Directed Study

Report completed on Stone Artefacts from the Winchelsea Collection for assessment of Directed Study in Archaeology for Flinders University.

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## Contents

**List Of Figures** ......................................................................................................................................... 3

**Executive Summary** ................................................................................................................................ 7

  Recommendations ......................................................................................................................................... 8

**Introduction** ............................................................................................................................................... 9

  Project Aim ................................................................................................................................................ 9

  Industry Partner ....................................................................................................................................... 10

  Study area and collection ............................................................................................................................. 10

  Process/Legislation .................................................................................................................................. 11

**Literature Review** ................................................................................................................................... 11

  Stone tool recording and documentation ................................................................................................. 14

**Methodology** .......................................................................................................................................... 15

**Results** ................................................................................................................................................... 17

  Archival research .................................................................................................................................... 17

  Geological background of collection areas ............................................................................................... 19

**Raw Materials** ..................................................................................................................................... 20

  Calcite ..................................................................................................................................................... 20

  Chalcedony ............................................................................................................................................... 20

  Chert ....................................................................................................................................................... 20

  Opalite ..................................................................................................................................................... 21

  Quartzite ............................................................................................................................................... 21

  Silcrete .................................................................................................................................................... 21

**Tool Types** ............................................................................................................................................. 21

  Flake ....................................................................................................................................................... 22

  Proximal/Medial/Distal Flake ..................................................................................................................... 22

  Blade ....................................................................................................................................................... 22

  Tula .......................................................................................................................................................... 22

  Scraper ................................................................................................................................................... 22

  Core ......................................................................................................................................................... 23

  Core Tool ............................................................................................................................................... 23

**Data Analysis and Results** ..................................................................................................................... 23

  Illustrations ............................................................................................................................................. 23

  Photos ..................................................................................................................................................... 28
Analytical Charts ....................................................................................................................................... 53
Conclusion ........................................................................................................................................... 74
References ....................................................................................................................................... 75
Appendices ....................................................................................................................................... 77

List Of Figures

Figure 1- Bag 1- Coober Pedy Opalites. ................................................................................................. 28
Figure 2- S.A Desert Blades Silcrete. ......................................................................................................... 29
Figure 3- Bag 3 S.A. Desert .................................................................................................................... 29
Figure 4- Bag 4- S.A. Desert ..................................................................................................................... 30
Figure 5- Bag 5 S.A Desert- Silcrete ...................................................................................................... 31
Figure 6 Bag 6 S.A. Desert ................................................................................................................... 31
Figure 7- Bag 7- S.A. Desert .................................................................................................................. 32
Figure 8- Bag 8 - Southend ................................................................................................................... 33
Figure 9- Bag 9 Robe- Flint .................................................................................................................... 33
Figure 10- Bag 10 Wilpena Quarzite. ...................................................................................................... 34
Figure 11- Bag 11- Youngs Lagoon Chalcedony .................................................................................... 34
Figure 12- Bag 12- Coongie Lake ........................................................................................................... 35
Figure 13- Bag 13 Coongie Lake ............................................................................................................ 35
Figure 14- Bag 14- Coongie Lake Adzes Silcrete ................................................................................... 36
Figure 15- Bag 15- Coongie Lake.................................................................36
Figure 16- Bag 16 Coober Pedy .................................................................37
Figure 17- Bag 17- Beachport .................................................................37
Figure 18- Bag 18 Beachport .................................................................38
Figure 19- Bag 19 Beachport .................................................................38
Figure 20- Bag 20 Mt Haywood S.A. .................................................................39
Figure 21- Bag 21- Port Macdonnell .................................................................39
Figure 22- Bag 22 Port Macdonnell .................................................................40
Figure 23- Bag 23- Port Macdonnell .................................................................40
Figure 24- Bag 24 - Port Macdonnell .................................................................41
Figure 25- Bag 25 Port Macdonnell .................................................................41
Figure 26- Bag 26- Port Macdonnell .................................................................42
Figure 27- Bag 27 Port Macdonnell .................................................................42
Figure 28- Bag 28 Port Macdonnell .................................................................43
Figure 29- Bag 29- Port Macdonnell .................................................................43
Figure 30- Bag 30- Port Macdonnell .................................................................44
Figure 31- Bag 31- Port Macdonnell .................................................................44
Figure 32- Bag 32- Port Macdonnell .................................................................45
Figure 33- Bag 33- Port Macdonnell .................................................................45
Figure 34- Bag 34- Port Macdonnell .................................................................46
Figure 35- Bag 35 -Port Macdonnell .................................................................46
Figure 36- Bag 36 Port Macdonnell .................................................................47
Figure 37- Bag 37- Port Macdonnell .................................................................47
Figure 38- Bag 38- Port Macdonnell .................................................................48
Figure 39- Bag 39- Port Macdonnell .................................................................48
Figure 40- Bag 40 Port Macdonnell .................................................................49
Figure 41- Bag 41- Port Macdonnell

Figure 42- Bag 42 Port Macdonnell

Figure 43- Bag 43 Port Macdonnell

Figure 44- Bag 44 Port Macdonnell

Figure 45- Bag 45 Port Macdonnell

Figure 46- Bag 46 Port MacDonnell

Figure 47- Bag 47 Port MacDonnell

Figure 48- Bag 48 (unlabelled) Coober Pedy Blades Silcrete

Figure 49- Total Flake Distribution by location

Figure 50- Total Artefact typology

Figure 51- Artefact Type by Percentage- Beachport

Figure 52- Percentage of Raw Materials Beachport

Figure 53- Beachport Retouch Margins by Percentage

Figure 54- Beachport Breakage by Percentage

Figure 55- Beachport-Total flake Volume in mm3

Figure 56- Platform area in mm2- Beachport

Figure 57 Artefact type by percentage- Coober Pedy

Figure 58- Raw Material Type by percentage- Coober Pedy

Figure 59- Retouch Margin Count- Coober Pedy

Figure 60- Breakage by percentage

Figure 61- Total flake Volume in mm3

Figure 62 Total platform area in mm2- Coober Pedy

Figure 63- Artefact Type by Percentage- Coongie Lake

Figure 64- Raw Material type by Percentage- Coongie Lake

Figure 65- Coongie Lake- Retouch Margin by Percentage

Figure 66-Coongie Lake - Breakage
Figure 67-Total flake Volume in mm3  Coongie Lake .................................................................64
Figure 68- Platform Area in mm2 - Coongie Lake ....................................................................64
Figure 69- Port MacDonnell- Artefact type by percentage..........................................................65
Figure 70-Port MacDonnell Artefact Raw Material by Percentage ..............................................65
Figure 71- Port MacDonnell Retouch Margin by Percentage .........................................................66
Figure 72- Port MacDonnell Breakage by Percentage ..................................................................66
Figure 73-Port MacDonnell- Total Flake Volume in mm3............................................................67
Figure 74-Port MacDonnell Total Platform area in mm2 ...............................................................67
Figure 75-S.A. Desert- Artefact types by percentage. .................................................................68
Figure 76- S.A. Desert Artefact Raw Materials by Percentage ....................................................68
Figure 77-S.A. Desert Retouch Margins by percentage ................................................................69
Figure 78-S.A. Desert Breakage by Percentage .........................................................................69
Figure 79- S.A. Desert Total flake dimensions by percentage. ......................................................70
Figure 80-S.A. Desert Total Platform area by percentage. ............................................................70
Figure 81-Southend- Artefact Type by Percentage .....................................................................71
Figure 82- Southend-Raw material type by percentage...............................................................71
Figure 83- Southend- Retouch Margins by percentage .................................................................72
Figure 84- Southend- Breakage by Percentage. ..........................................................................72
Figure 85- Southend- Total Flake Volume in mm3 .................................................................73
Figure 86- Southend Total Platform area in mm2 .................................................................73
Executive Summary

Recently, Flinders University was given temporary custody of a collection of apparently random stone artefacts from the South Australian Native Title Services Corporation. Very little was known of their origins, save for the fact that they were delivered to SANTS from the Wathaurong Aboriginal Community in North Geelong from Winchelsea, Victoria, and that the labels on the stones suggest that they were recovered from areas throughout South Australia. The recording of these artefacts was begun by the ARCH 8517 stone artefacts class in 2010 and was yet to be completed.

The recording of all 149 artefacts is now completed. The results are included in this report as an appendix (see appendix 6). The data is also available on a CD-Rom for use at SANTS and with other interested stakeholders. Inclusive in this CD-Rom is a compilation of all of the photographs taken of the artefacts, as well as the illustrations.

The archival information on stone tool collection illustrated that Aboriginal culture was being appreciated through the study of stone tool sequences in the 1960s and 1970s, however many stone tools were collected illegally and without permissions and have ended up in the situation like the Winchelsea Collection.

Due to the large area of collection, exact repatriation may not be possible, though there are a range of stakeholders who may be consulted to negotiate what the best outcome for the artefacts might be.
The collector was probably an amateur, and may have been based in or near Coober Pedy. Many of the areas of collection feature prominently in the literature for stone tools during the supposed collection time. This may have motivated their retrieval and collection.

**Recommendations**

SANTS may wish to repatriate some or all of the artefacts. Some will be easier to tie to relevant Aboriginal groups and their associated land than others. There can also be a number of analyses completed on the material with the Excel Spreadsheet data. The collection, if not repatriated, could remain a valuable identification resource for Indigenous and non-Indigenous people interested and employed, in verifying stone tools in field operations.

Overall SANTS should weigh up the benefits and costs of repatriation by consulting Aboriginal language groups who are stakeholders and discussing the options for the collection. SANTS should encourage this type of return of collected artefacts from the public to ensure that valuable artefacts like these are not been kept in private collections throughout the country.
Introduction

Project Aim

Recently, Flinders University were loaned a collection of stone artefacts from South Australian Native Title Services, SANTS. The objectives for SANTS of this loan was for staff and students at Flinders to analyse the artefacts within the collection and thereby provenance their possible locations.

The analysis and provenance of these materials is a challenging task because the collection is not linked with a collector to explain the context of their collection, or a report to illustrate where some of the collections may have originated. All that is apparent are some brief labels on the stone tools themselves and the bags and masking tape that are appended to them.

So it is that I have the goal to analyse and document the attributes of these stone tools. This will be my primary task and aim for Flinders University and SANTS as my industry partner. There are some secondary objectives which include:

- Research the possible collector/amateur archaeologist responsible for the collection
- Take pictures of particular tools and the process of documentation.
- Draw illustrations that follow conventions stated in literature of tool illustration.
- Keep a log book of the process to monitor any new outcomes or changes in my documentation.
Industry Partner

Flinders University’s Archaeology Department is the premier institution for archaeological research in South Australia. It is located at the Flinders University Bedford Park campus and has a number of facilities and equipment that enable its research. The department is Co-ordinated by Professor Donald Pate, with Associate Professor Heather Burke as the co-ordinator of the Directed Study topic. Another important staff member in this process is Dr Alice Gorman, who takes the Flinders Stone Artefacts class and is considered the resident expert. It is under Dr Gorman’s guidance that I have crafted my research and objectives. Some of the tools in the collection were analysed by last year’s stone tool class and a map of possible locations for these tools is another achievement of this class.

Study area and collection.

The items for the study are referred to as the Winchelsea collection, the reason being that they were delivered to the Wauthorong Aboriginal Corporation in North Geelong from a benefactor in Winchelsea, Victoria. Within the collection are 149 separate artefacts, some of which are grouped together in bags referring to their location. Most of the individual artefacts have been labelled with ink on their ventral surfaces. This information was useful for identifying the raw material and the location of the artefacts been analysed.

The items have being collected throughout South Australia from the South East at Beachport, to the North Eastern Desert at the Coongie Lake. The variation in the collection’s attributes and location suggests that the collector was probably an amateur, who collected along the course of a series of journeys to the locations. For a map of areas of collection with Native Title claim boundaries, see appendix 1.

The study area for my project is a large area of South Australia, where the artefacts were collected. They include areas in the Northern areas and also in the South East (see appendix 1). The work area I
used to analyse the stone tools was in the Flinders Archaeology labs. Within the labs I use a number of tools for my documentation included magnifying lamps, scales, callipers and recording sheets.

**Process/Legislation**

All of the material has been taken from South Australian land under current Native Title claims and within the land of Native Title holders. Therefore, until they are accurately located to their site of collection, which is likely to be difficult, the tools remain under the custodianship of SANTS. Therefore great responsibility and care must be exercised as an agent of Flinders University in the service of documenting these artefacts.

**Literature Review**

The development of a stone tool classification scheme in Australia was in its inception in the 1960’s. The work of Fred McCarthy (1967) and Norman Tindale (1963) is noted as bringing about a major shift in the way archaeology in Australia was viewed (Holdaway 2004). Before their excavations and research there was an antiquarian view towards Australian stone tools which were collected merely as items that were aesthetically pleasing; collectors saw no value in the tools themselves revealing cultural information about their former makers and users.

It is likely that the collection would have taken place during this time, perhaps earlier, but not later than the 1970s as laws and rhetoric from archaeological journals denounced the illegal collection and sale of stone tools (Kimber 1980). This means that the ideas of the 1960s and 70s in Australian archaeology are likely to have informed the collector.

The ideas and classification in *Australian Aboriginal Stone Implements* (McCarthy 1967) revealed a range of strategies that an amateur could employ for a short term investigation or collection. Aside from its illustrative classification, the reference to in-depth studies on lithics hinted to collectors
what a Blade or Tula might look like (McCarthy 1967). This broad display of material on stone tools has provided a framework suitable for amateurs to identify stone tools.

Another equally influential author in this respect is Tindale (1963), who pioneered tool types in Australia being linked to various cultures and this development as traceable through the archaeological record. This was one of many publications that appropriated the diversity and richness of Aboriginal culture available in the material record, which for reasons both technological and political, was not promoted earlier.

Another big development for stone tool classification was the work completed by Mulvaney at Kenniff Cave in 1962, which used both a formal typology and an attribute analysis to study the stone tools at the site (Holdaway 2004). Apart from championing a new rigour for Australian archaeology in the 1960s, Mulvaney (1999) promoted the study of regional sequences to reveal more about Australia’s past cultures.

An influential dentist/anthropologist from Millicent, near the famous Wyrie Swamp, was T.D. Campbell. Campbell (1966) produced a book on *Stone Implements*, in which he referred to a range of tool types, which he illustrated. He used his experience in the field to complement the work done by McCarthy. His main focus was to produce a text that could cluster tools which ‘are morphologically definitive- a precise and informative method of terminology.’ (Campbell 1966:214)

These examples and others in the literature generated a newfound interest and division in archaeology in Australia and provided the eager enthusiast with plenty of skills to apply in the Australian archaeological record.

In many cases the geological inferences made by the collector of the Winchelsea artefacts are accurate and the geology of the areas where the collecting has supposedly been undertaken matches the raw material of the artefacts being collected from them. This suggests that the collector was informed, to some degree by research, but likely still to be an amateur or private enthusiast.
owing to the lack of any publication to match the collection or better provenancing attached to the artefacts themselves. The information gained from the literature of the era has been valuable when considering the data retrieved from the collection itself.

Andrefsky Jr (1998) was vital for the interpretation that followed the initial recording. This assisted in taking the right approach in analysing the artefacts, data and presenting the results. Another important topic that was researched was raw material availability, which was vital to the interpretation of the various areas. This was explained well by Brantingham et al. (2000) who gave strong arguments for the predominant use of raw materials in close proximity to habitation over preferable material in remote areas in stone tool technology.

Another interesting insight into the variations of the artefacts were the articles within Richard Wright’s Stone Tools as Cultural Markers (1977). The articles displayed some of the examples of recording and interpretation that may have influenced the collector. Having examples too on how stone tools were arranged and categorised was well demonstrated by Orton in His Raw Material Retouch Index article (Jayson 2008). This article demonstrated one of many methods for analysing stone tools and provided good examples for my own analysis.

Also invaluable to the results and discussion component were the previous studies completed by John Hayward on toolkits and utility analysis (Hayward 2010). This was helpful because it provided examples of the stone tool literature from Australia and overseas and was an example of how a private collector had maintained a valuable collection. Also incredibly helpful were the previous recordings completed by Claire Keating and the report completed by Rachell Powell, which assisted me in compiling the discussion and results of the report. The work that they had previously completed was in the recording and measurement of the stone artefacts and the research of the various locations of the artefacts. By adding a research into literature and methods of collection, I was able to complement these studies.
Stone tool recording and documentation.

The primary goal of the study was to effectively analyse and document the stone artefacts within the Winchelsea collection. Therefore a thorough understanding of the documentation, processes and options for analysis was required to decide the best approach for the collection.

For the documentation, the most useful book I found was Holdaway’s (2004) *Record in Stone*. This book provided a great deal of contextual information for stone artefact fracture mechanics, geological variation and identification, processes for attribute analysis, identification of tool types and vital information on the recording and measurement process for stone tools. With this book’s assistance, I was able to develop my knowledge of the variation in the collection I was studying.

Another text that was vital in this regard was Andrefsky Jr’s (1998) *Lithics: macroscopic approaches to analysis*. Researching a range of strategies for analysis was critical to understanding the types of analysis that were possible for this collection. These were discussed in detail in this text. There were also some useful illustrations and information regarding identification and documentation of various artefact types.

In spite of its age, F.D McCarthy’s (1967) *Australian Aboriginal Stone Implements* was a vital resource to enable the identification of a range of implements and to help find illustrated examples of all of the classification types associated with the collection. It also helped to provide clues for the context of the collection, as I believe the collector to have been largely informed by this publication. Another publication that may have held significance is the work by T.D Campbell and R. Edwards *Stone Implements* (Campbell 1966). Printed at a similar time, the descriptions and illustrations of stone tool attributes are thorough and well presented.

Other articles and books consulted for recording included Lewis R Binford’s article on ‘Styles of style’ (1989) and Bowdler and Smith’s ‘Identifying style in Australian stone artefacts’ (Bowdler and Smith 1999). Important theories for identification and context of the artefacts was found in Marcia-Anne
Dobres (2010) Which focussed on the concept of Chaine Operatoire and its impact on researching stone artefacts. Being able to understand that the differences in the tools from areas in South Australia were cultural and behavioural as well as the availability of various raw materials was possible through reading about the concept of Chaine Operatoire. Also useful was having Chris Pellant’s *Rocks and Minerals* (Pellant 1992) to refer to in order to understand some of the underlying rules and structures of the varying geology represented in the collection.

**Methodology**

A range of approaches were taken to complete the research and analysis. My principal influence in research to analysis was Dr Alice Gorman, who suggested to me articles and books worth reading and provided a recording sheet that her class from 2010 had used to begin recording the artefacts. *The Artefact* (AASV 1999) on CD-Rom and a range of archaeological journal articles available online through the Flinders Database, were also a great help to begin to understand the topic and to build the context of the collection appropriately.

I consulted the collection at Flinders University first, which provided some information about stone tools and some articles from *The Artefact* journal that were quite helpful. The database at Flinders was also an important resource to retrieve and research a number of relevant journal articles. I also found some of the older, out of print pamphlets and books at the State Library where T.D Campbell had written. In order to read some of these rare materials, I had to gain access to the Sommerville reading room.
In order to record the artefacts effectively, the university’s laboratory was used to have controlled conditions and to keep the artefacts safe for the duration of the recording. Some of the common tools used were: scales, digital callipers, a lamp with magnification and a geologists’ lens for close inspection of particular features. All of the artefacts were carefully noted for their features and bagged into their correlating bag according to the groups prescribed by the original collector. The collector had the areas of collection on the bags and each individual artefact themselves and these were recorded each time I analysed an artefact. Another step I had taken was to refer my initial recordings, which were erroneous, to Dr Gorman and then reconcile these with student recordings completed in 2010. This enabled a consistent and well documented recording for the collection.

There were various features that I observed and recorded like raw material type, tool type and location. I then also had to measure types of features like length, width and platform width. In my earliest stages of recording, I had not completed these correctly; this was why consultation with Dr Gorman and a range of textbooks was so helpful to learn. Once collected, all of the information was digitised on Microsoft Excel and the results were manipulated into some illustrative tables and graphs that presented some noteworthy features of the artefacts.

The types of analysis that I completed were quite general and basic because the main goal for this collection was to establish a categorisation and simple analysis of the collection from which others may wish to interpret and analyse further. Any additional information that a future researcher or enthusiast may wish to obtain from the data is available through the Excel data. The report has been issued with a copy of the spreadsheet on CD.

Another approach to demonstrating the diversity of the collection was to record the artefacts with a digital camera. The artefacts were placed in optimum light, with a scale card visible to enable accurate visualisation of the artefacts. To showcase the variability in shadow and thickness of the
Results

Archival research

The main reason for the background research into the Victorian Anthropological and Archaeological Association was to attempt to discover the collector through any such correspondence that could be linked to the material in the Winchelsea collection. Some secondary information that was obtainable from this research was the types of texts and studies that informed amateur and professional archaeologists during the time of the collection (around 1960-1970). While the collector and any associated report with the collection was not uncovered, a decent scope of the types of tools in the collection and the attributes used to describe them are uncovered in a number of important texts in the study of Australian archaeology.

The Victorian Archaeological and Anthropological Association’s journal, The Artefact, has been in publication since 1965, it has had several notable contributors and editors, including, Bruno David, John Mulvaney, Alexander Gallus and Jane Balme to name but a few (AASV 1999). Throughout its
publication, the journal has promoted theories and published reports from fieldwork at a number of important locations for Australian archaeology.

Many interstate ventures and details about archaeology from interstate were revealed in the volumes of the journal. The website of the AASV, for example, refers to a series of lectures by ‘Phyl and Noel Wallace on the religion and life of the Pitjantjatjara people with whom they spent several months each year for twelve years during the 1950s and 60s.’ (AASV 1999) Other sites revealed in the collection like Port Macdonnell, are referred to by the Artefact, due to their close proximity with the Victorian border. There are also articles regarding the theft of artefacts by private collectors in various regions across the country.

This information, while useful to some degree, is not revealing about the collector from Winchelsea or their motives. However, the development of theories and ideas from within the journal was noted as a means of synthesizing the goals of the journal and any of its published material with the goals of the collection.

Another approach was to obtain influences and guides that the collector may have consulted during their collection. One such influence was Norman Tindale (1963) including his writings on Tartangan culture and other interesting theories evoking the beliefs and views of the period. Another influential writer of the time was Derek John Mulvaney (1999) whose first edition of Pre History of Australia was useful to understanding trends in archaeology and stone artefact analysis.

The context of the areas the artefacts are proposed to be from was vital. Given that Lake Eyre was central to many of the S.A. Desert artefacts that were collected, Phil Hughes’ (2004) Lake Eyre Monograph provided some vital information for the arid regions of the artefacts. More information was also found in Peter Veth’s Desert Peoples:archaeological perspectives (Veth et al. 2005)in regards to the arid regions where stone tools were found.
Another area where artefacts were collected was the south east of South Australia and great information was found in T.D. Campbell’s *Aborigines of the lower south east of South Australia* (Campbell 1946). This gave a thorough topographical and geological description of the areas found within this collection.

Although unable to locate the collector through rigorous searching, the context and potential influences on their collection were well understood prior to the tabulation, analysis and discussion of the results.

**Geological background of collection areas**

There are a number of notable reports and books written on the desert regions in South Australia and the geology that is found there. The information on this region does vary, as does the geology and, as the map demonstrates, (see appendix 2) there was a vast area to describe, within which it is possible that raw materials could have been traded or carried great distances. Hughes and Hiscock note that ‘Silcrete and Quartzite were the dominant raw materials used for flaking, but small amounts of quartz (both opaque and crystal) and a variety of chert rocks were also used’ (Hughes & Hiscock 2004:30) Most notable in the desert region is the abundance of silcrete and quartzite in various areas, which determines why ‘artefact scatters are overwhelmingly the most common type of site found in the study area and its surrounds’(Hughes & Hiscock 2004:6)

There were some differences in the south east geology sequences. Within the south east, there occurs a certain type of chert or flint, as it was referred to in the early 20th Century in Australia, which forms as nodules in limestone and calcite formations. This is possible due to the earlier coverage of the area by the sea. Campbell (1966:163) mentioned ‘with varied technologies and this abundant supply of flint, a classic implement material- the range of implements differed from northerly workers’. More geological information is available from Appendices 2-5.
Raw Materials

There were a limited amount of raw materials collected by the collector. There is no quartz collected, which demonstrates that the individual may have overlooked it for more cryptocrystalline material, even though quartz is abundant in many areas and has been used throughout the Pleistocene and Holocene (Holdaway 2004:24). There may have been a particular raw material sought by the collector at the various sites, since the geology of the area provides many more rocks for use and potential collection. A brief explanation of the raw materials found in the collection is necessary to understand what is on display. Raw materials in the collection consisted of: calcite, chalcedony, chert, opalite, quartzite, silcrete and their definitions are described below.

Calcite

Calcite is a mineral with a white to greyish streak and is quite dense. It is the main component of marble and limestone rock formations. Due to its colour and appearance, it has been confused with flint by the collector because flint can lose its dark colour and leech out water and silica under different sedimentary process (Campbell 1946:454).

Chalcedony

Chalcedony is a micro-crystalline formation of silicon dioxide. It has a waxy lustre and can range from dark purple to opaque in appearance (Pellant 1992:88). Chalcedony fractures conchoidally and is quite often used for stone working (Holdaway 2004:24).

Chert

Chert is a micro-crystalline sedimentary rock that forms as nodules, concretionary masses and as layered deposits (King 2011). Chert breaks with a conchoidal fracture, often producing very sharp edges. Early people took advantage of how chert breaks and used it to fashion cutting tools and weapons.
Opalite
Occurring in the Coober Pedy, Andamooka and Mintabie regions, opalite is formed from an opal deposition in calcite, agate and gypsum materials in the sub-soil. It is rare and very useful for the sharp cutting edge that can be produced.

Quartzite
Quartzite is a non-foliated metamorphic rock that is produced by the metamorphism of sandstone. It is composed primarily of quartz (over 90 per cent). Due to its colour and composition, it is often confused with silcrete.

Silcrete
Silcrete is formed when silica forms a duricrust with a layer of sediment over time (Holdaway 2004:24). During a study in the Beda Valley near the southern extremity of Lake Torrens, South Australia, Hutton et al (1972), were able to define two types of silcrete one which is medium grain, has angular quartz in its composition and is often confused with quartzite the other which is microcrystalline and is suitable for retouch. This location is in close proximity to Coober Pedy, where much of this collection’s quartzite is from.

Tool Types
Defining the artefacts using a typological approach is a difficult task. The categorical distinctions are not always possible to make and many different researchers will have different interpretations of the same word. An example is the term flake, which when used in the Australian context will refer to any flaked piece of rock, whether it is retouched or not. However, this is interpreted differently in American and European contexts, where a flake is only defined as such when retouch or use wear is evident on the artefact, otherwise it is known as a flaked piece. So in Australia, flake is a technological term as opposed to Europe and America where it can also be a behavioural one.
To avoid this confusion, I have only referred to a small number of tool types in the results, these are outlined below. The further and more detailed analysis may reveal a greater typological variation, however for a preliminary recording, measurements and brief descriptions are sufficient.

Flake
An artefact which has been struck from a core or parent. It may exhibit use wear, retouch and a range of other attributes like negative flake scars, which indicate a production process.

Proximal/Medial/Distal Flake
This is a flake with only the proximal end remaining, where the distal and/or medial end have been removed due to use wear/retouch. The same definition applies to medial and distal flake, where its other counterparts are no longer a part of the flake. These will often occur in collections, particularly surface collections, because they are discarded when they have been broken.

Blade
Blades are defined as flakes that are at least twice as long as they are wide (Holdaway 2004). A range of regional variations of a blade were suggested by Tindale and Campbell in their literature (Campbell 1946; Tindale 1963).

Tula
A Tula is a term used to describe a recognisable tongue-shaped artefact. John Hayward mentioned that ‘Tulas were the archetypal Aboriginal Australian woodworking tool, developed during the mid-Holocene in arid zones for working hardwood’(Hayward 2010:35).

Scraper
A scraper is a functional definition for a tool that is used to scrape wood and animal skins etc. It has a number of morphological and regional variations. Some of the shapes include concave, thumbnail convex and nose ended. Scrapers will generally be thicker and heavier than flakes.
Core

A core is simply defined as an artefact with one or numerous negative flake scars and no clear ventral surface. The main purpose of a core is to remove flakes to use as tools. It is not always associated with flakes at sites unless tool production occurred there.

Core Tool

A core that is further used or given retouch for secondary tasks like chopping and grinding is known as a core tool. Core tools have a number of regional variations and can be easily confused with scrapers.

There are many more examples and tool types that could be attached to the collection. However, it is a larger scale analysis and expert consultation that will reveal these exact nomenclatures and even then such things would be open to interpretation. For a list of attributes used please refer to the appendices section.

Data Analysis and Results

Illustrations

Illustrating the artefact gave me the time to really appreciate the amount of use wear and retouch on a number of artefacts. It also increased my respect for the variety and variability in the technology of stone tools. Labels are affixed where appropriate.
Figure 1- Round Edge Scraper- Beachport.
Figure 2- Coongie Lake Tula Slug
Figure 3 - Coober Pedy Chert Flake.
Figure 4- Coober Pedy flake.
Photos

The photos for the entire collection are included here for reference to the spreadsheet.

Figure 5- Bag 1- Coober Pedy Opalites.
Figure 6- S.A Desert Blades Silcrete.

Figure 7- Bag 3 S.A. Desert
Figure 8- Bag 4- S.A. Desert.
Figure 9- Bag 5 S.A Desert- Silcrete.

Figure 10 Bag 6 S.A Desert
Figure 11- Bag 7- S.A. Desert.
Figure 12- Bag 8 - Southend.

Figure 13- Bag 9 Robe- Flint.
Figure 14- Bag 10 Wilpena Quarzite.

Figure 15- Bag 11- Youngs Lagoon Chalcedony.
Figure 16- Bag 12- Coongie Lake.

Figure 17- Bag 13 Coongie Lake.
Figure 18- Bag 14- Coongie Lake Adzes Silcrete

Figure 19- Bag 15- Coongie Lake.
Figure 20- Bag 16 Coober Pedy.

Figure 21- Bag 17- Beachport
Figure 22- Bag 18 Beachport.

Figure 23- Bag 19 Beachport
Figure 24- Bag 20 Mt Haywood S.A.

Figure 25- Bag 21- Port Macdonnell.
Figure 26- Bag 22 Port Macdonnell

Figure 27- Bag 23- Port Macdonnell
Figure 28- Bag 24 - Port Macdonnell

Figure 29- Bag 25 Port Macdonnell
Figure 30- Bag 26- Port Macdonnell

Figure 31- Bag 27 Port Macdonnell
Figure 32- Bag 28 Port Macdonnell

Figure 33- Bag 29- Port Macdonnell
Figure 34- Bag 30- Port Macdonnell

Figure 35- Bag 31- Port Macdonnell
Figure 36- Bag 32- Port Macdonnell

Figure 37- Bag 33- Port Macdonnell
Figure 38- Bag 34- Port Macdonnell

Figure 39- Bag 35- Port Macdonnell
Figure 40- Bag 36 Port Macdonnell

Figure 41- Bag 37- Port Macdonnell
Figure 42- Bag 38- Port Macdonnell

Figure 43- Bag 39- Port Macdonnell.
Figure 44- Bag 40 Port Macdonnell

Figure 45- Bag 41- Port Macdonnell
Figure 46- Bag 42 Port Macdonnell

Figure 47- Bag 43 Port Macdonnell
Figure 48- Bag 44 Port Macdonnell

Figure 49- Bag 45 Port Macdonnell
Figure 50- Bag 46 Port MacDonnell

Figure 51- Bag 47 Port MacDonnell
Analytical Charts

There were a range of results calculated from the attribute data of the collection. The maximum, minimum, mean, median and frequencies of the artefacts are completed in some contexts in this section. There are many other results that can be completed by using the data on the spreadsheet. See Appendix 5.
Overall

Total Flake Distribution by location.

![Pie chart showing distribution by location]

- Coober Pedy, 69, 45%
- Port McDonnell, 31, 20%
- SA Desert, 15, 10%
- Coongie Lake, 11, 7%
- Mt. Haywood, 1, 1%
- Beachport, 17, 11%
- Wilpena, 2, 1%
- Youngs Lagoon, 1, 1%
- Southend, 5, 3%
- Robe, 1, 1%
- Port McDonnell, 31, 20%

Figure 53- Total Flake Distribution by location according to labels by collector.
There are a large number of artefacts that were collected from Coober Pedy (45%). This may have been the focus area for the collector; perhaps they were trying to discover a regional blade sequence. It may also have been close to where the collector lived.

Owing to the conservative typological approach adapted for this report, there are a large number of flakes in the collection (48%). Many of these may prove to be blades or microliths with an independent assessment.
**Beachport**

![Artefact Type by Percentage - Beachport](image1.png)

**Figure 55 - Artefact Type by Percentage - Beachport**

![Raw materials by percentage - Beachport](image2.png)

**Figure 56 - Raw materials by percentage - Beachport**
Figure 57-Beachport Retouch Margins by Percentage

Figure 58-Beachport Breakage by Percentage
Beachport featured the largest percentage of scrapers (17%). There was also a large number of retouched margins in the collection (3 margins at 56%). The tools collected demonstrate a continued use of artefacts even when use wear and retouch reduce the tool significantly.
**Coober Pedy**

![Artefact Type by Percentage](image1)

**Figure 61 Artefact type by percentage - Coober Pedy**

![Percentage of raw materials](image2)

**Figure 62 Raw Material Type by percentage - Coober Pedy**
Figure 63- Retouch Margin Count- Coober Pedy

Figure 64- Breakage by percentage
The Coober Pedy artefacts constituted the largest numbers of Silcrete (78%) and blades (18%). There are also a large number of distal snaps that relate to the blade percentages. The area may have been collected from to demonstrate the use of a specific silcrete-dominant blade technology.
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**Coongie Lake**

Figure 67- Artefact Type by Percentage- Coongie Lake

- Core Tool, 0, 0%
- Flake, 2, 18%
- Blade, 0, 0%
- Scraper, 3, 27%
- Tula, 4, 37%
- Medial Flake, 0, 0%
- Proximal Flake, 0, 0%
- Distal Flake, 0, 0%

Figure 68- Raw Material type by Percentage- Coongie Lake

- Silcrete, 6, 55%
- Quartzite, 1, 9%
- Chalcedony, 0, 0%
- Calcite, 0, 0%
- Chert, 4, 36%
- Opalite, 0, 0%
Figure 69- Coongie Lake - Retouch Margin by Percentage

- No margins, 0, 0%
- One Margin, 1, 11%
- Two Margins, 0, 0%
- Three Margins, 6, 67%
- Four Margins, 2, 22%

Figure 70- Coongie Lake - Breakage

- None, 4, 37%
- Proximal, 1, 9%
- Distal, 3, 27%
- Medial & Distal, 2, 18%
- Medial & Proximal, 0, 0%
- Longitudinal, 0, 0%
- Proximal and Distal, 1, 9%
The Coongie Lake has the only representations of Tulas in the collection. This demonstrates the use of this tool in desolate areas like the Coongie Lake where hardwood working for carrying seeds and making tools is so important.
Port MacDonnell

Figure 73- Port MacDonnell- Artefact type by percentage.

Figure 74-Port MacDonnell Artefact Raw Material by Percentage
Figure 75- Port MacDonnell Retouch Margin by Percentage

- No margins, 0, 0%
- One Margin, 2, 7%
- Two Margins, 4, 14%
- Three Margins, 15, 52%
- Four Margins, 8, 27%

Figure 76- Port MacDonnell Breakage by Percentage

- None, 8, 28%
- Distal, 14, 48%
- Left Lateral, 3, 10%
- Right Lateral, 2, 7%
- Medial & Distal, 0, 0%
- Medial & Proximal, 0, 0%
- Proximal and Distal, 1, 4%
Port MacDonnell featured a large percentage of quartzite in its raw material (50%). This occurs as pebbles throughout the South East and would have been an abundant resource for a number of
tasks. The large retouch percentages suggest that the tools used would have had a long life and perhaps a multifunctional use.

**S.A. Desert**

**Figure 79** - S.A. Desert - Artefact types by percentage.

**Figure 80** - S.A. Desert Artefact Raw Materials by Percentage
Figure 81-S.A. Desert Retouch Margins by percentage

- No margins, 0, 0%
- One Margin, 2, 12%
- Three Margins, 5, 29%
- Two Margins, 10, 59%

Retouch Margins by percentage.

Figure 82-S.A. Desert Breakage by Percentage

- None, 4, 23%
- Proximal, 4, 24%
- Distal, 6, 35%
- Medial & Distal, 2, 12%
- Medial & Proximal, 0, 0%
- Longitudinal, 0, 0%
- Proximal and Distal, 1, 6%

Breakage by percentage.
The S.A. Desert is characterised by a large percentage of breakage and retouch. This is related to the sparse resources of the geographical area and the high percentage of Chert used in the area (35%).
**Southend**

**Figure 85-Southend- Artefact Type by Percentage.**

**Figure 86- Southend-Raw material type by percentage.**
Figure 87- Southend- Retouch Margins by percentage.

- No margins, 0, 0%
- One Margin, 2, 50%
- Two Margins, 0, 0%
- Three Margins, 2, 50%
- Four Margins, 0, 0%

Figure 88- Southend- Breakage by Percentage.

- None, 2, 50%
- Proximal, 0, 0%
- Distal, 2, 50%
- Medial & Distal, 0, 0%
- Medial & Proximal, 0, 0%
- Longitudinal, 0, 0%
- Proximal and Distal, 0, 0%

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Figure 89- Southend- Total Flake Volume in mm³

Figure 90- Southend Total Platform area in mm²

Southend shows that cores and flakes were the important tools recovered by the collector. The area may have had places suitable for tool production.
Conclusion

The results and measurements of the artefacts are now complete. The decisions concerning repatriation should be approached with great care due to the somewhat subjective nature of the recording and collecting itself. There is also a large number of overlapping Native Title claims in some collection areas and so the artefacts should not be repatriated without a wide ranging consultation process.

Without a research design attached to the collection, it is uncertain whether it will bring any more information to researchers in future. There are certainly some excellent examples of textbook tools and raw materials. Perhaps the collection could benefit SANTS by using it as an educational resource for Indigenous groups and others interested in the collection and recording process, as well as basic stone tool identification.

The displacement of these artefacts is a great shame and hopefully the period of unconsulted collection of stone tools is finished in our country’s’ history. Nothing can be gained from unlawfully removing materials from country, except to break down respect for Aboriginal land and the tools that Aboriginal people have used on the land for thousands of years. The study of these tools was a real honour; they tell a story of a highly skilled, adaptable and resourceful people, who lived in adverse conditions for so long, yet flourished. I hope for the best outcome for this collection and for the appropriate outcomes for any future research or similar collections for all Aboriginal stakeholders.
References


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King, H.M. 2011 *Chert: How is it used*. Retrieved from Geology.com on 20/10/2011


Tindale, N.B. 1963 *Aboriginal Australians*, Brisbane, Qld. : Jacaranda Press.


Appendices

Appendix 1 - Native Title Application and Determination Areas.

Legend

= location of stone tools.
Appendix 2 - Geology of Northern Areas
Appendix 3- Geology of Areas near Coongie Lake
Appendix 4 - Geology of the South East.
Appendix 5 Geology Legend Reference

Legend for 1:1 000 000 and 1:2 500 000 Surface Geology

<table>
<thead>
<tr>
<th>Sedimentary Rocks and Low-Grade Metamorphic Rocks</th>
<th>Igneous Rocks</th>
<th>Metamorphic Rocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pelitic (a)</td>
<td>Intermediate (c)</td>
<td>Low-grade metamorphic (h)</td>
</tr>
<tr>
<td>Mafic to ultramafic (d)</td>
<td>Mafic (e)</td>
<td>High-grade metamorphic (i)</td>
</tr>
<tr>
<td>Metamorphosed (f)</td>
<td>Metamorphosed (g)</td>
<td>Metamorphosed (j)</td>
</tr>
<tr>
<td>Mixed Metamorphism (i)</td>
<td>Mixed Metamorphism (j)</td>
<td>Mixed Metamorphism (k)</td>
</tr>
<tr>
<td>Chemical Sediments (l)</td>
<td>Chemical Sediments (m)</td>
<td>Chemical Sediments (n)</td>
</tr>
</tbody>
</table>

Note: Geological units which span multiple time periods have symbols showing the oldest and youngest time periods. e.g. Cambrian & Ordovician sedimentary rocks = CO. Paleoproterozoic is the pre-Proterozoic high-grade metamorphic + Ultu.
**Appendix 6 – Excel Data. Including attribute key.**

<table>
<thead>
<tr>
<th>Attribute Flakes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw material</td>
<td>Chert, silcrete, quartz, mudstone, argillite, chalcedony, quartzite, basalt, indeterminate, etc</td>
</tr>
<tr>
<td>Weathering</td>
<td>Yes/No: formation of weathered surface after artefact detached</td>
</tr>
<tr>
<td>Typology</td>
<td>Flake, broken flake, flaked piece, backed artefact, point etc</td>
</tr>
<tr>
<td>Length mm</td>
<td>Measured from ring crack to midpoint of termination</td>
</tr>
<tr>
<td>Width mm</td>
<td>Measured perpendicular to length, at midpoint</td>
</tr>
<tr>
<td>Thickness mm</td>
<td>Measured perpendicular to width, at midpoint of length</td>
</tr>
<tr>
<td>Platform width mm</td>
<td>Measured from one lateral edge to the other</td>
</tr>
<tr>
<td>Platform thick mm</td>
<td>Measured perpendicular to width, between dorsal and ventral, at widest point</td>
</tr>
<tr>
<td>Pfa diam mm</td>
<td>Measured from one side of the ring crack to the other</td>
</tr>
<tr>
<td>Pfa ridge relationship</td>
<td>Behind, to one side, between two ridges, no relationship, indeterminate</td>
</tr>
<tr>
<td>Platform surface</td>
<td>Cortical, 1 scar, 2 scars, facetted (more than one scar)</td>
</tr>
<tr>
<td>Platform focalisation</td>
<td>Broad: = wider than width of flake. Focal: = narrower than width of flake</td>
</tr>
<tr>
<td>Overhang removal</td>
<td>Small negative scars on the dorsal side below the platform, designed to correct the angle or remove ridges</td>
</tr>
<tr>
<td>% Dorsal cortex</td>
<td>Estimated as a percentage of the entire dorsal surface</td>
</tr>
<tr>
<td>Max dorsal scar length</td>
<td>Length from ring crack to termination of largest complete negative scar on dorsal</td>
</tr>
<tr>
<td>Dorsal scar count</td>
<td>Number of negative scars on dorsal excluding retouch/usewear and those &lt; 5 mm</td>
</tr>
<tr>
<td>Dorsal scar termination</td>
<td>Terminations of dorsal scars above eg feather, step, hinge</td>
</tr>
<tr>
<td>Core rotation</td>
<td>Yes/No: presence of negative scars on dorsal which are NOT aligned in the same direction as the flake</td>
</tr>
<tr>
<td>Flake termination</td>
<td>Feather, hinge, step, plunging, indeterminate</td>
</tr>
<tr>
<td>Breakage</td>
<td>Proximal, medial, distal, lateral, cone split</td>
</tr>
<tr>
<td>Retouched margin count</td>
<td>Number</td>
</tr>
<tr>
<td>Attribute Cores</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Raw material</strong></td>
<td></td>
</tr>
<tr>
<td>Chert, silcrete, quartz, mudstone, argillite, chalcedony, quartzite, basalt, indeterminate, etc</td>
<td></td>
</tr>
<tr>
<td><strong>Weathering</strong></td>
<td></td>
</tr>
<tr>
<td>Yes/No: formation of weathered surface after artefact detached</td>
<td></td>
</tr>
<tr>
<td><strong>Typology</strong></td>
<td></td>
</tr>
<tr>
<td>Single platform, opposing platforms, multiplatform, radial, blade</td>
<td></td>
</tr>
<tr>
<td><strong>Length mm</strong></td>
<td></td>
</tr>
<tr>
<td>Maximum dimension</td>
<td></td>
</tr>
<tr>
<td><strong>Width mm</strong></td>
<td></td>
</tr>
<tr>
<td>Measured at right angles to length at midpoint</td>
<td></td>
</tr>
<tr>
<td><strong>Thickness mm</strong></td>
<td></td>
</tr>
<tr>
<td>Measured at right angles to width</td>
<td></td>
</tr>
<tr>
<td><strong>Platform count</strong></td>
<td></td>
</tr>
<tr>
<td>No of platforms</td>
<td></td>
</tr>
<tr>
<td><strong>Platform preparation</strong></td>
<td></td>
</tr>
<tr>
<td>Yes/No: grinding, flaking</td>
<td></td>
</tr>
<tr>
<td><strong>% cortex</strong></td>
<td></td>
</tr>
<tr>
<td>% of whole core</td>
<td></td>
</tr>
<tr>
<td><strong>Cortical surface count</strong></td>
<td></td>
</tr>
<tr>
<td>Number of distinct cortical surfaces</td>
<td></td>
</tr>
<tr>
<td><strong>Core body</strong></td>
<td></td>
</tr>
<tr>
<td>Pebble, outcrop, flaked, indeterminate</td>
<td></td>
</tr>
<tr>
<td><strong>Feather termination count</strong></td>
<td></td>
</tr>
<tr>
<td>Number of negative feather terminations</td>
<td></td>
</tr>
<tr>
<td><strong>Step/hinge termination</strong></td>
<td></td>
</tr>
<tr>
<td>Number of negative step and hinge terminations</td>
<td></td>
</tr>
<tr>
<td><strong>Comments</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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