ $2$ $1$ $1$ $70$ $100$ $0$ $522$ $4$ $1$ $1$ $1$ $70$ $133$ $0$ $4$ $7$ $0$ $1$ $1$ $70$ $133$ $0$ $4$ $7$ $0$ $1$ $1$ $160$ $12$ $50$ $7$ $8$ $1$ $1$ $1$ $1$ $160$ $18$ $10$ $0$ $1$ $1$ $1$ <	70	12	10	4	9	0				
70 $31$ $40$ $3$ $9$ $0$ $70$ $36$ $0$ $13$ $18$ $1$ $1$ $70$ $43$ $50$ $0$ $13$ $18$ $1$ $1$ $70$ $43$ $50$ $0$ $13$ $18$ $1$ $1$ $70$ $68$ $20$ $4$ $8$ $0$ $1$ $1$ $70$ $68$ $20$ $4$ $8$ $0$ $1$ $1$ $70$ $100$ $0$ $5$ $22$ $4$ $2$ $1$ $70$ $126$ $80$ $3$ $6$ $0$ $1$ $1$ $70$ $151$ $0$ $0$ $16$ $0$ $1$ $1$ $160$ $12$ $50$ $7$ $8$ $1$ $1$ $1$ $160$ $12$ $50$ $1$ $7$ $0$ $1$ $160$ $13$ $10$ $0$ $1$ $1$ $1$ $1$ $1$	70	16	30	1	7	0				
70 $36$ $0$ $4$ $3$ $0$ $70$ $43$ $50$ $0$ $13$ $18$ $1$ $1$ $70$ $68$ $20$ $4$ $8$ $0$ $1$ $1$ $70$ $68$ $20$ $4$ $8$ $0$ $1$ $1$ $70$ $69$ $80$ $4$ $4$ $2$ $4$ $1$ $1$ $70$ $100$ $0$ $5$ $22$ $4$ $2$ $1$ $1$ $70$ $126$ $80$ $3$ $6$ $0$ $1$ $1$ $70$ $133$ $0$ $4$ $7$ $0$ $1$ $1$ $160$ $5$ $30$ $6$ $4$ $4$ $1$ $1$ $160$ $12$ $50$ $7$ $8$ $1$ $1$ $1$ $160$ $18$ $10$ $1$ $10$ $0$ $1$ $1$ $160$ $36$ $20$ $2$ $1$	70	31	40	3	9	0				
70 $35$ $0$ $4$ $5$ $0$ $1$ $1$ $70$ $43$ $50$ $0$ $13$ $18$ $1$ $1$ $70$ $68$ $20$ $4$ $8$ $0$ $1$ $1$ $70$ $69$ $80$ $4$ $4$ $2$ $1$ $1$ $70$ $126$ $80$ $3$ $6$ $0$ $1$ $1$ $70$ $126$ $80$ $3$ $6$ $0$ $1$ $1$ $70$ $133$ $0$ $4$ $7$ $0$ $1$ $1$ $70$ $151$ $0$ $0$ $16$ $0$ $1$ $1$ $160$ $12$ $50$ $7$ $8$ $1$ $1$ $1$ $160$ $12$ $50$ $7$ $8$ $1$ $1$ $1$ $160$ $36$ $20$ $2$ $6$ $0$ $1$ $1$ $160$ $36$ $20$ $2$ $1$	70	26	40	3	3	0				
70 $43$ $30$ $0$ $13$ $16$ $1$ $1$ $70$ $55$ $30$ $1$ $7$ $0$ $1$ $1$ $70$ $69$ $80$ $4$ $4$ $2$ $1$ $1$ $70$ $69$ $80$ $4$ $4$ $2$ $1$ $1$ $70$ $126$ $80$ $3$ $6$ $0$ $1$ $1$ $70$ $133$ $0$ $4$ $7$ $0$ $1$ $1$ $70$ $151$ $0$ $0$ $16$ $0$ $1$ $1$ $160$ $5$ $30$ $6$ $4$ $4$ $1$ $1$ $160$ $12$ $50$ $7$ $8$ $1$ $1$ $1$ $160$ $16$ $10$ $2$ $6$ $0$ $1$ $1$ $160$ $36$ $20$ $2$ $6$ $0$ $1$ $1$ $160$ $43$ $10$ $3$ $5$	70	30	5.0	4	12	10			1	10
70 $68$ $20$ $4$ $8$ $0$ $1$ $1$ $1$ $70$ $68$ $20$ $4$ $8$ $0$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$	70	43	50	1	- 13	10		4		12
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	70	55				0		<sup>1</sup>		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	70	68	20	4	8	0				3
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	70	69	80	4	4	2				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	70	100	0	5	22	4				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	70	126	80	3	6	0				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	70	133	0	4	7	0			· ·	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	70	151	0	0	16	0				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	160	5	30	6	4	4				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	160	12	50	7	8	1				1
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	160	16	10	2	5	0				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	160	31	80	1	7	0				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	160	36	20	2	6	0				
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	160	43	10	0	81	0			1	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	160	55	0	1	0	0				
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	160	68	80	0	3	0				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	160	69	70	0	6	3				
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	160	100	0	3	5	2				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	160	126	0	4	5	0				
160     151     0     4     12     0     1       160     151     0     4     12     0     1       160     170     0     0     2     0     1       160     186     10     1     4     0     1       160     199     40     1     7     0     1       160     203     10     3     4     0     1       160     217     0     4     5     0     1       160     224     50     2     7     0     1       160     238     10     3     5     1     1       160     238     10     3     5     1     1	160	133	0	1	7	0			2	
160     170     0     7     12     0       160     170     0     0     2     0       160     186     10     1     4     0     1       160     199     40     1     7     0     1       160     203     10     3     4     0     1       160     217     0     4     5     0     1       160     224     50     2     7     0     1       160     238     10     3     5     1     1       160     238     10     3     5     1     1	160	151	0	A	12				1	
160     186     10     1     4     0     1       160     186     10     1     4     0     1       160     199     40     1     7     0     1       160     203     10     3     4     0     1       160     217     0     4     5     0     1       160     224     50     2     7     0     1       160     238     10     3     5     1     1       160     238     10     3     5     1     1	1001	170	0		2					
160     199     40     1     7     0       160     203     10     3     4     0       160     217     0     4     5     0       160     224     50     2     7     0       160     238     10     3     5     1       160     238     10     3     5     1       160     238     10     3     5     1	160	196	10		2 A	0				
160     139     40     1     7     0       160     203     10     3     4     0       160     217     0     4     5     0     1       160     224     50     2     7     0     1       160     238     10     3     5     1     1       160     238     10     3     5     1     1	100	100								
100         203         10         3         4         0         1           160         217         0         4         5         0         1           160         224         50         2         7         0         1           160         238         10         3         5         1         1           160         238         10         3         5         1         1           160         238         10         3         5         1         1	100	199	40	1						
160         217         0         4         5         0         1           160         224         50         2         7         0         1           160         238         10         3         5         1         -           160         238         10         3         5         1         -         -           527         1825         258         10         12         28         80	160	203	10	3	4	0		i		
160         224         50         2         7         0         1           160         238         10         3         5         1         -         -           527         1825         258         10         12         28         80	160	217	0	4	5	0			1	
160         238         10         3         5         1           527         1825         258         10         12         28         80	160	224	50	2	7	0			1	
	160	238	10	3	5	1				1
				527	1825	258	10	12	28	80

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Type of excavation	Quarry	Excavation
1 Test pits for site depth	Warren	EW1
2 Test pits for site extent	Gulgong	EG1
3 Test pits for stone extraction	Gulgong	EG2
4 Anvil debris	Gulgong	EG3
5 Extraction face	Gulgong	EG4
6 Flake mound debris	Gulgong	EG4

## Table 4.14Excavations at Gulgong and Warren

DOM	1				· · · · · · · · · · · · · · · · · · ·		
RUZZ	14/	· 	•	Not Montrod			Total of words 11
Square	worked stone			NOL WORKED			Total of Worked/
ļ	>30mmL	<30mmL	Total	>30mmL	<30mmL	Total	Not worked
North1	23	36	59	23	420	443	502
North2	10	22	32	60	556	716	748
North3	9	12	21	63	723	786	807
South1	7	7	14	14	41	55	69
South2	34	124	158	10	108	118	276
South3	14	34	48	0	13	13	61
				•			
Total	97	235	332	170	1861	2131	2463
%of total			13.5			86.5	100
	) }						
RO25							
North1	9	11	20	30	189	219	239
North2	3	3	6	0	0	0	6
North3	1	2	3	8	49	57	60
South1	2	0	2	8	43	51	53
South2	0	0	0	0	29	29	29
South3	0	0	0	0	18	18	18
	: !						
Total	15	16	31	46	328	374	405
%oftotal			7.6			92.4	100

# 4.15 Gulgong: Stone from excavation at rock outcrops 22 and 25

Table 4.16Gulgong: archaeological features recorded onstone in GFM1

	Feature	Attributes
1	Total stone	either worked; or not worked
2	Stone size	maximum length
3	Flake size	length, width and thickness measure (LWT)
4	Shape	flat; thin; block; or angular
5	PFA of flakes	measured from flakes with LWT measures; recorded as crushed where it is damaged; or as found where the flake is broken
6	Stone flaked on two sides	both ventral and dorsal sides; any dorsal ridge lines were also recorded
7	Termination type	on flakes; particularly hinge fractures
8	Flaws	in the raw material
9	Cortex	cover on flakes
10	Weathering	of stone

#### 4.17 Gulgong: Stone attributes recorded from excavation in GFM1

GFM1	Total	Not	Worked	Flake size	Flat	Thin	Block	Angular	PFA	PFA	PFA	Flaked 2	Dorsal Bidgo	Hinge	Flaw	Cortex	Weathered
	stone	worked		(average)					measurea	crusnea	Touna	sides	niuge	2	1	4	4
1C 1	124	22	102	40.09677	79	61	. 44	. 54	4		8	19		2		4.	
1C 2	329	97	232	41	226	203	99	120		20	17	32		4		13	4
1C 3	388	64	324	41.9	262	210	124	176	7	17	19	61	1	2	0	10	23
1C 4	524	96	428	38.9	378	325	144	198	22	20	24	58	4	7	2	14	19
1C 5	431	69	362	39.8	308	267	123	164	8	17	13	54	. 2	3	1	12	20
1C 6	270	53	217	48.3	193	164	78	106	7	4	19	36	1	1	0	0	11
Total1C	2066	401	1665		1446	1230	612	818	55	86	100	260	10	17	4	53	81
2C 1	32	2	30	51.5	24	2	8	30	10	5	4	14	0	4	0	13	. 0
2C 2	707	185	522	55.2	443	133	263	574	88	95	62	266	4	10	0	0	. 81
2C 3	246	98	148	56.2	170	43	76	203	19	22	31	55	5	10	0	0	14
2C 4	355	117	238	66.2	206	122	149	232	28	17	21	83	1	9	3	19	54
2C 5	206	93	113	75.5	113	86	89	118	13	8	32	0	0	4	0	0	31
2C 6	163	104	59	78.9	92	59	7.1	104	10	8	17	2	1	1	1	1	26
2C 7	56	41	15	75.4	22	17	32	37	5	1	5	0	0	0	0	0	. 19
2C 8	83	60	23	77.4	35	30	48	52	5	3	5	0	0	0	0	0	. 24
2C 9	26	22	4	80	9	9	1.6	16	2	0	2	0	0	U	0	0	5
2C 10	17	13	4	62.5	1	0	16	17	0	0	0	2	0	0	0	2	. 3
Total2C	1891	735	1156		1115	501	768	1383	180	159	179	422	11	38	4	35	257
														1	ł		
3C 1	783	154	630	35.5	523	448	259	334	28	18	49	74	1	5	2	39	24
3C 2	240	46	194	41.2	161	124	,79	115	19	6	18	25	3	2	0	11	13
3C 3	517	172	345	52.5	309	234	206	282	16	18	30	41	2	1	1	27	83
3C 4	377	257	120	56.2	133	88	245	289	12	5	21	19	0	1	0	25	112
Total3C	1918	629	1289	1	1126	894	789	1020	7 5	47	118	159	6	9	3	102	232
			: 								1				1		
4C S1	492	113	379	46.6	306	128	63	139	123	0	0	122	67	υ	0	292	58
4C 2	3501	1760	1741	54	1751	728	829	959	329	5	18	564	183	0	0	533	. 1140
4C 3	524	196	328	36.1	379	306	37	105	72	0	0	103	15	0	0	49	82
4C 4	261	205	56	46.5	139	100	62	48	4	0	0	5	3	0	0	8	81
Total4C	4778	2274	2504		268	0	0	882	1361	0	0	0	0	0	0	0	0
Total		1					1						1		1		
GFM1	10653	4039	6614		6262	3887	3160	4472	838	297	415	1635	295	64	11	1072	1931

Table 4.18Gulgong: GFM1 stone greater than 20mm lengthfrom 4 squares as worked or not workedSummary from Table 4.17

Square	Not Worked	Worked	Total
1C	401	1665	2066
% of square	19	<i>81</i>	100
2c	735	1156	1891
% of square	39	<i>61</i>	100
3C	629	1289	1918
% of square	<i>33</i>	67	100
4C	2274	2504	4778
% of square	48	52	100
Total of GFM1	4039	6614	10653
% of total	<i>38</i>	62	100

Square	Worked stone	% of Wkd stone	LWT#	Long Flake	Squat Flake	Small Squat Flake	Thick Squat Flake	Massive Flake	Massive Thick Flake
1C 1	102	3.9	4	0	4	4	0	0	0
1C 2	232	3	7	1	6	4	3	1	0
1C 3	324	2.2	7	4	3	3	1	0	0
1C 4	428	5.1	22	7	15	14	4	1	0
1C 5	362	2.2	8	2	6	6	2	0	0
1C 6	63	11.1	7	3	4	2	2	1	1
1C 7	217	3.2	7	3	4	2	2	1	1
Total	1728		62	2 0	42	35	14	4	2
%oftotal			3.6	1.2	2.4				
2C 1	30	33.3	10	4	6	6	3	0	0
2C 2	522	16.9	88	15	73	70	15	4	2
2C 3	148	12.8	19	1	18	18	2	1	0
2C 4	238	12.2	29	1	28	28	4	3	0
2C 5	113	11.5	13	2	11	11	0	1	0
2C 6	59	16.9	10	1	9	9	0	2	0
2C 7	15	33.3	5	0	5	4	2	0	0
2C 8	23	21.7	5	1	4	4	1	0	0
2C 9	4	50	2	1	1	1	0	0	0
Total	1156		181	26	155	151	27	11	2
%oftotal			15.7	2.3	13.4				
3C 1	630	4.6	29	6	23	23	6	0	0
3C 2	194	9.8	19	6	13	10	6	1	1
SC 3	345	4.6	16	4	12	10	6	3	3
3C 4	120	10	12	5	7	7	3	0	0
Total	1289		76	2 1	5 5	5 0	21	4	4
%oftotal			5.9	1.6	4.3				
4C S1	480	33.5	161	35	126	120	18	9	1
4C 2	1639	17.8	292	82	210	197	45	17	4
4C 3	328	22	72	19	53	51	5	3	1
4C 4	56	7.1	4	0	4	4	0	0	0
Total	2503		529	136	393	372	68	29	6
<i>coftotal</i>			21.1	5.4	15.7		1		

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4.19 Gulgong: GFM1 flake LWT measures

## 4.20 Gulgong: summary of GFM1 flake LWT measures

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Summary				1					
Square GFM1	Worked stone	% of Wkd stone	LWT#	Long Flake	Squat Flake	Small Squat Flake	Thick Squat Flake	Massive Flake	Massive Thick Flake
1C	1728	3.6	62	20	42	35	14	4	2
2C	1156	15.7	181	26	155	151	27	11	2
3C -	1289	5.9	76	21	55	50	21	6	4
4C	2503	21.2	529	136	393	372	68	29	6
Total	6676	12.7	848	213	645	608	130	50	14
%oftotal	100		12.7	3.2	9.65				
%of total flake			100	24	76				
% of total SF					100	94	15	6	2

.

Table 4.21Gulgong: GFM1 stone greater than 20mm lengthfrom 4 squares in size classes:Summary of Table 4.22GFM1Flakesize

	Stone c	lasses: length	in mm	
Square	20<60mm	60<100mm	100>100mm	Total
1C	1839	242	68	2149
% of square	86	11	3	100
2C	1130	575	188	1893
% of square	60	30	10	100
_				
3C	1591	219	108	1918
% of square	83	11	6	100
4C	3544	950	305	4799
% of square	74	20	6	100
Total of	8104	1986	670	10759
GFM1	75	19	6	100
% of GFM1				

.

GFM1	>20 to 60	>60 to 100	>100mm	Total
1C 1	109	14	1	124
1C 2	289	30	10	329
1C 3	332	42	13	387
1C 4	475	41	8	524
1C 5	386	38	6	430
1C 6	248	77	30	355
Total	1839	242	68	2149
% of total	85.6	11.3	3.1	100
2C 1	23	8	1	32
2C 2	503	166	38	707
2C 3	171	59	16	246
2C 4	203	114	38	355
2C 5	88	87	32	207
2C 6	66	67	31	164
2C 7	20	27	9	56
2C 8	38	29	16	83
2C 9	7	14	5	26
2C 10	11	4 ;	2	17
Total	1130	575	188	1893
% of total	59.7	30.4	9.9	100
I				
3C 1	729	48	7	784
3C 2	204	32	4	240
3C 3	384	83	50	517
3C 4	274	56	47	377
Total	1591	219	108	1918
% of total	83	11.4	5.6	100
4C S1	413	59	24	496
4C 2	2429	830	253	3512
4C 3	489	30	11	530
4C 4	213	31	17	261
Total	3544	950	305	4799
% of total	73.8	19.8	6.4	100
			1	
Total	8104	1986	669	10759
% of total	75 3	18.5	6.2	100

## 4.22 Gulgong: GFM1 flake size in 3 categories

Table 4.23 Gulgong: GFM1 squares density of stone in cubic metres

GFM1 square	total stone >20mm	density per cubic cm				
1C	2066	0.02174				
2C	1891	0.01847				
3C	1917	0.02289				
4C	4778	0.04155				
Total	10652	0.02559				

Table 4.24 Gulgong: GFM1 square 4C stone by weight in kilos. Greater than 20mm length compared with less than 20mm length

Squar	e4C S1	4C 2	4C 3	4C 4	Total
>20mm	9.033	81.177	39.464	5.087	134.76
% of total	100	99	96	86	98
<20mm	0	0.478	1.597	0.803	2.878
% of total	0	1	4		2
Total	9.033	81.655	41.061	5.89	137.64
% of total	100	100	100	100	100

## Chapter 5

Table 5.1 Axes from the Gulgong and Warren areas at the Australian Museum2-35
Table 5.2 Summary of preforms recorded where maximum measures are greater than axial measures at Gulgong and Warren
Table 5.3 Symmetry in preforms from all transects (A, B, C) at Gulgong by the stages of reduction
Table 5.4 Symmetry in preforms on transects at Warren by the stages of reduction2-38
Table 5.5 Symmetry in all preforms from Gulgong by the stages of reduction2-39
Table 5.6 Symmetry in all preforms from Warren by the stages of reduction2-4
Table 5.7 Edge damage and mass removal at Gulgong in symmetry and stages of reduction2-4
Table 5.8 Edge damage and mass removal at Warren in symmetry and stages of reduction

Axes	symmetry	approach symmetry	symmetry not attained	Total
Warren	2	4	75	81
%	2	5	93	100
Gulgong	50	19	65	134
%	37	14	49	100
Total	52	23	140	215
%	24	11	65	100

Table 5.1 Axes from the Gulgong and Warren areas at the Australian Museum

Chi-square test	symmetry and	symmetry	total
	symmetry	not attained	
	approached		
Warren	6	75	81
Gulgong	69	65	134

Chi-square = 41.27 Probability = < 0.000 Table 5.2Summary of preforms recorded wheremaximum measures are greater than axial measures atGulgong and Warren

	Maximum>Axial	Total
Gulgong		
Width count	78	315
% of total	25	100
Thickness count	101	314
% of total	32	100
Warren		
Width count	12	205
% of total	6	100
Thickness count	21	204
% of total	10	100

Table 5.2

Chi-square test	width	thickness
Warren	12	21
Gulgong	78	101

Chi-square = 0.335 Probability = 0.56

# Table 5.3 Symmetry in preforms from all transects (A, B, C) at Gulgong by the stages of reduction

ſ	S y m m e t r y			
Stage of reduction	Yes	Lost	Not attained	Total
Advanced thinning	18	9	5	32
Shaping	26	42	22	90
Blocking out	15	23	55	93
Total	59	74	82	215
%	28	34	38	100

#### Table 5.3 and 5.4

Chi-square test	symmetry attained	symmetry not	total
	and lost	attained	
Warren	26	48	74
Gulgong	133	82	212

Chi-square = 14.83 Probability = 0.000 Table 5.4Symmetry in preforms on transects at Warrenby the stages of reduction

.

	Symmetry					
	Yes	Lost	Not attained	Total		
Stage of reduction						
Advanced thinning	4	3	2	9		
Shaping	2	13	8	23		
. Blocking out	2	2	38	4 2		
Total	8	18	4 8	74		
%	11	24	65	100		

Table 5.5Symmetry in all preforms from Gulgong by thestages of reduction

			Symr	netry				
	Atta	ined	Lo	st	Not	attained		
Stage of reduction	N	%	N	%	N	%	Total	%
Advanced thinning	25	49	16	31	10	20	51	100
Shaping	35	25	62	44	43	31	140	100
. Blocking out	18	15	25	21	74	64	117	100
Total	78	25	103	34	127	41	308	100

Table 5.5 and 5.6

Chi-square test	symmetry attained	symmetry not	total
	and lost	attained	
Warren	42	83	125
Gulgong	181	127	308

Chi-square = 21.55 Probability = 0.000

			Sym	metry			]	
	Atta	ined	Lo	ost	Not	attained		
Stage of reduction	N	%	N	%	N	%	Total	%
Advanced thinning	6	43	5	36	3	21	14	100
Shaping	1	2	26	59	17	39	44	100
Blocking out	1	1	3	5	63	94	67	100
Total	8	6	34	27	83	67	125	100

•

Table 5.6Symmetry in all preforms from Warren by thestagesofreduction

Table 5.7Edge damage and mass removal at Gulgong insymmetry and stages of reduction

Symmetry	Stage of reduction	Edge Damage	Mass Removal	Total
	Advanced	9	5	14
Attained	Shaped	11	3	14
	Blocking out	6	3	9
	Advanced	6	1	7
• Lost	Shaped	35	6	41
	Blocking out	13	5	18
	Advanced	2	2	4
Not attained	Shaped	14	7	21
	Blocking out s	19	20	39
Total		115	5 2	167

Table 5.7

Chi-square test	edge damage	mass removal	total
symmetry attained	80	23	113
and lost			
symmetry not	35	31	66
attained			
total	115	54	179

Chi-square = 10.127 Probability = 0.001

·

Table 5.8Edge damage and mass removal at Warren insymmetryandstagesofreduction

Symmetry	Stage of reduc	tion	Edge Damag	e Mass Removal	Total
	Advan	n c e d	1	4	5
Attained	Sha	ped	2	1	3
	Blocking	out	1	1	2
	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·		
	Advan	iced	3	0	3
· Lost	Sha	ped	10	2	12
	Blocking	out	2	0	2
	Advan	nced	0	1	1
Not attained	Sha	ped	6	2	8
	Blocking	out	12	11	2 3
Total			37	2 2	59

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### Chapter 6

Table 6.1 Tests used in rock mechanics research suitable for evaluating the selection of stone for axes
Table 6.2 Measures of rock mechanics on raw material for axe making2-44
Table 6.3 Raw material type found at axe quarries in east Australia2-44
Table 6.4 Ranking of rock outcrops at Gulgong by stoneworkers in prehistory:summary of Table 6.5
Table 6.5       Rock outcrop survey of Gulgong Areas A, B, C, D2-47
Table 6.6 Extraction and archaeological material at Gulgong rock      outcrops
Table 6.7 Fine-grained rock outcrops in flake mound Area B.X atGulgong: summary of Table 6.8
Table 6.8 Rock outcrops in flake mound Area B.X at Gulgong2-50
Table 6.9 Rock outcrops along transects at Warren2-51
Table 6.10    Flake scatters along transects at Warren2-52
Table 6.11    Flake scatters along four transects at Warren
Table 6.12 Random metre square surface stone density atWarren: summary of 6.13
Table 6.13 Random metre square stone density at Warren2-55

Table	6.1	Tests	used	in	rock	mec	hanics	rese	earch	suitable
f	or	evaluating	g the	se	lection	of	stone	for	axes	

Test	Performance measure	Reference	
Brazil disc test	Tensile strength	Lama and Vutukuri (1978) Bradley et al. (1992)	
Unconfined compressive strength test	Tensile strength	Hayden (1987)	
Los Angeles test	Hardness	Dickson (1981) Minty (1961)	
Vickers indentation	Hardness	Cotterell and Kamminga (1990)	
Moh's scratch test	Hardness	Dickson (1981) Semenov (1964)	
Paige impact test	Elasticity and resiliancy	Goodman (1944) McBryde (1978)	

Rock Type	Source	Density	Elasticity	Tensile Strength
Source: (La	ma and Vutu	kuri 1978)		
Grey wacke	USA	2.77	68.43	5.52
	Taiwan	2.5	4.14	2.0
	India	2.67	21.89	4.83
Greenstone	USA	3.1	74.6	26.89
Actinolite Schist	India	3.5	77.9	N/A
Tremolite Schist	India	3.01	89.6	N/A
Amphibole	India	3.15	117.	41.7
Andesite	USA	2.37	37.02	7.24
	Japan	2.56	33.2	10.2
Basalt	USA	N/A	N/A	15.3
Source: (B	radley <i>et al.</i>	1992)	· ·	
\.	Great	N/A	N/A	34.2
	Langdale England			42.0
	(range)			(7.8)
	Graig Lywd Wales	N/A	N/A	33.8
	Tieve- bulliagh, N. Ireland	N/A	N/A	22.2
	Killin Scotland (range)	N/A	N/A	31.4 44.1 (12.7)

Table 6.2 Measures of rock mechanics on raw materialfor axe making

. ·

# Table 6.3 Raw material type found at axe quarries in east Australia

Quarry	Raw material type	McBryde axe group
Moore Creek	Andesitic greywacke	2B
Salisbury Court	Siltstone	3D
Tia, Wilson's Creek	Laminated amphibolite	8C
Gragin Peak	Metamorphosed bole	6
Aberfoyle	Siltstone	3 A
Tweed volcano	N/A	7D
Gulgong	Actinolitic schist	10
Tumut	Cambrian greenstones	N/A
Mt. Foster Mt. Harris Little Mount	Quartz feldspar porphry	N/A
Lowes Mount	Amphibolitised metabasalt	N/A
Cudgegong River	Basalt	N/A
Arthurville	Andesitic greywacke	N/A
Mount Oberon	Amphibole hornsfelses- sheared andesite	N/A
Mission Lane, Brewarrina	Quartzite	N/A
Mount Bowen	N/A	N/A
Mounts William and Camel	Andesitic hornsfels	N/A

Table	6.4	Ranking	of	rock	outcrops	at	Gulgong	by
	stone	workers	in	preh	istory			

Rank	No. of outcrops	Percent of total	Characteristics
High	5	10	Fine grained; solid block; no fracture
Medium	15	31	Loose blocks of fine- grained material
Low	29	59	Coarse-grained material; fine-grained fractured and weathered material
Total	49	100	

No.	Size in	Material	Fracture	Rock	Score	Rank	Archaeological	Extraction
	m2	(Fine/coarse)	(Y/N)		(3-6)		material (Y/N)	face (Y/N)
1	1300	Fine	No	Solid	6	High	Yes	Yes
2	350	Fine	No	Solid	6	High	Yes	No
3	300	Fine	Yes	Loose	4	Med	Yes	No
4	140	Fine	No	Solid	6	High	No	Yes
5	220	Fine	Yes	Loose	4	Med	No	No
6	210	Coarse	Yes	Loose	3	Low	No	No
7	220	Fine	Yes	Loose	4	Med	No	No
8	380	Coarse	Yes	Loose	3	Low	No	No
9	190	Coarse	Yes	Loose	3	Low	No	No
10	900	Coarse	Yes	Loose	3	Low	No	No
11	580	Coarse	Yes	Loose	3	Low	No	No
12	590	Coarse	Yes	Loose	3	Low	No	No
13	10	Fine	Yes	Loose	4	Med	No	No
14	10	Coarse	Yes		3		No	No
15	640	Coarse	Voc	10050	1	Mod	No	No
10	400	Eino	Vee	Loose	4	Med	Vee	No
10	490	Fine	Yee	Loose	4	Med	Tes	
17	760	Fine	res	Calid	4		No	No
18	760	Fine	INO	Solia	6	High	No	Yes
19	730	Coarse	Yes	Loose	3	LOW	INO	<u> </u>
20	570	Coarse	Yes	Loose	3	LOW	Yes	NO
21	350	Fine	Yes	Loose	4	меа	Yes	No
22	930	Fine	Yes	Loose	3	Low	Yes	No
23	270	Coarse	Yes	Loose	3	Low	<u>No</u>	No
24	180	Coarse	Yes	Loose	3	Low	NO	No
25	670	Coarse	Yes	Loose	3	LOW	<u>N0</u>	<u>No</u>
26	240	Coarse	Yes	Loose	3	Low	NO	No
27	490	Fine	Yes	Loose	4	Med	No	No
28	400	Fine	Yes	Loose	4	Med	No	No
29	390	Coarse	Yes	Loose	3	Low	Yes	No
_30_	1240	Fine	Yes	Loose	4	Med	No	No
31	800	Fine	Yes	Loose	4	Med	No	No
32	220	Fine	Yes	Loose	4	Med	Yes	No
33	360	Coarse	Yes	Loose	3	Low	No	No
34	250	Fine	Yes	Loose	3	Low	No	No
35	410	Coarse	Yes	Loose	3	Low	No	No
_36	440	Fine	Yes	Loose	3	Low	No	No
37	1050	Coarse	Yes	Loose	3	Low	No	No
38	1200	Fine	Yes	Loose	4	Med	No	No
_39	420	Coarse	Yes	Loose	3	Low	No	No
40	300	Fine	Yes	Loose	3	Low	No	No
41	20	Coarse	Yes	Loose	3	Low	No	No
42	240	Fine	Yes	Loose	3	Low	No	No
_43	900	Fine	Yes	Loose	3	Low	No	No
44	700	Coarse	Yes	Loose	3	Low	No	No
45	400	Coarse	No	Solid	5	Med	Yes	No
_46	270	Coarse	Yes	Loose	3	Low	No	No
47	360	Fine	Yes	Loose	3	Med	Yes	No
48	300	Coarse	Yes	Solid	3	Med	No	No
49	800	Fine	Yes	Solid	6	High	Yes	Yes

Table 6.5Rock outcrop survey of GulgongAreas A, B, C, D

Rock outcrop number (n=14)	Rank	Archaeological material	Extraction	Archaeological material and extraction
1	High	Yes	Yes	Yes
2	High	Yes	No	No
3	Medium	Yes	No	No
4	High	No	Yes	No
16	Medium	Yes	No	No
18	High	No	Yes	No
20	Low	Yes	No	No
21	Medium	Yes	No	No
22	Low	Yes	No	No
29	Low	Yes	No	No
32	Medium	Yes	No	No
45	Medium	Yes	No	No
47	Medium	Yes	No	No
49	High	Yes	Yes	Yes

### Table 6.6. Extraction and archaeological material at Gulgong rock outcrops

Table 6.7	Fine-grained rock outcrops in the flake moun	nd
	Area B.X at Gulgong: Summary of Table 6.	8

Characteristics	Number
Fine grained rock outcrops	3 0
Rocks in situ to the bedrock	29
Outcrops with loose blocks	1
Extraction and flaking present	20
Raw material flaws	1
Total	3 0

Number	Location	Height in	Diameter	Diameter	Count	Count	Extraction	Raw material	Flakes
		centimetres	N-S	E- <b>W</b>	InSitu	Loose	(Y/N)	Flaw (Y/N)	(Y/N)
1	Ga120 5.1m	100	80	100	1		Yes	No	Yes
2	Ga115 21.7m	70	60	100	6		No	No	No
2a	Ga115 23.7m	90	300	120	1		No	No	No
2b	10m S of 2	120	70	180	1		Yes	No	No
3	Ga 90 21.9m	100	520	430	6	3	Yes	No	Yes
4	Ga80 25.1m	120	490	320	4	8	No	No	No
5	Ga80 15.7m	80	160	100	2		Yes	No	Yes
6	Ga75 37m	70	400	170	1		No	No	Yes
7	Ga70 39.2m	95	300	265	11	5	No	No	Yes
7a	5mNW of 7	35	80	45	0	1	Yes	No	No
8	Ga65 10.4m	100	50	60	1		Yes	No	No
9	Ga92 6.3m	60	100	80	1		Yes	Yes	Yes
10	Ga92 8.8m	40	60	60	1		Yes	No	Yes
11	Ga45 8.3m	50	60	70	1		Yes	No	Yes
12	Ga45 11.3m	50	30	50	1		Yes	No	No
13	Ga40 13.9m	70	290	110	3	1	Yes	Nø	Yes
14	Ga30 8.7m	40	120	50	1		Yes	No	No
15	Ga45 32.2m	100	220	120	4		Yes	No	Yes
16	Ga35 23.5m	70	470	120	3	3	No	No	Yes
17	Ga42 41.6m	80	50	60	1		Yes	No	Yes
18	Ga10 26.3m	90	410	250	1		Yes	No	Yes
19	Ga340 14.1m	20	90	70	1		Yes	No	No
20	Ga340 24.m	80	110	120	2		No	No	Yes
21	Ga340 29.1m	100	350	190	1	8	No	No	No
22	Ga345 32.8m	90	90	60	1		No	No	No
23	Ga330 29.4m	120	240	350	1	8	Yes	No	Yes
24	Ga305 33.m	125	350	400	1	5	Yes	No	Yes
25	Ga305 35.6m	90	295	265	1		Yes	No	Yes
26	Ga310 34.8m	145	940	570	6	16	Yes	No	Yes
27	Ga310 40.8m	80	430	210	1	9	No	No	No

Table 6.8 Rock outcrops in flake mound Area B.X at Gulgong

ROCK OUTCROPS	3								
TransectMetres	0-50	51-100	101-150	151-200	201-250	251-300	301-350	351-400	Total
Transect#									
# 1			1						1
#2			2	2	3				7
#3		1	1	1	2				5
#4	2			3		1			6
#5	2	2	5	1	1	2	2	1	16
#6	1	1	3	1	3	1	2		12
#7	1	1	3	2	2	2	2	6	19
#8	2	1		2			2		7
#9	1	2	2	1	1	2		3	12
#10	2	3	2	4	2	3	3		19
#11		5	3	2	3	2	2	1	18
#12		1	1	1	1	1	1		6
#13	2	1	2	3	2	2	2	1	15
#14		3	3	2	3	2			13
#15			2	1	1	1			5
Total	13	21	30	26	24	19	16	12	161

Table 6.9Rock outcrops along transects at Warren

FLAKE SCATTER	S								
TransectMetres	0-50	51-100	101-150	151-200	201-250	251-300	301-350	351-400	Total
Transect									
# 1			1				1		1
#2			2	2	2				6
#3			2	1					3
#4	1					1	1		2
#5	1	1	3		1	1			7
#6			1	2			2		5
#7		2	2		1		1	1	7
#8			1	1	· · · · · · · · · · · · · · · · · · ·				2
<b>#9</b>						1		2	3
# <b>1</b> 0	1	1	1		2		2		7
#11		2					2		4
# <b>1</b> 2	1	1					1		3
#13	1	1	1	2	1	2	2		10
<b>#1</b> 4		1	1	2	3				7
# <b>1</b> 5				2	1				3
Total	5	9	15	12	10	5	11	. 3	70

## Table 6.10 Flake scatters along transects at Warren

Transect	Square metres	Flake scatters	Flake count	Flakes per square metre
T500/6	900	24	513	0.57
T500/8	1550	8	94	0.06
T500/12	1800	14	202	0.11
T500/16	1750	16	176	0.1
Total	6000	62	985	0.16

Table	6.11	Flake	scatters	along	four	transects	at	Warren
-------	------	-------	----------	-------	------	-----------	----	--------

Table	6.12	Rand	lom	metre	square	surv	ey	of	surf	ace	stone
	d	ensity	at	Warren	: Sumn	ıary	of	Ta	ble	6.13	
						•					

	Number	Percent
Loose stone >250mm	172	80
Worked stone	69	32
Bedrock in square	165	76
Bedrock within 5m. around square	180	83
Total number of squares surveyed	216	100

## Table 6.13 Random metre square stone density at Warren

				<b>F</b> <sup>1</sup>	6	7		0	1.0
	2	3	4	5					10
240	5	40	6	6	0		1		2
240	12	40	1	19	0				
240	16	10	4	9	0				1
240	31	30	2	18	0				2
240	36	0	6	19	0				
240	43	40		7.	2				
240	68	40	3	14	2				2
240	69	60	2	19	8				9
240	100	10	5	9	1				
240	126	20	0	19	0		1	1	1
240	133	0	0	27	3				
50	5	70	4	4	0				
50	12	50	5	3	2				
50	16	40	4	5					
50	36	50	2	8	0				
50	43!	20	2	17	0				
50	55	20	3	6	0				
50	68	80	3	9	2				1
50	69	40	1	23	1				
50	100	0	3	23	1			1	
50	126	40	2	7	3				
50	133	30	3	12	0				
50	170	0		<u>^</u>	0				
50	186	0	1	16	0				
30	5	40	3	. 0	0				
30	12	40	4	8	0				
30	16	10	1	15	0				1
30	36	10	0	7	0				
30	31	20	2	4	0	11		1	
30	43	30	1	11	0	·;			{
30	55	40	2	12	0	·····			
30	60	30	<u>S</u>	201		i			
30	100	50	2	4	0.				
30	126	20	5	7	0		1		
30	133	20	4	6	0				
30	151	0	1	15	0				]
30	170	0	2	9	0	·····	i		1
30	186	0	1	25	14				
30	199	0	6	17	0				
30	203	70	4	10	3				
30	229	10	7	<u>12</u> 5	2			1	
30	238	10	4	3	4	1	·····		'
320	5	20	1	4	0	· · · ·	2		
320	12	30	9	3	0				
320	16	30	7	6	1				
320	31	40	3	15	1				
320	36	20	4	8	0				
320	43	50		11					
320	68	20	0	8	<u> </u>				
320	69	20	3	3	0				 1
320	100	30	3	4	0				
320	120	30	2	1	0				
320	133	80	1	8	10				
320	151	40	3	6	0				
320	170	0		19	0				
320	186	10	3	8	4				'
320	203	10		17	25				
320	217		5	15	<u> </u>			·····	2
320	229	0	2	14	2				
320	238	20	1	12	3				
10	5	30	3	10	0				
10	12	40	4	7	0				
10	16	0	<u> </u>	12	<u>.</u>		• • •		
10	31	10	1	20	0				

Column	
1	Transect degrees
2	Metre square distance along transect
3	Percent of bedrock in metre squares
4	Stone greater than 250mm in length
5	Stone less than 250mm in length
6	Stone less than 40mm in length
7	Worked stone -Preform
8	Worked stone -Elock
9	Worked stone -Hammerstone
10	Worked stone -Flake

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Table 6.13/2

10	36	20	3	9	1				
10	43	10	3	2	0				
10	55	10	1	7	0				
10	68	30	1	5	0			1	
10	69	40	0	6	3	1			
10	100	10		6	0	<b>·</b>			
10	100	70			0				'
10	126	70	0	3	0				
10:	133	70	1	3	0				
10	151	70	0	7	0				
10	170	40	0	9	2				
10	186	70	0	4	0				
10	100	10			0				
10	199	40		0					
10	203	70	5	2	0				
10	217	10	0	11	5				
10	229	60	0	3	0			1	
10	238	10	4	16	0				2
070	200								
270	5	30	7	8	0				1
270	12	40	5	6	1				
270	16	20	4	14	5	1			
270	31	30	3	6	0				
270	36	10	4	8	0		2		
270	4.2	10	4		0				
270	43	10	- 4						
270	55	0	5	9	0			1	
270	68	0	5	16	0			1	1
270	69	0	4	18	0				
270	100	40	4	6	0				_
270	126	0	5	10	, a			1	2
270	100	30		1 4					<u> </u>
2/0	133	30		- 14	<u> </u>			2	
180	5	10	3	7	2				
180	12	20	5 :	6	2				
180	16	60	3	3	3				
180	31	20	1	8	2.			1	
190	26	10		10	2				
100	30	10		10	2				
180	43	10	1	16	2			↓ <u>1</u>	
180	55	10	0	1	0				
180	68	0	0	0	0			i	
180	6.9	0	0	1	0	1			
190	100	30	0		0	·	1		
100	100						·	÷	
180	126	0		6				11	
180	133	90	0	1	1				
180	151	50	1	4	6	į			
180	170	30	2	7	0	1			
100	100	50	0	1 5	16	'			
100	100	50		15	10			•	
180	199	10	0	6	0			•	
180	203	0	0	17	0 :				
180	217	20	1	6	11				
180	229	0	5	12	0		1		2
180	229	10	2	10	2		·····		
	230			19	<u> </u>				·{
110	5	20	5	3	0				
110	12	10	3	12	1				
110	16	50	4	6	2				
110	31	10	3	16	0				
110	36	100	1	15	7	•			16
110	12	100	~					·	
110	+ 3	100						<u>.</u>	
110	55	40	4	9	0				
110	68	30	1	7	1				
110	69	50	1	3	1	1		1	
110	100	10	2	13	0				
110	126	10	<u></u>	4	2				
220	- E U				<u> </u>				
330	5	30	2	9					
330	12	20	4	8	0				
330	16	50	4	1	0	1			
330	31	30	1	7.	0				
330	36	70	۵	6	0				
320	12	10							
	43		4	-	0				·····
330	55	50	0	7	0				
330	68	10	1 :	4	0				
330	69	10	1	4	0			1	
330	100	0	0	7	1				
330	12A	30	2	10	·				
330	122	20	2	1 4	~ ~				
	100	<u> </u>	<u> </u>		3				
330	151	0	4	9	0			1	
	170	30	- <b>1</b> -	Λ	2				
Table 6.13/3

330       199       10       0       9       2       1         330       230       100       4       6       0       1         330       237       0       2       8       1       1         330       238       0       4       7       1       1         220       15       0       3       10       1       1         220       16       50       1       11       0       1         220       16       50       1       14       0       1         220       36       0       0       3       1       1         220       68       40       0       5       0       1         220       69       40       1       3       0       1         220       151       100       1       9       7       1         220       151       100       1       9       7       1         220       151       100       1       9       7       1         220       153       14       0       1       1         350       16	330	186	10	4	9	0	1			1
330         203         100         4         6         0         1           330         228         70         2         7         0         1           330         228         70         2         7         0         1           320         25         0         3         10         1         1           220         12         0         8         6         0         1           220         16         50         1         1         0         1           220         43         40         0         3         1         1           220         68         40         0         3         1         1           220         69         40         1         3         0         1           220         126         50         1         8         0         1           220         126         50         1         8         0         1           350         10         1         10         0         1         1           350         16         10         12         0         1         1	330	199	10	0	9	2			<u> </u>	
330         217         0         2         8         1           330         228         0         4         7         1           220         5         0         3         10         1         1           220         12         0         8         6         0         1           220         16         50         1         11         0         1           220         36         0         0         23         0         1           220         36         0         0         3         1         1           220         68         40         0         5         0         1           220         100         10         7         8         3         1           220         151         100         1         9         7         1           220         151         10         1         1         350         1         1           350         12         30         1         4         0         1           350         130         1         1         0         1         1           350	330	203	100	4	6	0			1	
330       229       70       2       7       0         330       238       0       4       7       1         220       12       0       8       6       0       1         220       12       0       8       6       0       1         220       16       50       111       0       1         220       36       0       0       3       1         220       34       40       0       0       3       1         220       68       40       0       3       1       1         220       68       40       1       3       0       1         220       165       1       8       0       1       1         220       126       50       1       8       0       1         350       5       30       3       1       0       1         350       13       0       1       1       0       1         350       13       0       2       5       0       1         350       13       20       2       5       0	330	217	0	2	8	1				
330         238         0         4         7         1           220         5         0         3         10         1           220         12         0         8         6         0         1           220         16         50         1         11         0         1           220         36         0         0         23         0         1           220         36         0         0         3         1         1           220         68         40         0         5         0         1           220         69         40         1         3         0         1           220         151         100         1         9         7         1           220         151         100         1         9         7         1           220         151         100         1         9         7         1           350         12         30         1         4         0         1           350         13         0         4         0         1         1           350         16	330	229	70	2	7	0			1	
220         5         0         3         10         1 $220$ 12         0         8         6         0         1 $220$ 16         50         1         11         0         1 $220$ 31         60         0         8         0         1 $220$ 63         40         0         5         0         1 $220$ 68         40         1         3         0         1 $220$ 68         40         1         3         0         1 $220$ 126         50         1         8         0         1 $220$ 170         40         0         12         4         1 $350$ 16         60         1         5         0         1 $350$ 16         60         1         5         0         1 $350$ 16         10         2         0         1         1 $350$ 16         0         2         1         1         1 <tr< td=""><td>330</td><td>238</td><td>0</td><td>4</td><td>7</td><td>1</td><td></td><td></td><td></td><td>2</td></tr<>	330	238	0	4	7	1				2
220       12       0       8       6       0       1         220       16       50       1       11       0       1         220       16       0       23       0       1         220       36       0       0       3       1         220       43       40       0       5       0       1         220       68       40       0       5       0       1         220       68       40       0       5       0       1         220       100       10       7       8       3       1         220       151       100       12       4       1       1         350       530       31       4       0       1       1         350       12       30       1       4       0       1       1         350       36       80       2       12       0       1       1         350       10       0       3       9       0       1       1       1         350       100       0       2       0       1       1       1	220	5	0	3	10	1				
120         16         50         1         0         1           220         31         60         0         8         0         1           220         36         0         0         3         1           220         36         0         0         3         1           220         65         10         1         4         0         1           220         68         40         0         5         0         1           220         161         100         1         9         7         1           220         170         40         0         12         4         1           350         1         0         1         1         1         350           350         30         3         1         0         1         1           350         16         60         1         5         0         1           350         16         0         2         5         0         1           350         16         0         2         1         1         1           350         16         0	220	12	0	8	6	0		1		
120 $31$ $60$ $11$ $10$ $11$ $220$ $36$ $0$ $23$ $0$ $11$ $220$ $36$ $0$ $0$ $3$ $11$ $220$ $45$ $10$ $1$ $4$ $0$ $220$ $68$ $40$ $0$ $5$ $0$ $11$ $220$ $68$ $40$ $0$ $5$ $0$ $11$ $220$ $151$ $100$ $1$ $9$ $7$ $11$ $220$ $151$ $100$ $12$ $4$ $0$ $11$ $350$ $53$ $31$ $0$ $11$ $1350$ $12$ $30$ $14$ $0$ $11$ $350$ $12$ $30$ $14$ $0$ $11$ $350$ $12$ $30$ $11$ $11$ $10$ $350$ $150$ $10$ $12$ $11$ $15$ $10$ $11$ $15$ $11$ $11$ $11$ $11$ $11$ $11$ $11$ $11$ $11$ </td <td>220</td> <td>16</td> <td>50</td> <td></td> <td>11</td> <td>0</td> <td></td> <td>1</td> <td></td> <td></td>	220	16	50		11	0		1		
220 $36$ $0$ $0$ $3$ $0$ $220$ $43$ $40$ $0$ $0$ $3$ $0$ $220$ $68$ $40$ $1$ $3$ $0$ $1$ $220$ $68$ $40$ $1$ $3$ $0$ $1$ $220$ $68$ $40$ $1$ $3$ $0$ $1$ $220$ $151$ $100$ $1$ $9$ $7$ $0$ $220$ $151$ $100$ $1$ $9$ $7$ $0$ $220$ $151$ $100$ $12$ $4$ $0$ $1$ $350$ $13$ $0$ $4$ $10$ $0$ $1$ $350$ $13$ $0$ $4$ $0$ $1$ $1$ $350$ $13$ $0$ $2$ $0$ $1$ $1$ $350$ $126$ $10$ $2$ $0$ $1$ $1$ $350$ $126$ $10$ $2$ $0$ $1$ $1$ <td< td=""><td>220</td><td>21</td><td>60</td><td></td><td></td><td>0</td><td></td><td></td><td>·</td><td></td></td<>	220	21	60			0			·	
220 $36$ 0       0 $23$ 0 $220$ $55$ 10       1       4       0 $220$ $68$ 40       0       5       0       1 $220$ $68$ 40       1       3       0       1 $220$ $168$ 40       1       3       0       1 $220$ $151$ 100       1       9       7       1 $220$ $151$ 100       1       9       7       1 $220$ $151$ 100       12       4       1       1 $350$ $53$ $31$ 0       1       1       1 $350$ $12$ $30$ 1 $410$ 0       1 $350$ $540$ $2$ $5$ 0       1       1 $350$ $55$ $402$ $5$ 0       1       1 $350$ $100$ $0$ $39$ 0       1       1 $350$ $100$ $0$ $3111$ 1       1       1	220	26	00	- 0	22	0				
220       43       40       0       0       3         220       68       40       0       5       0       1         220       68       40       1       3       0       1         220       100       10       7       8       3       1         220       126       50       1       8       0       1         220       170       40       0       12       4       1         350       15       30       3       1       0       1         350       16       60       1       5       0       1         350       16       60       1       5       0       1         350       36       80       2       4       0       1         350       66       0       2       4       0       1         350       13       0       0       0       1       1         350       16       10       2       0       1       1         350       16       0       1       23       1       1         350       16       1 <td>220</td> <td>36</td> <td>0</td> <td></td> <td>23</td> <td>0</td> <td></td> <td></td> <td>·</td> <td></td>	220	36	0		23	0			·	
220       55       10       1       4       0         220       68       40       0       5       0       1         220       100       10       7       8       3       1         220       126       50       1       8       0       1         220       126       50       1       8       0       1         220       151       100       1       9       7       1         220       151       100       1       9       7       1         220       16       60       1       5       0       1         350       12       30       1       4       0       1         350       31       0       4       10       0       1         350       36       80       2       12       0       1         350       100       0       2       0       1       1         350       100       0       2       0       1       1         350       100       0       3       1       1       1         350       130       <	220	43	40	0	0	3				
220       68       40       0       5       0       1         220       69       40       1       3       0       1         220       126       50       1       8       3       1         220       126       50       1       8       0       1         220       170       40       0       12       4       1         350       5       30       3       1       0       1         350       16       60       1       5       0       1         350       31       0       4       10       0       1         350       36       80       2       12       0       1         350       68       0       2       4       0       1         350       68       0       2       4       0       1         350       120       0       8       1       1       1         350       120       0       8       1       1       1         350       120       0       3       1       1       1         350       120 </td <td>220</td> <td>55</td> <td>10</td> <td></td> <td>4</td> <td>0</td> <td></td> <td></td> <td>ļ</td> <td></td>	220	55	10		4	0			ļ	
220       69       40       1       3       0       1         220       100       100       7       8       3       1         220       126       50       1       8       0       1         220       151       100       1       9       7       1         350       5       30       3       1       0       1         350       12       30       1       4       0       1         350       16       60       1       5       0       1         350       36       80       2       12       0       1         350       43       20       2       5       0       1         350       55       40       2       5       0       1         350       126       10       0       2       0       1         350       133       0       0       0       1       1         350       133       0       0       1       1       1         350       133       0       0       1       1       1         350 <td< td=""><td>220</td><td>68</td><td>40</td><td>0</td><td>5</td><td>0</td><td></td><td></td><td></td><td></td></td<>	220	68	40	0	5	0				
220       100       10       7       8       3         220       126       50       1       8       0         220       170       40       0       12       4         350       5       30       3       1       0       1         350       12       30       1       4       0       1         350       36       80       2       12       0       1         350       36       80       2       12       0       1         350       36       80       2       5       0       1         350       55       40       2       5       0       1         350       126       10       0       2       0       1         350       126       10       0       2       0       1         350       133       0       0       0       1       1         350       16       30       1       23       2       1         350       133       0       0       1       1       1         350       238       0       2       <	220	69	40	1	3	0			1	
220       126       50       1       8       0         220       170       40       0       12       4       1         350       5       30       3       1       0       1         350       12       30       1       4       0       1         350       16       60       1       5       0       1         350       36       80       2       12       0       1         350       36       80       2       12       0       1         350       43       20       2       5       0       1         350       55       40       2       5       0       1         350       133       0       2       0       1       1         350       133       0       0       0       1       1         350       151       20       0       8       1       1         350       186       30       1       23       2       1         350       203       20       0       12       2       1         350       203	220	100	10	7	8	3			1	
220       151       100       1       9       7         220       170       40       0       12       4       1         350       5       30       3       1       0       1         350       12       30       1       4       0       1         350       31       0       4       10       0       1         350       36       80       2       12       0       1         350       36       80       2       5       0       1         350       68       0       2       4       0       1         350       126       10       0       2       0       1         350       126       10       0       2       0       1         350       126       10       0       2       0       1         350       126       10       0       2       1       1         350       170       20       3       11       1       1         350       203       20       0       12       2       1         350       238	220	126	50	1	8	0				1
220       170       40       0       12       4         350       5       30       3       1       0       1         350       16       60       1       5       0       1         350       16       60       1       5       0       1         350       36       80       2       12       0       1         350       36       80       2       12       0       1         350       55       40       2       5       0       1         350       68       0       2       4       0       1         350       100       0       2       0       1       1         350       133       0       0       0       1       1         350       133       0       0       0       1       1         350       133       0       0       12       2       1         350       133       0       0       12       2       1         350       203       20       0       12       2       1         350       238 <td< td=""><td>220</td><td>151</td><td>100</td><td>1</td><td>9</td><td>7</td><td></td><td></td><td></td><td>4</td></td<>	220	151	100	1	9	7				4
350 $5$ $30$ $3$ $1$ $0$ $1$ $350$ $16$ $60$ $1$ $5$ $0$ $350$ $31$ $0$ $4$ $10$ $0$ $1$ $350$ $31$ $0$ $4$ $10$ $0$ $1$ $350$ $43$ $20$ $2$ $5$ $0$ $1$ $350$ $55$ $40$ $2$ $5$ $0$ $1$ $350$ $68$ $0$ $2$ $4$ $0$ $1$ $350$ $126$ $10$ $0$ $2$ $0$ $1$ $350$ $126$ $10$ $0$ $2$ $0$ $1$ $350$ $126$ $10$ $0$ $2$ $0$ $1$ $350$ $103$ $0$ $3$ $11$ $11$ $1$ $350$ $203$ $20$ $0$ $12$ $2$ $1$ $350$ $229$ $30$ $4$ $2$ $1$ $70$ <t< td=""><td>220</td><td>170</td><td>40</td><td>0</td><td>12</td><td>4</td><td></td><td></td><td>1</td><td></td></t<>	220	170	40	0	12	4			1	
350         12         30         1         4         0           350         16         60         1         5         0           350         31         0         4         10         0           350         331         0         4         10         0           350         36         80         2         12         0           350         43         20         2         5         0           350         68         0         2         4         0           350         100         0         2         0         1           350         133         0         0         0         1           350         133         0         0         8         1         1           350         133         0         0         8         1         1           350         126         10         0         2         1         1           350         203         20         12         1         1         1           70         12         10         4         9         0         1           70 <td>350</td> <td>5</td> <td>30</td> <td>3</td> <td>1</td> <td>0</td> <td></td> <td></td> <td>1</td> <td></td>	350	5	30	3	1	0			1	
350         16         60         1         5         0           350         31         0         4         10         0         1           350         36         80         2         12         0         1           350         43         20         2         5         0         1           350         55         40         2         5         0         1           350         68         0         2         4         0         1           350         100         0         3         9         0         1           350         126         10         0         2         0         1           350         151         20         0         8         1         1           350         156         10         2         1         1           350         186         30         1         23         2         1           350         203         20         0         3         1         1           350         229         30         0         4         0         1           70         16 <td>350</td> <td>12</td> <td>30</td> <td>1</td> <td>4</td> <td>0</td> <td></td> <td>-</td> <td></td> <td></td>	350	12	30	1	4	0		-		
350 $10$ $0$ $1$ $0$ $0$ $350$ $36$ $80$ $2$ $12$ $0$ $0$ $350$ $55$ $40$ $2$ $5$ $0$ $0$ $350$ $56$ $0$ $2$ $4$ $0$ $0$ $350$ $56$ $0$ $2$ $4$ $0$ $0$ $350$ $126$ $10$ $2$ $0$ $1$ $350$ $126$ $10$ $2$ $0$ $1$ $350$ $133$ $0$ $0$ $0$ $1$ $350$ $126$ $10$ $2$ $1$ $1$ $350$ $186$ $30$ $1$ $21$ $1$ $350$ $203$ $20$ $0$ $12$ $2$ $1$ $350$ $217$ $30$ $0$ $3$ $0$ $1$ $1$ $70$ $12$ $10$ $4$ $9$ $0$ $1$ $1$ $70$ $31$ $40$ <	350	16	60'	1	5	0				
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### Chapter 7

Table 7.1 Characteristic flakes found in axe reduction stages	2-58
Table 7.2 Features recorded on preforms from Gulgong and Warren	2-59
Table 7.3 Attributes recorded for archaeological material from the excavation	2-60
Table 7.4 Experimental stone reduction at Gulgong	
Table 7.5 Attributes recorded in the experimental stone reduction of GulgongmaterialatUNE	.2-62
Table 7.6 Experimental trials on Gulgong material at UNE	2-63
Table 7.7 Events recorded in experimental trials	2-65
Table 7.8 Experimental trials for extraction of raw material at Gulgong	2-66
Table 7.9 Experimental extraction of raw materal at Warren commercial quarry	2-67
Table 7.10 Experimental trials on raw material at Gulgong of stone detachedabove 80mm in length	2-68
Table 7.11 Shape of flakes in the experimental axe making on Gulgong material	2-69
Table 7.12 Experimental stone flakes classified by shape for the total of events in each experiment	.2-71
Table 7.13 Large flakes and blocks (>180mm) from experimental trials with material from Gulgong	.2-72
Table 7.14 Experimental stone flakes from extraction to the blocking out stage of reduction	.2-73
Table 7.15 Experimental stone flakes from the blocking out stage of reduction	2-74
Table 7.16 Experimental stone flakes from the shaping stage of reduction	2-75
Table 7.17 Experimental stone flakes from the thinning stage of reduction	2-76
Table 7.18 Experimental flaking of Gulgong stone: Squat and thick flakes	2-77
Table 7.19 Experimental stone from Gulgong: Squat and thick flakes in the extraction stage	2-78
Table 7.20 Experimental stone from Gulgong: Squat and thick flakes from the blocking out stage of reduction	2-79
Table 7.21 Experimental stone from Gulgong: Squat and thick flakes in the shaping stage of reduction	2-80
Table 7.22 Hinge fractures by reduction stage in experimental trials on materialfromGulgong	2-81

Table 7.23 Hinge flake measures from experimental trials with Gulgong raw         material.	2-82
Table 7.24         Reason for abandonment of preforms at Gulgong and Warren	2-83
Table 7.25 Reason for abandonment of axe preforms by stages of reduction, along transects in Areas A,B and C at Gulgong	2-84
Table 7.26 Reason for abandonment of axe preforms by stage of reduction along transects at Warren, Little Mount	2-85
Table 7.27Summary of stepped and hinge fractures on preforms from Gulgong and Warren	2-86
Table 7.28Number of hinge fractures on preforms from all recording at Gulgong and Warren	2-87
Table 7.29 Hinge flakes count by the stages of reduction, recorded from transects at Gulgong (Areas A,B,C) and at Warren	2-88
Table 7.30 Percentage of hinge flakes grouped by stages of reduction from transects at Gulgong on Areas A,B,C and at Little Mount, Warren	2-89
Table 7.31    Flaking control features from GFM1	2-90
Table 7.32 Comparison of square GFM1 2C with total of GFM1	2-91
Table 7.33 Hinged flakes from the 10x5 metre surface area at Gulgong	2-92

Reduction Stage	From Newcomer, Burton and Edmonds	Stages at Gulgong & Warren	Quarry products	Flake debitage
3	Initial trimming of block	Blocking out	Block	Massive flakes; thick in section; elongated and invasive LWT=100x 100x50 small angular platform chips with large platforms
4	Mass reduction	Shaping	Blank	Broad squat flakes; thick in section LWT= 50x100x20
5	Final shaping & thinning	Advanced shaping and thinning	Preform	Thinning flakes; small thin platform chips LWT=
				100x50x5

## Table 7.1. Characteristic flakes found in axe reduction stages

# Table 7.2Features recorded on preforms from GulgongandWarren

Feature of preform	Description
Made on a flake, or block	Either flake or block
Bifacial flaking	Yes/no important for flake
Measures	Axial in mm
LWT	Length Width Thickness
Measures	Maximum in mm
Length Width Thickness	-see text for description
Axial Length to width	
Weight in gms	
Reduction Stage	3 stages: Blocking Shaping Thinning
Symmetry	3 states: 1) attained 2) not attained 3) symmetry lost
Reason for abandonment	4 reasons: 1) Transverse snap 2) Edge damage 3) Mass removal 4) Raw material flaw
Flake count	
Hinged flake count	
Step flake count	
Cortex %	

### Table 7.3The attributes recorded for archaeologicalmaterialfrom the excavation

Flake Feature	Description
Not Worked	No flaking features
Worked	Carries flaking features
Flake Size	Maximum length measure
Length	From platform or PFA
Width	At mid-point to length
Thickness	At mid point to length
PFA Found	Impact point can be identified
PFA Crushed	No platform intact
PFA Width	Platform intact
Cortex	Percentage of cover on dorsal side
Flaked on 2 sides	Dorsal and ventral flake marks
Dorsal ridges	Presence or absence on flake
Hinged flake	Presence of hinge termination
Ripple marks	Presence of ripples on ventral side
Flaw in material	Crack or gap in the material
Flat shape	
Thin shape	
Block shape	
Angular shape	

### Table 7.4Experimental stone reduction at Gulgong

Input Details	Comments
Two people; stone knapper and the recorder	Usually same knapper through each experiment; some knappers change in the course of the experiment
Raw material sample selected	Forty numbered pieces of Gulgong stone were available
Weight and metric (LWT) size of the sample selected	The size of the input raw material varied between sample input pieces
General morphology of the selected stone as either rounded, or angular	Used as a guide to the starting condition of the workpiece
The surface can be cortex covered, or clean	The working properties and flakes produced are affected by the presence or absence of cortex
The raw material may be flawed, or clear	The flaws may be visible fractures, and may appear during knapping
The workpiece can be anvil- rested, or held freehand	Working details of holding the workpiece will change in some experiments
The percussion tool can be a stone hammer, or a steel hammer	In a few sections of the experiments a steel hammer was used
The type of blow delivered by the knapper can be a series of short blows, or a full arm swing	Short blows are usual, but with an anvil block then an arm swing may be used
The hand hold for the percussor may be single hand or double hand	Most of the hammerstones selected were only suitable for single hand use

## Table 7.5 Attributes recorded in the experimental stone reduction of Gulgong material at UNE

Attribute	Explanation
Experiment number	
Raw Material sample #	
Knapper	
Strike count	
Stone start shape:	Round Angular
Stone quality:	Flawed Not flawed
Surface of stone:	With cortex No cortex
Reduction technique:	Anvil rested Freehand
Hammer:	Stone Steel
Knapping by:	Short blows Arm swing
Knapping grip:	Singlehand Doublehand
Weight at start in kg	
Measure in mm	Length Width Thickness

Weight at end in kg

Exp	Raw	Knapper	Event	Strike	Stone	Stone	Stone	Reduction	Hammer	Knapping	Grip	Start	Length	Width	Thickness	End
No.	material sample No.		No.	count	start shape	quality	surface	te ch nique		tchnique		wgt (kg)	(mm)	(mm)	(mm)	wgt (kg)
1	3 5	PG	1 - 4	145	Round	Flawed	Cortex	Anvil	Stone	Short blows	I hand	19.1	480	290	180	6.7
2	36	PG	1 - 7	420	Angular	Not flawed	No cortex	Anvil	Stone	Short blows	l hand	4.6	300	150	100	1
3	4	GK	1 - 4	175	Angular	Flawed	No cortex	Anvil	Stone	Short blows	1 hand	8.9	5 5 0	150	150	1.8
4	fromExp3	WP/GK	1 - 6	92	Angular	Not flawed	No cortex	Anvil	Stone & steel	Short blows	1 hand & 2 hand	12.2	410	145	140	5.8
5	16	WP/GK	1 - 9	419	Angular	Not flawed	No cortex	Anvil & freehand	Stone	Short blows	1 hand	4.7	270	160	80	1
6	1	GK/WP	1 - 3	124	Angular	Not flawed	No cortex	Anvil	Stone & steel	Short blows	1 hand	5.2	390	190	130	2.2
7	38/2A	PG	1+2	189	Angular	Not flawed	No cortex	Anvil	Stone	Short blows & arm swing	l hand	2.8	260	90	75	1
8	38/2B	PG	1	4 8	Angular	Not flawed	No cortex	Anvil	Stone	Arm swing	l hand	4.5	290	110	90	4.4
9	2	WP/GK	1 - 3	157	Angular	Flawed	No cortex	Anvil & freehand	Stone	Short blows	l hand	4.8	295	165	8.0	1.4
10	5	PG	1+2	62	Angular	Flawed	No cortex	Anvil	Stone	Short blows & arm swing	l hand	7.2	410	180	100	4.2
11	6	WP	1 - 3	330	Round	Not flawed	No cortex	Anvil	Stone & steel	Short blows	l hand	7	275	230	100	1

.

Table 7.6/2

12	23	GK	1+2	158	Angular	Not flawed	No cortex	Anvil & freehand	Stone	Short blows	1 hand	3.1	265	135	90	0.9
13	WRO1	PG/RSC	1 - 4	N/A	Angular	Not flawed	No cortex	Anvil	Stone	Short blows & arm swing	1 hand & 2 hand	20	460	200	180	N/A
14	RO21	PG/RSC	1	N/A	Round	Flawed	Cortex	Anvil	Stone	Short blows & arm swing	1 hand & 2 hand	20	490	220	180	N/A

#### Table 7.7 Events recorded in experimental trials

Events are:

- 1 Change of sides, faces, or edges on the workpiece: so there must be a break in the physical location of the flake removal, something which happens less in early stages than late
- 2 Removal of large slab: changes mass of block on one face and everything has to be reconsidered
- 3 Return to a previously worked edge or face: to reincorporate the earlier events on that part of the preform back into the process
- 4 Change position of the workpiece: for example, by wedging mass against an anvil to increase mass for better detachments
- 5 Move from sides or edges to centre mass and back
- 6 Change of hammerstone
- 7 Change in size of the flakes removed: for example where work moves from an edge into the inner mass then flakes get smaller as this is reduced
- 8 Excessive force and repeated blows with a hammerstone to remove stone from the block

Table 7.8Experimental trials for extraction of rawmaterial at Gulgong

Weight (grams)	Flake Size	Flat/ thin	Angular block	Irregular shape	Flawed
620	230		1		
2235	295		1		
1585	240		1		
1836	255		1	1	1
3170	385		1	1	
TOTAL			5	2	1

Table 7.	9 Experime	ntal	extraction	of	raw	material	at
Warren	commercial	qua	rry				

Trial #	Type of hammer	Length	Width	Thick	Shape	Regular shape (Y/N)
1	Stone	335	120	110	angular block	Y
2	Stone	270	165	120	angular block	N
3	Steel	275	195	110	angular block	N
4	Steel	190	210	78	flat flake	Y

Table 7.10.	Exper	imental	trials	on	raw	mat	erial	at
Gulgong of	stone	detache	d abo	ve	80mm	in	lengt	h

Experiment#	Wgt (gms)	Flake Size	Flat/Thin	Angular/block
Exp G1	287	100		1
	157	80		1
	581	155		1
	419	180		1
	132	110		1
	35	85	1	
	44	92		1
	15	80	1	
	41	80		1
	2650	265		1
	1030	200		1
	632	155		1
	318	170		4
	185	150	4	1
	165	115	I	4
	105	05		4
	60	95		4
	69 57	90		4
	57	86		4
	41	81	4	1
	36	100	1	4
	51	82		1
	70	90	1	-
	172	102	4	
	111	85	1	
	65	80	1	,
	12	93		1
	360	115		1
	98	90		1
	167	120		1
	133	105		1
	127	90		1
	54	92		1
	64	82		1
	75	108	1	
	68	85		1
Total			8	2 7
Exp G2	517	165		1
	302	165		1
	289	148		1
	123	120		1
	48	92		1
	17	80	1	
	13	82	1	
	472	190		1
	177	135	•	1
	200	130	ł	1
	108	135		1
	39	85		1
	44	80	1	1
	52	87		1
Total			2	12

Table 7.11.The Shape of flakes in the experimental axeshaping on Gulgong material

Intiliber         Intiliber         Intiliber         Intiliber         Intiliber         Intiliber           1         1         1         6         1         5           2         17         10         7           3         33         17         16           4         106         39         67           7         162         67         95           2         1         10         8         2           2/3         16         7         9         4         22         3           6         23         13         10         7         44         28         16           7         44         28         16         120         69         51           3         1/2         9         5         4         3         12         0         12           4         1/2         6         6         6         6         6         6           7         44         12         6         6         6         3         3         3         1           2         5         1         1         1         1         1 <t< th=""><th>Experiment</th><th>Event</th><th>Flake</th><th>Flat</th><th>Angular</th></t<>	Experiment	Event	Flake	Flat	Angular
1         1         0         1         3           2         17         10         7           3         33         17         16           4         106         39         67           7         10         8         2           2         1         10         8         2           2/3         16         7         9           4         22         11         11           5         5         2         3           6         23         13         100           7         44         28         16           Total         120         69         51           3         1/2         9         5         4           3         12         0         12           4         1.4         17         10         7           5         1         1         1         1           2         5         4         1         3           5         1         1         1         1           2         5         3         3         1           3         8	1	1	<u> </u>	1	5
1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1	l	1	17	10	7
4         106         39         67           Total         162         67         95           2         1         10         8         2           2/3         16         7         9         4         22           4         22         11         11         11         11           5         5         2         3         10         7           4         22         11         11         11         11           5         5         2         3         10         7           7         44         28         16         10         10           7         44         28         16         10         12           4         12         6         6         6         12           4         12         6         6         6         12           4         12         6         6         6         12           5         1         1         1         1         1           6         7         1         1         1         3         3           5         1         1         1		2	33	17	16
Total         162         67         95           2         1         10         8         2           2/3         16         7         9           4         22         11         11           5         5         2         3           6         23         13         10           7         44         28         16           Total         120         69         51           3         1/2         9         5         4           3         12         0         12           4         12         6         6           Total         33         1         22           4         1-4         17         10         7           5         1         1         1         1           3         8         4         4         9           5         1         1         1         1           3         8         4         4         9           6         1         1         1         3           6         1         4         2         2           10		1	106	30	67
1         1         10         8         2           2         1         10         8         2           2/3         16         7         9           4         22         11         11           5         5         2         3           6         23         13         10           7         44         28         16           Total         120         69         51           3         1/2         9         5         4           3         12         0         12           4         12         6         6           Total         33         11         22           4         1-4         17         10         7           5         1         1         1         1           2         5         4         1         3           5         1         1         1         1           3         8         4         4         9           6         1         1         1         3           6         1         4         2         2	Total	7	162	67	95
2       1       10       6       2         2/3       16       7       9         4       22       11       11         5       5       2       3         6       23       13       10         7       44       28       16 <b>Total 120 69 51</b> 3       1/2       9       5       4         3       12       0       12         4       12       6       6 <b>Total 33 11 22</b> 4       1-4       17       10       7         5       1       1       1       1         2       5       4       1       3         5       1       1       1       1         2       5       4       1       3         6       1       1       1       3         6       1       4       2       2         7       6       5       1       3         6       1       4       2       2         7       1	10tai		102	Q	2
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	2	2/3	16	7	0
5       5       2       3         6       23       13       10         7       44       28       16         Total       120       69       51         3       1/2       9       5       4         3       12       0       12         4       12       6       6         Total       33       1       22         4       1-4       17       10       7         5/6       41       15       26         Total       58       25       33         5       1       1       1         2       5       4       1         3       8       4       4         4       9       6       3         5       1       1       1         2       5       4       1         3       8       4       4         4       9       6       3         5       4       1       3         6/7       6       5       1         8       10       6       4         2       9 <th></th> <th>275 A</th> <th>22</th> <th>, 11</th> <th>11</th>		275 A	22	, 11	11
6       23       13       10         7       44       28       16         Total       120       69       51         3       1/2       9       5       4         3       12       0       12         4       12       6       6         Total       33       11       22         4       1-4       17       10       7         4       1-4       17       10       7         5       1       1       1       1         2       5       4       1       3         5       1       1       1       1         2       5       4       1       3         6       1       1       1       1         2       5       4       1       3         6       1       4       2       2         6       1       4       2       2       2         6       1       4       2       2       2         6       1       4       2       2       2         6       1       4       2 <th></th> <th>5</th> <th>5</th> <th>2</th> <th>3</th>		5	5	2	3
7 $44$ $28$ $16$ Total $120$ $69$ $51$ 3 $1/2$ $9$ $5$ $4$ 3 $12$ $0$ $12$ 4 $12$ $6$ $6$ Total $33$ $11$ $22$ 4 $1-4$ $17$ $10$ $7$ $5/6$ $41$ $15$ $26$ Total $58$ $25$ $33$ $5$ $1$ $1$ $1$ $2$ $5$ $4$ $1$ $3$ $8$ $4$ $4$ $4$ $9$ $6$ $3$ $5$ $1$ $1$ $1$ $2$ $5$ $4$ $1$ $3$ $6/7$ $6$ $5$ $1$ $3$ $6/7$ $6$ $2$ $2$ $2$ $1$ $4$ $2$ $2$ $2$ $10$ $1$ $4$ $3$ $1$ $2$ $2$ $2$		6	23	13	10
Total         120         69         51           3 $1/2$ 9         5         4           3         12         0         12           4         12         6         6           Total         33         11         22           4         1-4         17         10         7           5/6         41         15         26           Total         58         25         33           5         1         1         1           2         5         4         1           3         8         4         4           4         9         6         3           5         1         1         3         8           4         9         6         3         5           5         4         1         3         6/7         6         5           8         10         6         4         9         2         2           5         0         2.9         2.1         6         1         4         2           6         1         4         2         2         3		7	2 J A A	28	16
1/1       1/2       0       5       4         3 $1/2$ 0       12         4       12       0       12         4       12       6       6         Total       33       11       22         4       1-4       17       10       7         5       1       1       1       2         4       1-4       17       10       7         5       1       1       1       1         2       5       4       1       3         5       1       1       1       1         2       5       4       1       3         6       1       1       1       1         3       8       4       4       9         6       1       1       3       1         6       1       4       2       2         6       1       4       2       2         7       1       8       7       1         7       1       8       7       1         9       1       6       4       2	Total	7	120	69	5 1
3 $1/2$ 9       3       4         3 $12$ 0 $12$ 4 $12$ 6       6         Total $33$ $11$ $22$ 4 $1-4$ $17$ $10$ $7$ 5       1 $1$ $15$ $26$ Total $58$ $25$ $33$ 5       1 $1$ $1$ $2$ $5$ $4$ $1$ $3$ $8$ $4$ $4$ $4$ $9$ $6$ $3$ $5$ $1$ $1$ $1$ $1$ $3$ $8$ $4$ $4$ $4$ $9$ $6$ $3$ $5$ $4$ $1$ $3$ $6/7$ $6$ $5$ $1$ $8$ $10$ $6$ $4$ $2$ $2$ $5$ $2$ $2$ $2$ $7$ $1$ $8$ $7$ $1$ $6$ $1$ $4$ $3$ $1$ <	2	1/2	120	5	<u> </u>
A       12       6       6         Total       33       11       22         4       1-4       17       10       7         5/6       41       15       26         Total       58       25       33         5       1       1       1         2       5       4       1         3       8       4       4         4       9       6       3         5       1       1       1       1         3       8       4       4         4       9       6       3         5       4       1       3         6/7       6       5       1         8       10       6       4         9       7       2       2         6       1       4       2       2         2       5       0       2.9       2.1         6       1       4       2       2         7       1       8       7       1         2       2       0       9       1         7       1       8 </th <th>3</th> <th>2</th> <th>10</th> <th>0</th> <th>4</th>	3	2	10	0	4
Total       33       11       22         4       1-4       17       10       7         5/6       41       15       26         Total       58       25       33         5       1       1       1         2       5       4       1         3       8       4       4         4       9       6       3         5       1       1       1       3         6       1       1       3       3         6/7       6       5       1         8       10       6       4         9       7       2       5         Total       50       29       21         6       1       4       2       2         2       5       2       3       3         3       20       16       4       4         10       4       3       1         9       1       6       4       2         2       9       5       4       1         9       1       6       4       2 <t< th=""><th></th><th>Л</th><th>12</th><th>6</th><th>۰<i>۲</i></th></t<>		Л	12	6	۰ <i>۲</i>
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4       1-4       17       10       7         5/6       41       15       26         Total       5       1       1       1         2       5       4       1       3         5       1       1       1       1         2       5       4       1       3         5       1       1       1       1         3       8       4       4         4       9       6       3         5       4       1       3         6/7       6       5       1         8       10       6       4         9       7       2       5         7       1       8       7       1         6       1       4       2       2         7       1       8       7       1         2       9       5       4         10       17       12       5         8       1       4       3       1         9       1       6       4       2         2       25       17       18       <	10121	1 1	17	10	7
Total       58       25       33         5       1       1       1         2       5       4       1         3       8       4       4         4       9       6       3         5       4       1       3         6       7       6       5       1         8       10       6       4         9       7       2       5         Total       50       29       21         6       1       4       2       2         2       5       2       3       3         3       20       16       4         4       3       1       1         2       9       5       4         10       17       12       5         3       15       11       4         10       1       23       14       9         2       25       12       13       13         10       1       23       14       9         2       25       12       13       14      10       10       23	4	1-4	17	10	26
10tal $3 \ 0$ $2 \ 5$ $3 \ 0$ $3 \ 0$ 5       1       1       1         2       5       4       1         3       8       4       4         4       9       6       3         5       4       1       3         6/7       6       5       1         8       10       6       4         9       7       2       5         Total       50       29       21         6       1       4       2       2         2       5       2       3       3         3       20       16       4       4         7       1       8       7       1         2       9       5       4       1         10       17       12       5       5         8       1       4       3       1         9       1       6       4       2         2       45       27       18       3         3       15       11       4       4         9       1       6 <th>Total</th> <th>570</th> <th>58</th> <th>2.5</th> <th>33</th>	Total	570	58	2.5	33
J       I       I       I       I         2       5       4       1         3       8       4       4         4       9       6       3         5       4       1       3         6/7       6       5       1         8       10       6       4         9       7       2       5         Total       50       29       21         6       1       4       2       2         2       5       2       3       3       20       16         Total       29       20       9       9       1       1         2       9       5       4       1       1       1         2       9       5       4       1       1       1         2       9       5       4       1       1       1       1         10       1       2       1       1       1       1       1       1         2       25       12       13       1       1       1       1       1       1       1       1       1 <th>5</th> <th></th> <th>1</th> <th><u></u></th> <th></th>	5		1	<u></u>	
2 $3$ $4$ $4$ $3$ $8$ $4$ $4$ $4$ $9$ $6$ $3$ $5$ $4$ $1$ $3$ $5$ $4$ $1$ $3$ $6/7$ $6$ $5$ $1$ $8$ $10$ $6$ $4$ $9$ $7$ $2$ $5$ $7$ $2$ $5$ $2$ $3$ $3$ $20$ $16$ $4$ $7$ $1$ $8$ $7$ $1$ $2$ $9$ $5$ $4$ $7$ $1$ $8$ $7$ $1$ $2$ $9$ $5$ $4$ $1$ $7$ $1$ $8$ $7$ $1$ $2$ $9$ $5$ $4$ $3$ $1$ $7$ $1$ $8$ $7$ $1$ $3$ $1$ $7$ $1$ $8$ $7$ $1$ $8$ $1$ $9$ $1$ $6$	5	1	5	1	1
3 $3$ $3$ $4$ $4$ $9$ $6$ $3$ $5$ $4$ $1$ $3$ $6/7$ $6$ $5$ $1$ $8$ $10$ $6$ $4$ $9$ $7$ $2$ $5$ Total $50$ $29$ $21$ $6$ $1$ $4$ $2$ $2$ $6$ $1$ $4$ $2$ $2$ $3$ $20$ $16$ $4$ $7$ $1$ $8$ $7$ $1$ $8$ $7$ $1$ $7$ $1$ $8$ $7$ $1$ $8$ $7$ $1$ $7$ $1$ $8$ $7$ $1$ $8$ $7$ $1$ $7$ $1$ $8$ $7$ $1$ $8$ $1$ $1$ $1$ $7$ $1$ $8$ $7$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$ $1$		2	8	4	1
4 $3$ $6$ $3$ $5$ $4$ $1$ $3$ $6/7$ $6$ $5$ $1$ $8$ $10$ $6$ $4$ $9$ $7$ $2$ $5$ Total $5$ $2$ $2$ $6$ $1$ $4$ $2$ $2$ $6$ $1$ $4$ $2$ $2$ $3$ $20$ $16$ $4$ $7$ $1$ $8$ $7$ $1$ $2$ $9$ $5$ $4$ $7$ $1$ $8$ $7$ $1$ $2$ $9$ $5$ $4$ $1$ $7$ $1$ $8$ $7$ $1$ $2$ $9$ $5$ $4$ $1$ $7$ $1$ $8$ $7$ $1$ $7$ $1$ $8$ $7$ $1$ $9$ $1$ $6$ $4$ $2$ $2$ $45$ $27$ $18$ $3$		3	0	4	4
6/7 $6$ $5$ $1$ $3$ $8$ $10$ $6$ $4$ $9$ $7$ $2$ $5$ Total $50$ $29$ $21$ $6$ $1$ $4$ $2$ $2$ $2$ $5$ $2$ $3$ $20$ $16$ $7$ $1$ $8$ $7$ $1$ $2$ $9$ $5$ $4$ $7$ $1$ $8$ $7$ $1$ $2$ $9$ $5$ $4$ $Total$ $17$ $12$ $5$ $8$ $1$ $4$ $3$ $1$ $9$ $1$ $6$ $4$ $2$ $2$ $45$ $27$ $18$ $3$ $3$ $15$ $11$ $4$ $9$ $2$ $25$ $12$ $13$ $7$ $6$ $4$ $2$ $24$ $10$ $1$ $23$ $14$ $9$ $2$ $25$ $12$ $13$ <th></th> <th>4</th> <th>9 1</th> <th>1</th> <th>3</th>		4	9 1	1	3
077 $10$ $0$ $3$ $1$ 8 $10$ $6$ $4$ $9$ $7$ $2$ $5$ Total $50$ $29$ $21$ $6$ $1$ $4$ $2$ $2$ 6 $1$ $4$ $2$ $2$ $3$ $20$ $16$ $4$ $7$ $1$ $8$ $7$ $1$ $8$ $7$ $1$ $2$ $9$ $5$ $4$ $3$ $1$ $7$ $1$ $8$ $7$ $1$ $2$ $9$ $5$ $4$ $1$ $4$ $3$ $1$ $9$ $1$ $6$ $4$ $2$ $2$ $45$ $27$ $18$ $3$ $15$ $11$ $4$ $9$ $1$ $6$ $4$ $2$ $24$ $10$ $1$ $23$ $14$ $9$ $2$ $25$ $12$ $13$ $10$ $1$ $23$ $14$ $9$ <		6/7	- -	5	1
9       7       2       5         Total       50       29       21         6       1       4       2       2         2       5       2       3         3       20       16       4         Total       2.9       20       9         7       1       8       7       1         2       9       5       4         7       1       8       7       1         2       9       5       4         Total       17       12       5         8       1       4       3       1         9       1       6       4       2         2       45       27       18       3         9       1       6       4       2         2       25       12       13         9       1       23       14       9         2       25       12       13         10       1       23       14       9         2       25       12       13         10       1       23       14       9		8	1.0	6	1
Total       50       29       21         6       1       4       2       2         2       5       2       3         3       20       16       4         Total       29       20       9         7       1       8       7       1         2       9       5       4         Total       17       12       5         8       1       4       3       1         9       1       6       4       2         2       45       27       18         3       15       11       4         9       1       6       4       2         2       25       12       13         4       3       15       11       4         10       1       23       14       9         2       25       12       13       13         Total       48       26       22       2         11       1/2       7       7       0         3       49       27       22       2         Total       56       <		9	7	2	5
I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal       I otal <thi otal<="" th="">       I otal       <thi otal<="" th=""> <thi otal<="" th=""></thi></thi></thi>	Total	,	5 0	29	2 1
1       4       2       2         2       5       2       3         3       20       16       4         Total       29       20       9         7       1       8       7       1         2       9       5       4         Total       17       12       5         8       1       4       3       1         9       1       6       4       2         2       45       27       18         3       15       11       4         9       1       6       4       2         2       45       27       18         3       15       11       4         9       1       23       14       9         2       25       12       13         Total       48       26       22         11       1/2       7       7       0         3       49       27       22       22         Total       56       34       22       2	6	1	1	<u> </u>	2 1
2 $3$ $20$ $16$ $4$ Total $29$ $20$ $9$ $7$ $1$ $8$ $7$ $1$ $2$ $9$ $5$ $4$ Total $17$ $12$ $5$ $8$ $1$ $4$ $3$ $1$ $9$ $1$ $6$ $4$ $2$ $9$ $1$ $6$ $4$ $2$ $2$ $45$ $27$ $18$ $3$ $15$ $11$ $4$ $10$ $1$ $23$ $14$ $9$ $2$ $25$ $12$ $13$ $Total$ $48$ $26$ $22$ $11$ $1/2$ $7$ $7$ $0$ $3$ $49$ $27$ $22$ $Total$ $56$ $34$ $22$	0	2	5	2	3
Total29209718712954Total1712581431916422452718315114Total664224101231492251213Total482622111/27703492722Total563422		2	20	16	з Д
7       1       8       7       1         2       9       5       4         Total       17       12       5         8       1       4       3       1         9       1       6       4       2         2       45       27       18         9       1       6       4       2         2       45       27       18         3       15       11       4         10       1       23       14       9         2       25       12       13         Total       48       26       22         11       1/2       7       7       0         3       49       27       22         Total       49       27       22         Total       56       34       22	Total	5	29	2 0	9
1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1 <th1< th=""> <th1< th=""> <th1< th=""></th1<></th1<></th1<>	7	1	8	7	1
Total       17       12       5         8       1       4       3       1         Total       4       3       1         9       1       6       4       2         2       45       27       18         3       15       11       4         Total       66       42       24         10       1       23       14       9         2       25       12       13         Total       48       26       22         11       1/2       7       7       0         3       49       27       22       22         Total       56       34       22       2	,	2	9	5	4
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Total	-	17	12	5
Total     4     3     1       9     1     6     4     2       2     45     27     18       3     15     11     4       Total     66     42     24       10     1     23     14     9       2     25     12     13       Total     48     26     22       11     1/2     7     7     0       3     49     27     22       Total     56     34     22	8	1	4	3	1
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Total		4	3	1
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	9	1	6	4	2
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		2	4 5	27	18
Total     6 6     4 2     2 4       10     1     23     14     9       2     25     12     13       Total     4 8     2 6     2 2       11     1/2     7     7     0       3     49     27     22       Total     5 6     3 4     2 2		3	15	11	4
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	Total		66	42	24
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	10	1	23	14	9
Total         48         26         22           11         1/2         7         7         0           3         49         27         22           Total         56         34         22		2	25	12	13
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Total		48	26	22
3     49     27     22       Total     56     34     22	11	1/2	7	7	0
Total 56 34 22		3	49	27	22
	Total	2	56	34	2 2

### Table 7.11/2

12	1	13	11	2
	2	14	13	1
Total		27	24	3
13	1	30	8	22
	2	38	16	22
	3	70	15	55
	4	2	2	0
Total		140	41	99
14	1	46	34	12
Total		46	34	12
All Exps Total		856	437	419

Table 7.12Experimental stone flakes classified by shapefor the total of events in each experimentSummary of Table 7.11

Experiment	Event	Flat/	Angular	Total
number	number	Thin	Block	Count
1	1 - 4	67	95	162
2	1 - 7	69	51	120
3	1 - 4	11	22	33
4	1 - 6	25	33	58
5	1 - 9	29	21	50
6	1 - 3	20	9	29
7	1 - 2	12	5	17
8	1	3	1	4
9	1 - 3	42	24	66
10	1 - 2	26	22	48
11	1 - 3	34	22	56
12	1 - 2	24	3	27
13	1 - 4	41	99	140
14	1	34	12	46
Total		437	419	856
% of total		51	<b>4</b> 9	100

## Table 7.13Large flakes and blocks (>180mm in length)from experimental trials with material from Gulgong

Flake #	Experiment#	Event#	Weight (grams)	Size length
			_	(mm)
	1	1	1211	195
	1	2	908	210
	1	4	759	250
	3	1/2	1443	220
	4	1 - 4	715	195
	4	5/6	585	200
			1606	230
	5	2	866	190
	5	4	823	180
	1	2	1062	185
	1	1	815	180
	1	2	2650	265
			1030	200
	14	1	517	180
			500	190
Mean			1031	196
Range (max)			2650	265
(min)		. ,	500	180

Tabl	le 7.14	Exp	eriment	tal	stone	flakes	from	extraction	to
the	blocking	out	stage	of	reduc	tion			

Experiment Number	Event number	No. of flat & thin flakes	No. of angular block flakes	Total count	Angular block flakes as % of total
1	1-4	67	95	162	58.6
3	1-2	4	5	9	55.6
4	1-4	10	7	17	41.2
13	1-4	41	99	140	70.7
14	1	34	12	46	26.1
Total		156	218	374	58.3
% of total		42	58	100	

Table 7.15Experimental stone flakes from the blockingout stage of reduction

Experiment	Event	No. of flat	No. of	Total	Angular block
Number	number	flakes	block flakes	count	total
2	1-6	41	35	76	46.0
3	3	0	12	12	100
4	5-6	15	26	41	63.4
5	1-2	5	1	6	16.7
6	1	2	2	4	50.0
7	1-2	12	5	17	29.4
8	1	3	1	4	25.0
9	1	4	2	6	33.3
10	1-2	26	22	48	45.8
11	1-2	7	0	7	100
12	1-2	24	3	27	11.1
Total		139	109	248	44.0
% of total		56	44	100	

Table7.16Experimental stone flakes from the shapingstageofreduction

Experiment Number	Event number	No. of flat & thin	No. of angular	Total count	Angular block flakes
		flakes	block flakes		as % of total
2	7	28	16	44	36.4
3	4	6	6	12	50.0
5	3-7	16	11	27	40.1
6	2-3	18	7	25	28.0
9	2-3	38	22	60	3
11	3	27	22	49	44.9
Total		133	84	217	38.7
% of total		61	39	100	

Table 7.17Experimental stone flakes from the thinningstage of reduction

Experiment Number	Event number	No. of flat & thin flakes	No. of angular block flakes	Total count	Angular block flakes as % of total
5	8-9	8	9	17	36.4
Total		8	9	17	36.4
% of total		47	53	100	

Experiment No.	Event No.	Stage of Reduction	$ \begin{array}{c c} L ength \\ to width \\ = <0.67 \\ (Squat) \end{array} $	Length to width = <0.67 - 1.0 (Squat)	L ength to width = 1.0 - 2.0	Length to width = $> 2.0$ (Long)	TOTAL length to width	Length to thickness = <4.0 (Thick)	Length to thickness = >4.0 (Thin)	TOTAL length to thickness
			(-1)	(- 1 )	(Long)	(				
1	4	Extraction	4	0	0	0	4	2	2	4
2	1-6 7	Blocking out Shaping	22 17	9 6	12	3 0	4 6 2 6	25 19	21 7	4 6 2 6
3	3	Blocking out	1	0	2	0	3	1	2	3
4	1-4 5-6	Extraction Blocking out	1 9	0 2	4 2	0 0	5 1 3	2 7	3 6	5 1 3
5	1-2 4-7 8-9	Blocking out Shaping Thinning	0 0 6	0 6 0	9 3 5	3 2 0	1 2 1 1 1 1	3 3 7	9 8 4	1 2 1 1 1 1
6	2-3	Shaping	8	5	0	0	13	9	4	1 3
7	1-2	Blocking out	3	1	0	0	4	3	1	4
8	1	Blocking out	2	0	0	0	2	2	0	2
9	2	Shaping	1	2	1	0	4	3	1	4
10	1-2	Blocking out	2	0	0	0	2	2	0	2
11	3	Shaping	10	3	0	0	13	9	4	13
12	2	Blocking out	3	1	0	0	4	3	1	4
Total			89	3 5	41	8	173	100	73	173
% Total			51.4	20.2	23.7	4.6	100	57.8	42.2	100

Table 7.19Experimental flaking of Gulgong stone: Squat and thick flakes in the extractionstage

Experiment No.	Event No.	Length to width = <0.67 (Squat)	Length to width = <0.67 - 1.0 (Squat)	Length to width = 1.0 - 2.0 (Long)	Length to width = >2.0 (Long)	TOTAL length to width	Length to thickness = <4.0 (Thick)	Length to thickness = >4.0 (Thin)	TOTAL length to thickness
1	4	4	0	0	0	4	2	2	4
4	1-4	1	0	4	0	5	2	3	5
Total		5	0	4	0	9	4	5	9
% Total		56	0	44	0	100	44	56	100

Table 7.20 Experimental stone from Gulgong: squat and thick flakes from the blocking out stage of reduction

Experiment No.	Event No.	Length to width = <0.67 (Squat)	Length to width = <0.67 - 1.0 (Squat)	Length to width = 1.0 - 2.0 (Long)	Length to width = >2.0 (Long)	TOTAL length to width	Length to thickness = <4.0 (Thick)	Length to thickness = >4.0 (Thin)	TOTAL length to thickness
2	1-6	22	0	12	3	4 6	25	21	46
3	3	1	0	2	0	3	1	2	3
4	5-6	9	2	2	0	13	7	6	13
5	1 - 2	0	0	9	3	12	3	9	12
7	1 - 2	3	1	0	0	4	3	1.	4
8	1	2	0	0	0	2	2	0	2
10	1 - 2	2	0	0	0	2	2	0	2
12	2	3	1	0	0	4	3	1	4
Total		4 2	13	2 5	6	86	4 6	4 0	86
%Total		49	15	29	7	100	54	46	100

Table 7.21 Experimental flaking of Gulgong stone: Squat and thick flakes in the shaping stage of reduction

Experiment No.	Event No.	Length to width = <0.67 (Squat)	Length to width = <0.67 - 1.0 (Squat)	Length to width = $1.0 - 2.0$	Length to width = >2.0 (Long)	TOTAL length to width	Length to thickness = <4.0 (Thick)	Length to thickness = >4.0 (Thin)	TOTAL length to thickness
2	7	17	6	3	0	2 6	19	7	2 6
5	4 - 7	0	6	3	2	11	3	8	11
6	2-3	8	5	0	0	13	9	4	13
9	2	1	2	1	0	4	3	1	4
11	3	10	3	0	0	13	9	. 4	13
Total		36	2 2	7	2	67	43	24	67
Percent		54	33	10	3	100	64	36	100

# Table 7.22Hinge fractures by reduction stage inexperimental trials on material from Gulgong

Reduction stage	Experiment#	Event#	Flakes	Hinges	Hinge %
Extraction (2)	3	1, 2	9	1	
	4	1 to 4	17		
Total (2)			26	1	3.9
Blocking out (3)	3	3	12		
	4	5, 6	41	3	
	5	1	2	1	
	5	2	7		
Total (3)			62	4	6.5
Shaping (4)	3	4	12		
	5	3	11	2	
	5	4	11	2	
	5	5	5	1	
	5	6, 7	9		
Total (4)			48	5	10.4
Thinning (5)	5	8	13		
	5	9	9		
Total (5)			22	0	0
TOTAL			158	10	6.3

. -

Experiment#	Event #	Length (mm)	Width (mm)	Thick (mm)
3	1, 2	45	35	7
4	5, 6	75	75	20
	5, 6	30	57	6
	5, 6	24	43	4
5	1	44	32	10
	3	41	35	8
	3	55	30	15
	4	43	28	7
	4	42	24	5
	5	41	28	15

Table 7.23Hinged flake measures from experimentaltrials with Gulgong raw material

Table 7.24The Reason for abandonment of preforms atGulgong and Warren

		Transverse snap	Edge damage	Mass removal	Raw material flaw	TOTAL
Gulgong	Ν	35	165	66	27	293
	%	12	56	23	9	100
Warren	Ν	82	80	37	0	199
	%	41	40	19	0	100

Table7.25Reason for abandonment of axe preforms by<br/>stages of reduction, along transects in Areas A, B and C<br/>at Gulgong

Stage of reduction	Transverse snap	Edge damage	Mass removal	Raw material flaw	TOTAL	PERCENT
3. Blocking out stage	6	41	26	14	87	40
2. Shaping stage	15	56	17	3	91	42
1. Advanced thinning stage	8	20	9	2	39	18
TOTAL	29	117	52	19	217	100
PERCENT	14	53	24	9	100	

Table 7.26Reason for abandonment of axe preforms by<br/>stages of reduction along transects at Warren, Little<br/>Mount.

Stage of reduction	Transverse snap	Edge damage	Mass removal	Raw material flaw	TOTAL	PERCENT
3. Blocking out stage	20	24	12	0	56	40
2. Shaping stage	29	19	7	0	5 5	42
1. Advanced thinning stage	2	6	6	0	14	18
TOTAL	5 1	49	2 5	0	125	100
PERCENT	41	39	20	0	100	

Table 7.27 Summary of stepped and hinge fractures on preforms from Gulgong and Warren.

SITE	Number of preforms	Percent with Hinge Fractures	Percent with Step Fractures
Gulgong	341	87.3%	89.6%
Warren	124	6.6%	72%

Table 7.28 Number of Hinge fractures on preforms from all recording at Gulgong andWarren

	Number of hinge fractures												]									
	0 1		1	2			3	 	4	5		6		7			8	>8		TOTAL		
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Gulgong	42	12	55	16	70	21	77	23	46	14	30	9	8	2	4	1	4	1	5	1	341	100
Warren	117	94	6	5	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	124	100_

# Table 7.29 Hinged flake count by the stage of reduction recorded from transects at Gulgong (Areas A, B, C) and at Warren

		·.			Number	r of hinge	fractures				7
	0	1	2	3	4	5	6	7	8	>8	TOTAL
Gulgong	tata ang	1	1. A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A	1	· ·	· · · · · ·	I	1	1	1,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	- <b>I</b>
Blocking out stage	14	14	17	16	6	1	2	0	0	0	
Shaping stage	16	20	24	20	6	12	2	0	2	1	
Advanced thinning stage	2	5	11	8	5	1	1	0	0	2	
TOTAL	32	44	54	44	17	14	5	0	2	3	213
Percent	15	21	25	21	8	7	2	0	<1	1	100
Warren				·	I.,, <u>,</u> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	ι	L	I		I	
Blocking out stage	47	4	1								
Shaping stage	49	2									
Advanced thinning stage	21										
TOTAL	117	6	1								124
Percent	94	5	1								100

Table 7.30Percentage of hinge flakes grouped by stagesof reduction from transects at Gulgong on Areas A, B, Cand at Little Mount, Warren

	No.	of hi	flakes							
	0	1 - 4	>4	%						
Gulgong (n=213)										
Stage 3: Blocking out	19%	77%	4%	100						
Stage 2: Shaping	16%	67%	17%	_100						
Stage 1: Advanced thinning	6%	83%	11%	100						
TOTAL %	15%	75%	10%	100						
Warren (n=124)										
Stage 3: Blocking out	90%	10%		100						
Stage 2: Shaping	96%	4%		100						
Stage 1: Advanced thinning	100%	0%		100						
TOTAL %	94%	6%		100						

GFM1	PFA	Worked	Hinge	Ventral	PFA	PFA	PFA
Excavation	total	stone	flake	ripple	c r u s h e d	found	width
square			fracture				measure
GFM1 1C 1	21	102	2	0	8	8	5
1C 2	40	232	2	0	20	17	3
1C 3	42	324	2	0	17	19	6
1C 4	51	428	7	0	20	24	7
1C 5	34	362	3	0	17	13	4
1C 6	17	63	1	0	4	13	0
1C 7	0	154	0	0	0	0	0
Total1C	205	1665	17	0	86	94	2 5
GFM1 2C 1	13	30	4	0	5	4	4
2C 2	157	522	10	0	95	62	0
2C 3	53	148	10	0	22	31	0
2C4	4 5	238	9	0	17	21	7
2C5	40	113	4	0	8	32	0
2C6	26	59	1	0	8	17	1
2C7	9	15	0	0	1	5	3
2C8	10	23	0	0	3	5	2
2C9	4	8	0	0	0	2	2
Total 2C	357	1156	38	0	159	179	19
GFM1 3C 1	74	630	5	0	18	49	7
3C 2	30	194	2	0	6	18	6
3C 3	46	345	1	0	18	30	8
3C 4	29	120	1	0	5	21	3
Total 3C	179	1289	9	0	4 7	118	2 4
GFM1 4C S	0	760	14	9	0	0	0
4C L1	23	3511	84	43	5	18	0
4C L2	0	660	11	9	0	0	0
4C L3	0	113	0	0	0	0	0
Total 4C	23	5044	109	61	5	18	0
Total	774	9154	173	61	297	409	68
Percent	8.4	100	1.9	0.7	38.4	52.8	8.8

Table 7.31Flaking Control features from GFM1
Excavation	PFA	Worked	PFA	PFA	PFA width
square	total	stone	crushed	found	measure
GFM1 (total)	774	9154	297	409	68
Percent	8.4	100	38.4	52.8	8.8
GFM1 2C	357	1156	159	1948	<1
Percent	30.9	100	13.8	17.1	<1

Table 7.32Comparison of GFM1 2C with total of 4 GFM1

Table 7.33Hinged flakes from the 10x5 metre surfacearea at Gulgong

	Hinged flakes	Total worked stone
Count of all	65	892
worked stone		
Percent	7.3	100
Count of LWT	3 4	139
Percent	24.5	100

# Chapter 8

Table 8.1 Tool kits in relation to the production trajectory and use-life for stone axes	2-93
Table 8.2 Hammerstones from Gulgong in total	2-94
Table 8.3 Hammerstones from transects at Gulgong	2-95
Table 8.4 Hammerstones from Warren in total	2-96
Table 8.5  Hammerstones from transects at Warren	2-97
Table 8.6 Summary of all hammerstones from Gulgong and Warren compared to hammerstones from the transects	2-98
Table 8.7 Battering on hamerstones	2-99
Table 8.8 Hammerstones compared with axe preforms	-100
Table 8.9  Large hammerstones recorded at Gulgong2	-101
Table 8.10 Hammerstones grouped by the weights2	-102
Table 8.11 Trajectory of all hammerstones recorded at Gulgong2	-103
Table 8.12  Trajectory of all hammerstones recorded at Warren2	-104
Table 8.13 Hammerstones from transects by type of material and point in the production trajectory2-	105

# Table 8.1Tool kits in relation to the productiontrajectory and use-life for stone axes

Stage of reduction	Predicted	Gulgong	Warren
Extraction	Lever poles Fire Wedges Heavy h/stone	Heavy h/stone Actinolitic schist Local stone not for axes	None required
Blocking out	Anvil Large h/stones	Anvil Large h/stone Actinolitic schist	Large h/stone Actinolitic schist
Shaping	Medium h/stone	Medium h/stone Actinolitic schist Exotic stone	Medium h/stone Actinolitic schist
Thinning	Small h/stone	Small h/stone Actinolotic schist Exotic stone	Small h/stone Actinolitic schist
Grinding	Grinding slab	Fixed grindstone	Fixed grindstone
Use and Maintenance	Small h/stone Whetstone Portable grindstone	None	-at campsites Small h/stone Exotic stone Portable grindstone Whetstone

GWR01       155       90       45       1002       2       1       1         GWR02       195       90       55       1302       2       1       1         GWR01       135       60       42       518       2       1       1         GFMT11E       110       60       36       294       3       1       4         GHS174C       120       65       55       517       1       2       1         GHS374C       75       50       40       223       2       1       1         GHS374C       75       50       40       223       2       1       1         GHS111C       90       60       40       243       1       1       1         GT4C       8
GWR01       155       90       45       1002       2       1       1         GWR02       195       90       55       1302       2       1       1         GWR01       135       60       42       518       2       1       1         GMR01       135       60       42       517       1       2       1         GHS174C       120       65       55       517       1       2       1         GHS374C       75       50       40       223       2       1       1         GHS374C       75       50       40       223       2       1       1         GHS111C       90       60       40       243       1       1       1         GT4C       84<
GWRO2     195     90     55     1302     2     1     1       GWRO1     135     60     42     518     2     1     1       GFM T11E     110     60     36     294     3     1     4       GHS1T4C     120     65     55     517     1     2     1       GHS1T4C     165     98     50     1307     1     2     1       GHS3T4C     75     50     40     223     2     1     1       G T12/3     80     60     50     343     1     1     1       GHS1T1C     90     60     40     243     1     1     1       GHS1T1C     90     60     40     243     1     1     1       GHS1T1C     90     60     40     243     1     1     1     1       G T4C     84     48     18     98     2     1     1     1       GHS#49     95     75     25     228     3     1     4
GWRO1     135     60     42     518     2     1     1       GFM T11E     110     60     36     294     3     1     4       GHS1T4C     120     65     55     517     1     2     1       GHS1T4C     165     98     50     1307     1     2     1       GHS3T4C     75     50     40     223     2     1     1       G T12/3     80     60     50     343     1     1     1       G T12/3     80     60     50     343     1     1     1       GHS1T1C     90     60     40     243     1     1     1       GHS1T1C     90     60     40     243     1     1     1       G T4C     84     48     18     98     2     1     1     1       G T7CM25     95     70     45     342     1     1     1     1       GHS#49     95     75     25     228     3     1     4 <tr< td=""></tr<>
GFM T11E       110       60       36       294       3       1       4         GHS1T4C       120       65       55       517       1       2       1         GHST4C       165       98       50       1307       1       2       1         GHS3T4C       75       50       40       223       2       1       1         GHS3T4C       75       50       40       223       2       1       1         G T12/3       80       60       50       343       1       1       1         GHS1T1C       90       60       40       243       1       1       1         GHS1T1C       90       60       40       243       1       1       1         GHS11C       90       60       40       243       1       1       1         GHS2       95       70       45       342       1       1       1         GHS#49       95       75       25       228       3       1       4         GHS#50 <t< td=""></t<>
GHS1T4C       120       65       55       517       1       2       1         GHST4C       165       98       50       1307       1       2       1         GHS3T4C       75       50       40       223       2       1       1         G T12/3       80       60       50       343       1       1       1         GHS1T1C       90       60       40       243       1       1       1         GHS1T1C       90       60       40       243       1       1       1         GT4C       84       48       18       98       2       1       1         GT7CM25       95       70       45       342       1       1       1         GHS#49       95       75       25       228       3       1       4         GHS#50       87       73       48       560       3       1       4         GHS1       100       90       28       295       3       1       4         GHS1       100 </td
GHST4C     165     98     50     1307     1     2     1       GHS3T4C     75     50     40     223     2     1     1       G T12/3     80     60     50     343     1     1     1       GHS1T1C     90     60     40     243     1     1     1       GHS1T1C     90     60     40     243     1     1     1       GT4C     84     48     18     98     2     1     1       GT7CM25     95     70     45     342     1     1     1       GHS#49     95     75     25     228     3     1     4       GHS#50     87     73     48     560     3     1     4       GHS#50     87     73     48     560     3     1     4       GHS1     100     90     28     295     3     1     4       GHS2     75     45     32     151     3     1     4       GHS2     75
GHS3T4C       75       50       40       223       2       1       1         G T12/3       80       60       50       343       1       1       1       1         GHS3T4C       75       50       40       223       2       1       1       1         G T12/3       80       60       50       343       1       1       1       1         GHS1T1C       90       60       40       243       1       1       1       1         GHS1T1C       90       60       40       243       1       1       1       1         GT2CM25       95       70       45       342       1       1       1         GHS#49       95       75       25       228       3       1       4         GHS#50       87       73       48       560       3       1       4         GHS#50       87       75       40       253       3       1       4         GHS1       100       90       28       295       3
G T12/3     80     60     50     343     1     1     1       GHS1T1C     90     60     40     243     1     1     1     1       G T4C     84     48     18     98     2     1     1     1       G T4C     84     48     18     98     2     1     1     1       G T7CM25     95     70     45     342     1     1     1     1       GHS#49     95     75     25     228     3     1     4       GHS#50     87     73     48     560     3     1     4       GHS#51     100     90     28     295     3     1     4       GHS1     100     90     28     295     3     1     4 </td
GHS1T1C     90     60     40     243     1     1     1       G T4C     84     48     18     98     2     1     1       G T7CM25     95     70     45     342     1     1     1       GHS#49     95     75     25     228     3     1     4       GHS#50     87     73     48     560     3     1     4       GT12M78     90     75     40     253     3     1     4       GHS1     100     90     28     295     3     1     4       GHS2     75     45     32     151     3     1     4
G T4C     84     48     18     98     2     1     1       G T7CM25     95     70     45     342     1     1     1     1       GHS#49     95     75     25     228     3     1     4       GHS#50     87     73     48     560     3     1     4       GT12M78     90     75     40     253     3     1     4       GHS1     100     90     28     295     3     1     4       GHS2     75     45     32     151     3     1     4
G T7CM25     95     70     45     342     1     1     1       GHS#49     95     75     25     228     3     1     4       GHS#50     87     73     48     560     3     1     4       GT12M78     90     75     40     253     3     1     4       GHS1     100     90     28     295     3     1     4       GHS2     75     45     32     151     3     1     4
GHS#49     95     75     25     228     3     1     4       GHS#50     87     73     48     560     3     1     4       GT12M78     90     75     40     253     3     1     4       GHS1     100     90     28     295     3     1     4       GHS2     75     45     32     151     3     1     4
GHS#50       87       73       48       560       3       1       4         GT12M78       90       75       40       253       3       1       4         GHS1       100       90       28       295       3       1       4         GHS2       75       45       32       151       3       1       4
GT 12M78   90   75   40   253   3   1   4     GHS1   100   90   28   295   3   1   4     GHS2   75   45   32   151   3   1   4
GHS1       100       90       28       295       3       1       4         GHS2       75       45       32       151       3       1       4
GHS2       75       45       32       151       3       1       4         GHS2       75       45       32       151       3       1       4
(GE/H)34   / 3   60   50   315   3   1   4
GEM14CI 1 85 65 45 425 3 1 5
GEM12Cspit7 64 42 40 155 3 1 5
GEM 85 62 49 330 3 2 4
GEM       103       83       23       275       3       1       4
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
GExtrEace 295 120 90 4750 2 1 1
El Extrade 122 48 35 285 1 2 1
07 BO1 T2 139 105 63 1028 2 1 1
40 T10 M192 100 85 72 1427 1 2 1
49       19       190       03       72       1427       1       2       1         45       T10       M165       105       87       64       1210       1       1       1       1
43 119 M103       133       07       04       1213       1       1       1         51 T10 M183       155       0.8       61       868       1       1       1       1
86 T3 M70 137 68 34 351 1 1 3
70 T3-T4       280       145       120       6156       1       2       3
<u>54 T18-20 270 113 78 2372 1 1 3</u>
T7c/10 236 122 63 2493 1 1 3
T11 M60 130 70 54 655 1 1 3
T11 M24 215 114 100 2831 1 1 1
$\begin{array}{c c c c c c c c c c c c c c c c c c c $
T14 M80 180 65 55 1068 1 2 3
T11/31       265       112       80       3320       1       1       2
T12 M35 158 85 65 1086 1 1 1
T12 mod       100       00       00       1000       1       1       1         T11/13       161       80       57       962       1       1       3
T11/15 116 74 43 503 1 1 1
T11/6 185 132 80 2570 1 1 2
EM1 20spit9 260 140 105 2100 1 1 2
10x5sg 100 65 27 215 1 3 1
Image: Second second
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
Gabo 12.2111       1.34       0.7       0.4       34.5       1       1       1       1         Gabo 15.5m       1.08       8.8       3.2       4.25       1       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3       3
Cado 13.5m       100       00       52       42.5       1       5       3         Ca30N 22.4m       135       57       4.4       420       1       1       2
Gabory 22.4m       155       81       58       800       1       1       3
Cabon 22.4m       100       01       50       050       1       1       1         Cabon 22.4m       10       48       42       270       1       1       2
Galoun       12.5m       110       40       42       210       1       1       3         Co20N       22.4m       2.47       7.4       7.2       2050       1       1       2
Gabury 22.411       247       14       12       2030       1       1       3         #D2       210       120       55       1875       1       1       2
#12       210       120       33       1073       1       1       3         Ga/5 32 3m       115       58       52       450       1       2       2

# Table 8.2HammerstonesfromGulgongintotal

### \* (raw material type):

1=fine grained actinolitic schist 2=coarse grained actinolitic schist 3=exotic/off site stone

### \*\*(Trajectory):

1=hammerstone 2=block to hammerstone 3=preform to hammerstone 4=exotic hammerstone 5=exotic muller to hammerstone

Location	Length	Width	Thickness	Weight	Raw material	No. of battered	Trajectory**
					type*	points	
T4C	120	65	55	517	1	2	1
T4C	165	98	50	1307	1	2	1
T4C	75	50	40	223	2	1	1
T12/3	80	60	50	343	1	1	1
T1C	90	60	40	243	1	1	1
T4C	84	48	18	98	2	1	1
T7CM25	95	70	45	342	1	1	1
T12M78	90	75	40	253	3	1	4
T2 97 RO1	139	105	63	1028	1	1	1
T19 M183	190	85	72	1427	1	2	1
T19 M165	195	87	64	1219	1	1	1
T19 M183	155	98	61	868	1	1	1
T3 M70	137	68	34	351	1	1	3
T3-T4	280	145	120	6156	1	2	3
T18-20	270	113	78	2372	1	1	3
T7C/10	236	122	63	2493	1	1	3
T11 M60	130	70	54	655	1	1	3
T11 M24	215	114	100	2831	· 1	1	1
T8C/2	205	90	67	1447	1	1	1
T14 M80	180	65	55	1068	1	2	3
T11/31	265	112	80	3320	1	1	2
T12 M35	158	85	65	1086	1	1	1
T11/13	161	80	57	962	1	1	3
T11/15	116	74	43	503	1	1	1
T11/6	185	132	80	2570	1	1	2

Table 8.3 Hammerstones from transects at Gulgong

#### \* (Raw material type):

1=fine grained actinolitic schist 2=coase grained actinolitic schist 3=exotic/off site stone

#### \*\*(Trajectory):

1=hammerstone 2=block to hammerstone 3=preform to hammerstone 4=exotic hammerstone 5=exotic muller to hammerstone

Location	Length	Width	Thickness	Weight	No. of battered	Trajectory*
					points	
T150/4	80	70	45	310	1	1
Isolated find	155	135	75	1950	1	1
T500/14	126	60	48	570	2	3
Isolated find	105	88	67	650	1	1
Isolated find	115	75	47	575	1	3
Isolated find	147	90	45	860	1	3
Isolated find	186	85	52	950	2	1
Isolated find	120	108	47	830	1	1
Isolated find	105	105	48	645	1	3
Isolated find	125	85	65	1075	1	1
Isolated find	103	83	42	480	2	3
T500/16/7	90	65	45	340	1	1
Isolated find	90	105	40	570	1	3
Isolated find	152	95	55	1180	2	2
T500/14	122	100	32	587	1	3
T500/14	120	90	64	779	1	2
Isolated find	118	80	45	603	1	3
T500/14	107	100	45	540	2	3
Isolated find	125	72	36	517	1	1
Isolated find	140	100	47	805	1	3
Isolated find	128	85	52	730	1	3
Isolated find	140	125	62	1770	2	1
T150/4	115	90	43	600	1	3
T500/8	115	70	60	650	1	1
T500/12	110	85	38	420	2	3
ISOLATED	98	90	42	434	1	3
T500/10	100	96	45	520	2	3
T500/10	87	110	47	660	1	3
T500/10	100	120	47	835	1	3
T500/10	102	96	40	765	1	3
T500/13	135	118	50	1215	1	5
T500/13	135	68	60	840	2	3
T500/13	145	77	53	765		3
T500/18	110	70	38	650		1
T150/6	125	96	65	990	2	1
T500/10	83	60	38	250	2	3
T500/10	95	82	50	450	1	1
T500/10	70	45	35	120	1	2
T500/15	115	62	58	530	1	1
ExtractionFace	135	105	64	1275	2	1
Study Area	112	92	44	705	1	4
Study Area	85	85	75	780	1	5
Study Area	105	75	63	675	3	1
Isolated find	98	103	46	710	1	4
Isolated find	123	55	45	475	2	1
Isolated find	105	88	67	650	1	1
Isolated find	115	75	47	575	1	3
Isolated find	147	<u> </u>	45	860	1	3
Isolated find	186	85	52	950	2	3
Isolated find	120	108	47	830	1	2
Isolated find	105	105	4.8	645	' 	1
Isolated find	125	85	65	1075	1	1
Isolated find	103	83	42	480	2	3

## Table 8.4 Hammerstones from Warren in total

\* (Trajectory):

1=hammerstone

2=block to hammerstone

3=preform to hammerstone

4=transverse snap preform to hammerstone

5=core to hammerstone

Location	Length	Width	Thickness	Weight	No. of battered	Trajectory*
					points	
T150/4	80	70	45	310	1	1
T500/14	126	60	48	570	2	3
T500/16/7	90	65	45	340	1	1
T500/14	122	100	32	587	1	3
T500/14	120	90	64	779	1	2
T500/14	107	100	45	540	2	3
T150/4	115	90	43	600	1	3
T500/8	115	70	60	650	1	1
T500/12	110	85	38	420	2	1
T500/10	100	96	45	520	2	1
T500/10	87	110	47	660	1	1
T500/10	100	120	47	835	1	1
T500/10	102	96	40	765	1	1
T500/13	135	118	50	1215	1	5
T500/13	135	68	60	840	2	3
T500/13	145	77	53	765	1	3
T150/6	125	96	65	990	2	1
T500/10	83	60	38	250	2	3
T500/10	95	82	50	450	1	1
T500/10	70	45	35	120	1	2
T500/15	115	62	58	530	1	1

## Table8.5HammerstonesfromtransectsatWarren

### \*(Trajectory):

1=hammerstone 2=block to hammerstone 3=preform to hammerstone 4=transverse snap to hammerstone 5=core to hammerstone

	H/stones of stone used	H/stones of stone from	Total	H/stones of exotic	Total	
	for axes	quarry, not used for axes		stone		
Gulgong						
Across whole site	35	7	42	11	53	
% of site	83	17	100			
On Transects	21	3	24	1	25	
% of site	87	13	100			
Warren						
Across whole site	53					
% of site	100					
On Transects	21					
% of site	100					

# Table8.6Summaryofhammerstones

	Number 1	of battered 2	points 3	Total
Gulgong				
Across whole	4 2	8	3	53
site				
% of total	80	15	5	100
On Transects	20	5	0	25
% of total	80	20	0	100
Warren				
Across whole	37	15	1	53
site				
% of total	70	28	2	100
On Transects	14	7	0	21
% of total	67	33	0	100

# Table8.7Battering on hammerstones

	Preforms	Hammer stones	Total
From whole	site:		<u></u>
Gulgong	350	53	403
%	87	13	100
Warren	235	53	288
%	82	18	100
From trans	ects:	<u></u>	••••••••••••••••••••••••••••••••••••••
Gulgong	222	2 5	247
%	90	10	100
Warren	124	21	145
%	86	14	100

# Table8.8Hammerstonescomparedwithaxepreforms

# Table 8.9 Large hammerstones recorded at Gulgong

Location	Length (mm)	Weight (gm)
Length >250mm and	heavier than 2kg	
Excavation:		
Extraction face	295	4750
FM1 2C spit 9	260	2100
Transect:		
T3 M70	280	6156
T 18 M35	270	2372
T 11 M31	265	3320
Heavier than 2kg		
Transect:		
T7C/10	236	2493
T11 M24	215	2831
T11/6	185	2570
Ga 30N	247	2050

	Weight in grams (gms)						
	<300	300 - <650	650 - <1000	1000 - <1500	1500 - <2000	>2000	Total
Gulgong:				- <u> </u>	·····		
N	3	15	5	10	1	9	53
%	25	28	9	19	2	17	100
Warren:					······································	<u></u>	
N	2	21	21	7	2	0	53
%	4	40	40	13	4	0	100

# Table8.10Hammerstonesgroupedbyweight

Table 8.1	.1	Trajectory	of	hammerstones	from	all
recording	s a	t Gulgong				

	Raw material used						
Trajectory	Axe material	Coarse grain from quarry	Ofsite Exotic	Total	% of total		
As hammerstone	18	7	10	35	66		
From blocking out	4	0	0	4	8		
From shaping and thinning stage	13	0	0	13	24		
From other tool form (muller)	0	0	1	1	2		
Total	3 5	7	11	53	100		
% of total	66	13	21	100			

Table	8.12	Т	rajectory	of	hammerstones	from	all
recordi	ngs	at	Warren				

Trajectory	N	%
As hammerstones	20	38
From blocking out	4	7
From shaping and thinning stage	18	34
From transverse snap	9	17
Core for flakes	2	4
Total	53	100

# Table8.13 Hammerstonesfromtransectsbytypeofmaterialusedandpointintheproductiontrajectory

	Raw material used						
Trajectory	Preform	Coarse grain	Exotic	Total	%		
Gulgong				<u> </u>			
As hammerstone	12	3	1	17	64		
From block	2	0	0	2	0		
From preform	7	0	0	7	28		
From transverse snap	0	0	0	0	0		
From core	0	0	0	0	0		
Total	2 1	3	1		100		
%	84	12	4	100			
Warren							
As hammerstone	7				33		
From block	1				5		
From preform	9				43		
From transverse snap	4				19		
From core	0				0		
Total	2 1				100		
%	100						