The Esperance Nyungars, at the Frontier

An archaeological investigation of mobility, aggregation and identity in late-Holocene Aboriginal society, Western Australia

A thesis submitted for the degree of Doctor of Philosophy of The Australian National University

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I, Myles Bevan Mitchell, declare that this thesis is all my own work, except for the acknowledged collaborations of co-authors in the published manuscripts that comprise Chapters 5 and 8 of this thesis, as detailed below.

Chapter 5


As first co-author on this manuscript, my contribution was to develop the main concepts of the paper and establish the theoretical basis for the research. I also conducted the background research and wrote the literature review. I wrote the majority of text in this paper.

Chapter 8


My contribution to this manuscript was to provide the research context through which to analyse the rock-art data. This is why the paper directly addresses the research questions in my thesis because I intentionally designed it to do so. I also provided some of the Esperance rock art data and assisted with the data analysis. The majority of data was provided by Gunn and Webb. Gunn conducted the majority of data analysis, which is the basis for his role as lead author. I contributed much of the text, especially the introductory sections, the discussion and conclusions.

M.B. Mitchell __________________________ Date: 15 June 2017
Dedicated to

The Esperance Nyungars.

Past, present and future.

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ABSTRACT

This thesis documents the results of an Aboriginal community-based archaeological research project in the Esperance region, southern Western Australia. It is based on analysis of rock art, stone arrangements and flaked stone artefacts. The aim is to understand the role of the study sites – Belinup and Marbaleerup – within patterns of movement that underpinned society and economy in this region during the late-Holocene. The research explores concepts of identity (Jones 1997; Meskell and Preucel 2004) relating to the local Esperance Nyungar people, and the broader Noongar and Western Desert cultural blocs. It has been suggested that negotiations over territory, law and identity during the recent past were directly related to the expansion of the Western Desert cultural bloc (Gibbs and Veth 2002), which situates the study area at a dynamic frontier of cultural change. Exploration of these questions leads to a discussion about the historical construction of Esperance Nyungar identity.

The study sites are hypothesised to have functioned in the past as aggregation locales (Conkey 1980). Investigation of this hypothesis is illuminative; firstly, for understanding more about the study sites; and secondly about the application of the aggregation concept, and its limitations for archaeology. The results inform a discussion of how mobility (Binford 1980; Kelly 1992) and aggregation can be usefully applied together to investigate the intersections of social and economic elements in hunter-gatherer settlement.

As a conceptual tool for archaeology, identity is challenging because it cannot be directly interpreted from material culture in a simple way. Despite the challenges, identity is an important tool for understanding past societies. Identity is investigated here by mapping the occurrence of symbols across landscapes and considering how these may, or may not, relate to notions of identity and connections to place. The approach begins with what is known
(contemporary identity and connection), and works backwards through time and outwards through space towards the unknown. Identity is a powerful way to link the archaeological past with the contemporary descendent community.

The process of undertaking a community-based research partnership is discussed, with critical reflection on the challenges and successes. An argument is presented for how and why community input and ownership is critical to the success of archaeological research into Aboriginal pasts in Australia and abroad.

The results demonstrate the inherent dynamism in Aboriginal society in southern Western Australia and highlight a historical legacy to the processes of cultural change underpinning Esperance Nyungar identity today. Those processes predate the colonial interruption, and continue into the post-Native Title era. This leads to a discussion and critique of the Native Title system, which often neglects to acknowledge the nuanced realities of Aboriginal societies and the inherent mutability of identity and connections across time and space. It is argued that the internal social dynamics of Aboriginal society are an important part of identity, as people continually negotiate who they are and how they relate to people and places. This constant process of identity-making is a fundamental part of Aboriginal culture and society now and into the distant past.
In the winter of 2007 I was engaged in fieldwork at Belinup, at the mouth of the Thomas River, east of Esperance. The fieldwork had been instigated by the local Esperance Nyungar Traditional Owners and involved a cultural heritage assessment of Belinup as part of the then Restoring Connections Project (South Coast Natural Resource Management). The approach suggested by the Elders was to conduct targeted archaeological and cultural surveys in the area burnt by bushfires during the previous summer, exposing cultural and archaeological materials in an area of known cultural significance, usually covered by the thick coastal scrub and banksia stands that surround Belinup. Our preliminary survey uncovered a rich suite of archaeological materials, predominantly flaked chert artefacts which scattered the ground (in varying densities) numbering in their thousands, extending over a large area (approximately five square kilometres). Central to this lithic landscape is a set of stone arrangements on a prominent granite outcrop overlooking the Southern Ocean.

The results of these surveys provoked an immediate archaeological interest for me, and one question stood out in particular. The question had been posed by senior Elder Veronica Williams-Bennell who pointed out the distinct similarity in form between the Belinup stone arrangements and those in the Wittenoom Hills (Budjari Yorg), near Marbaleerup, another granite outcrop in Esperance Nyungar country, situated about 100km to the north-west. Veronica asked me how they were connected and if I thought that they shared the same function given the obvious similarities in form, and if so what that function may have been? I did not know the answer to any of these questions, particularly as I had not seen the stone arrangements at Budjari Yorg at that time. It struck me however that these were very good questions that gave rise to a number of interesting topics for archaeological investigation. This thesis presents my answer to those questions posed in the winter of 2007, to which I owe a debt of gratitude to the
Esperance Nyungar people, for inviting me to explore the post bushfire landscape of Belinup and continuing to invite me to explore the cultural landscapes of Esperance Nyungar country; and especially to Veronica Williams-Bennell whose questions and observations provoked this research.
# TABLE OF CONTENTS

**ABSTRACT**

**PRELUDE**

**TABLE OF CONTENTS**

**LIST OF FIGURES**

**LIST OF TABLES**

## 1 INTRODUCTION

1.1 RESEARCH AIMS

1.2 RESEARCH QUESTIONS

1.3 THESIS STRUCTURE

1.4 ESPERANCE NYUNGAR RESEARCH PARTNERSHIP

1.4.1 THEORETICAL AND METHODOLOGICAL BASIS

1.4.2 PEOPLE, REPRESENTATION AND CULTURAL GOVERNANCE

1.4.3 STRUCTURE

1.4.4 SETTING UP THE RESEARCH PARTNERSHIP

1.5 TIME PERIOD FOR THE RESEARCH

1.6 OVERVIEW OF THESIS

## 2 SOCIO-CULTURAL CONTEXT: AT THE FRONTIER

2.1 CHAPTER INTRODUCTION

2.2 CULTURE, IDENTITY AND LAW

2.3 IDENTITY AND NATIVE TITLE

2.4 A BRIEF SOCIAL HISTORY FOLLOWING EUROPEAN SETTLEMENT

2.5 WESTERN DESERT CULTURAL EXPANSION

2.6 ETHNO-HISTORICAL EVIDENCE FOR THE ESPERANCE REGION AS A CULTURAL FRONTIER

2.7 CHAPTER SUMMARY: AT THE FRONTIER

## 3 ARCHAEOLOGICAL AND GEOGRAPHICAL CONTEXT: AT THE FRONTIER

3.1 CHAPTER INTRODUCTION

3.2 ARCHAEOLOGICAL CONTEXT

3.2.1 INTRODUCTION TO STUDY SITES

3.2.2 PREVIOUS ARCHAEOLOGICAL RESEARCH

3.2.3 NOONGAR MATERIAL CULTURE

3.3 ENVIRONMENTAL CONTEXT: A GEOGRAPHICAL FRONTIER

3.3.1 CLIMATE AND RAINFALL

3.3.2 GEOLOGY

3.3.3 LANDFORMS AND HYDROLOGY

3.3.4 VEGETATION

3.4 CHAPTER SUMMARY: AT THE FRONTIER

## 4 THEORETICAL CONTEXT

4.1 CHAPTER INTRODUCTION
### 4.2 MOBILITY

4.3 AGGREGATION

4.4 IDENTITY

4.5 IDENTITY, STYLE AND MATERIAL SIGNALLING

4.6 CHAPTER SUMMARY

### 5 TOWARDS SUSTAINABLE COMMUNITY HERITAGE MANAGEMENT AND THE ROLE OF ARCHAEOLOGY

5.1 CHAPTER INTRODUCTION

5.2 INTRODUCTION

5.3 BACKGROUND CONTEXT

5.4 AN INTEGRATED FRAMEWORK

5.5 PROJECTS

5.6 SUCCESS AND ONGOING CHALLENGES

5.7 DISCUSSION

5.8 CONCLUSION

5.9 CHAPTER SUMMARY

### 6 LITHIC ANALYSIS

6.1 CHAPTER INTRODUCTION

6.2 LITHIC TECHNOLOGY AND MOBILITY

6.2.1 Mobility, Provisioning Strategies and Technological Organisation

6.2.2 Provisioning Strategies and Assemblage Diversity

6.2.3 Linking Theory and Method (Mobility – Provisioning – Technology)

6.3 METHODS

6.3.1 Data Collection

6.3.2 Effects of Previous Artefact Collections

6.3.3 Sample Size

6.3.4 Temporal Control in Recording Surface Artefact Scatters

6.4 MARBALEERUP: SITE-STRUCTURING PREDICTIONS, RESULTS AND DISCUSSION

6.4.1 Description and Activity Areas

6.4.2 Raw Material Availability

6.4.3 Activity Area – Marbalearup Proper (Mount Ridley)

6.4.4 Activity Area – MO1

6.4.5 Activity Area – MO2

6.4.6 Activity Area – Budjari Yorg Stone Arrangements Site

6.4.7 Summary

6.5 BELINUP: SITE-STRUCTURING PREDICTIONS, RESULTS AND DISCUSSION

6.5.1 Description and Activity Areas

6.5.2 Raw Material Availability

6.5.3 Activity Area – Belinup Stone Arrangements

6.5.4 Activity Area – BEL1

6.5.5 Activity Area – Coastal Ridgetop

6.5.6 Activity Area – Upper Creek

6.5.7 Activity Area – Quarry

6.5.8 Activity Area – Boyatup Rock Art Site

6.5.9 Summary

6.6 CONCLUSION

6.7 CHAPTER SUMMARY

### 7 STONE ARRANGEMENTS AS SYMBOLS

7.1 CHAPTER INTRODUCTION

7.2 INTRODUCTION
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.2.1 Esperance Nyungar Country – geographical and cultural context</td>
<td>206</td>
</tr>
<tr>
<td>7.3 Interpreting stone arrangements</td>
<td>208</td>
</tr>
<tr>
<td>7.4 Comparing Belinup and Budjari Yorg stone arrangements</td>
<td>211</td>
</tr>
<tr>
<td>7.5 Comparing with Southwest and Western Desert stone arrangements</td>
<td>226</td>
</tr>
<tr>
<td>7.6 Discussion</td>
<td>233</td>
</tr>
<tr>
<td>7.7 Conclusion</td>
<td>236</td>
</tr>
<tr>
<td>7.8 Chapter summary</td>
<td>237</td>
</tr>
<tr>
<td>8 The Rock Art of Marbaleerup and Its Place in the Art Traditions of</td>
<td>238</td>
</tr>
<tr>
<td>Southwest Western Australia</td>
<td></td>
</tr>
<tr>
<td>8.1 Chapter introduction</td>
<td>238</td>
</tr>
<tr>
<td>8.2 Introduction</td>
<td>240</td>
</tr>
<tr>
<td>8.3 Methods</td>
<td>244</td>
</tr>
<tr>
<td>8.4 Esperance Nyungar Rock Art</td>
<td>246</td>
</tr>
<tr>
<td>8.4.1 The Rock Art at Marbaleerup</td>
<td>246</td>
</tr>
<tr>
<td>8.4.2 The Rock Art at Boyatup</td>
<td>257</td>
</tr>
<tr>
<td>8.4.3 Summary</td>
<td>258</td>
</tr>
<tr>
<td>8.5 Noongar Rock Art</td>
<td>259</td>
</tr>
<tr>
<td>8.5.1 The Study Area (Southwest Western Australia)</td>
<td>260</td>
</tr>
<tr>
<td>8.5.2 Previous Ethnographic Investigations</td>
<td>261</td>
</tr>
<tr>
<td>8.5.3 Previous Archaeological Investigations</td>
<td>265</td>
</tr>
<tr>
<td>8.5.4 Five Anomalous Noongar Art Sites</td>
<td>266</td>
</tr>
<tr>
<td>8.5.5 Noongar Art Sites on the Yilgarn Craton</td>
<td>270</td>
</tr>
<tr>
<td>8.6 The Attributes of Eastern Noongar Rock Art</td>
<td>276</td>
</tr>
<tr>
<td>8.7 The Character of Eastern Noongar Rock Art</td>
<td>291</td>
</tr>
<tr>
<td>8.8 A comparison of Esperance Nyungar and the Eastern Noongar Rock Art</td>
<td>293</td>
</tr>
<tr>
<td>8.9 Discussion</td>
<td>294</td>
</tr>
<tr>
<td>8.10 Conclusion</td>
<td>298</td>
</tr>
<tr>
<td>8.11 Chapter summary and addendum: Preliminary comparison of Eastern</td>
<td>299</td>
</tr>
<tr>
<td>Noongar and Western Desert Rock Art</td>
<td></td>
</tr>
<tr>
<td>9 Conclusions</td>
<td>305</td>
</tr>
<tr>
<td>9.1 Chapter introduction</td>
<td>305</td>
</tr>
<tr>
<td>9.2 Research Question one</td>
<td>305</td>
</tr>
<tr>
<td>9.3 Research Question Two</td>
<td>310</td>
</tr>
<tr>
<td>9.4 Research Question Three</td>
<td>312</td>
</tr>
<tr>
<td>9.5 Research Question Four</td>
<td>318</td>
</tr>
<tr>
<td>9.6 Research Question Five</td>
<td>322</td>
</tr>
<tr>
<td>9.7 Conclusion: Implications and future research</td>
<td>323</td>
</tr>
<tr>
<td>9.7.1 Mobility, Landuse and the social landscape</td>
<td>323</td>
</tr>
<tr>
<td>9.7.2 Aggregation</td>
<td>325</td>
</tr>
<tr>
<td>9.7.3 Identity</td>
<td>328</td>
</tr>
<tr>
<td>9.7.4 Community Research Partnership</td>
<td>330</td>
</tr>
<tr>
<td>9.8 Conclusion</td>
<td>333</td>
</tr>
<tr>
<td>Reference List</td>
<td>335</td>
</tr>
<tr>
<td>Appendix 1: Stone Artefact Field Recording Sheet</td>
<td>351</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

FIGURE 1. Map of the study sites in relation to the current native title boundaries of Aboriginal groups in the southern half of Western Australia. ........................................................................................................2
FIGURE 2. Extract of Horton Aboriginal Australia Map (1996), depicting Wudjari country in relation to neighbouring culture groups (Note: the Malpa and Ngatjumay areas pictured here, are referred to as Ngadjju country in text).......................................................................................................................... 31
FIGURE 3. Map of Esperance Nyungar country in relation to bio-geographic regions and sub-regions........... 64
FIGURE 4. Map showing cultural places on Esperance Tjaljaraak data-base as of November 2015.............. 78
FIGURE 5. Preliminary land-use model based on archaeological investigation of the Cape Le Grande National Park (Gulfoyle: 2011: 97) ................................................................................................................................. 90
FIGURE 6. Distribution of eucalyptus pleuroparca (Tjaljaraak) - WA Herbarium....................................... 99
FIGURE 7. Distribution of eucalyptus excrca (Tjaljaraak) - WA Herbarium.................................................. 99
FIGURE 8. Location of Esperance and Gabbie Kylie Foundation projects (2008 to 2012)............................. 122
FIGURE 9. Relationship between mobility and technological organisation, showing the linking role of provisioning strategies.................................................................................................................. 149
FIGURE 10. Marbaleerup Lithic Landuse Map (cloud cover in aerial imagery obscures some vision)... 196
FIGURE 11. Belinup Lithic Landuse Map ....................................................................................................... 198
FIGURE 12. Esperance Nyungar Regional Landuse Map ............................................................................ 199
FIGURE 13. The study sites in regional context. ............................................................................................. 205
FIGURE 14. Regional map showing all sites considered in the analysis (site numbers are reflected in tables, see below). ......................................................................................................................... 206
FIGURE 15. A. Belinup, looking south-west ................................................................................................. 213
FIGURE 15. B. Belinup Curvi-linear motif facing west .............................................................................. 213
FIGURE 15. C. Belinup, typical stack of stones. ............................................................................................ 214
FIGURE 16. A. Photo showing budjari yorg physical setting, view to distant granite outcrops Mt Heywood (left), Mt N ey (right) and general location of another near-by stone arrangement site (centre). Distinctive ‘two cairns joined by a line of stones’ motif in the foreground. .......................................................... 215
FIGURE 16. B. Photo of distinctive ‘circular-irregular’ form at budjari yorg which bears clear similarity to a form at Boorabbin .................................................................................................................. 216
FIGURE 16. C. Typical example of ‘long curvi-linear’ form at budjari yorg.................................................. 216
FIGURE 17. A. Belinup stone arrangements with aerial imagery (Attribution: Imagery ©2015 CNES/ASTRIUM digital globe) .................................................................................................................. 218
FIGURE 17. B. Belinup arrangements, North end ......................................................................................... 219
FIGURE 17. C. Belinup arrangements, mid-north section ........................................................................... 219
FIGURE 17. D. Belinup arrangements, mid-section ....................................................................................... 220
FIGURE 17. E. Belinup arrangements, south-west section ........................................................................... 220
FIGURE 17. F. Belinup arrangements, south section .................................................................................... 221
FIGURE 17. G. Belinup tadpole motif .......................................................................................................... 221
FIGURE 18. A. Budjari yorg stone arrangements ......................................................................................... 222
FIGURE 18. B. Budjari yorg, North-East section ......................................................................................... 222
FIGURE 18. C. Budjari yorg, mid North-East section .................................................................................. 223
FIGURE 18. D. Budjari yorg lower North-East section ............................................................................. 223
FIGURE 18. E. Budjari yorg, upper South-West section ............................................................................ 224
FIGURE 18. F. Budjari yorg lower South-West section ............................................................................... 224
FIGURE 19. Map showing distribution of granite ‘stacked slab’ motifs in the southwest............................ 234
FIGURE 20. Marbaleerup from the north-West ......................................................................................... 240
FIGURE 21. Boyatup from the East, with rock art location circled in red.................................................... 241
FIGURE 22. Location of Marbaleerup and Boyatup relative to current native title boundaries across southern Western Australia. ........................................................................................................... 243
FIGURE 23. Location of recorded rock art complexes in southwest Western Australia and average annual rainfall isohyets .............................................................................................................. 246
FIGURE 24. Marbaleerup shelter MR-01 from the north ........................................................................... 248
FIGURE 25. Photo-tracing of the main art panel at MR-01 showing superimpositioning.......................... 248
FIGURE 26. The cream paintings at MR-01 (photo-tracing)..................................................................... 250
FIGURE 27. Interpreted harris matrix for the main panel at MR-01 (motif numbers and colour shown on the matrix)............................................................................................................................. 253
FIGURE 28. MR-02a main art panel ............................................................................................................. 255
FIGURE 29. MARBALEERUP MOTIF NUMBERS PER SHELTER. SHELTERS ARRANGED FROM NORTH TO SOUTH .............................. 256
FIGURE 30. MARBALEERUP HANDSTENCIL MIDDLE-FINGER LENGTHS ........................................................................ 256
FIGURE 31. PAINTING AT BOYATUP .......................................................................................................................... 258
FIGURE 32. BOYATUP HANDSTENCIL MIDDLE-FINGER LENGTHS ........................................................................ 258
FIGURE 33. LOCATION OF THE UNDERLYING YILGARN CRATON, SURFACE GRANITES, AND ART SITE COMPLEXES .......... 260
FIGURE 34. DALE’S CAVE SHOWING UNIQUE CIRCULAR DESIGN, 2005 ................................................................. 262
FIGURE 35. HANDSTENCILS AT MULKA’S CAVE SAYS TO BE OF THE HANDS OF MULKA ........................................... 263
FIGURE 36. THE KYKBA PETROGLYPH SITE AT MILYEANNUP, (HORIZONTAL ARROW INDICATES THE EXTENT OF THE
PETROGLYPH PANELS) (DORTCH ET AL. 2006) ........................................................................................................ 263
FIGURE 37. DETAIL OF PAVEMENT WITH DOMINANT ARRAY PECKED BIRD TRACKS, (DORTCH ET AL. 2006) .......... 264
FIGURE 38. THE ENTRANCE TO MORFIT CAVES, 2005 ............................................................................................. 267
FIGURE 39. KUDARDUP CAVE AT THE LOCATION OF THE HANDSTENCILS, 2005 .................................................... 268
FIGURE 40. ROCK SHELTER FORMS: A: MID-SLOPE GRANITE OUTCROP (DALES CAVE); B: GRANITE INSELBERG TORS (OLIGLIE
ROCKS); C: UNDERCUT NICHE IN SAPROLITE BREAKAWAY (LAKE HILLMAN) ......................................................... 273
FIGURE 41. MULKA’S CAVE SHOWING LOW ENTRANCE, 2005 .................................................................................. 274
FIGURE 42. DISTRIBUTION OF MOTIF NUMBERS PER COMPLEX ............................................................................... 275
FIGURE 43. NOONGAR ROCK ART MOTIF NUMBERS BY SHELTER LENGTHS, EXCLUDING MULKA’S CAVE WITH ITS
EXCEPTIONALLY HIGH MOTIF NUMBERS (452) AND A SHELTER LENGTH OF 15M ...................................................... 276
FIGURE 44. SIMPLE DESIGN MOTIFS FROM BURRAN ROCKS (PHOTO-TRACING) ..................................................... 282
FIGURE 45. SET OF VERTICAL LINES (NULLA NULLA 2005) .......................................................................................... 283
FIGURE 46. COMPLEX DESIGN MOTIF - BERRINGBOODING (PHOTO-TRACING) ..................................................... 283
FIGURE 47. TYPICAL LARGE DESIGN MOTIFS HERE SUPERIMPOSED OVER HANDSTENCILS (MULKA’S CAVE, 2005) .... 285
FIGURE 48. COLOUR-ENHANCED SECTIONS OF THE 9.9 M LONG SIMPLE LARGE DESIGN (ROW OF BAR MOTIFS) (FRIEZE CAVE,
2005) (DSTRETCH _L1E10) .................................................................................................................................. 285
FIGURE 49. COMPLEX LARGE DESIGN MOTIF 3.7 X 3.4 M (BALD ROCK) (FREEHAND SKETCH. NO PHOTOMOSAIC COULD BE
ACHEIVED DUE TO THE UNDULATING LOW CEILING) .............................................................................................. 285
FIGURE 50. DISTRIBUTION OF LARGE (>70CM) MOTIFS BY COLOUR ........................................................................ 286
FIGURE 51. NUMBER OF FREE-FORMS BY PRE-FORMS PER SITE ............................................................................ 286
FIGURE 52. DRY-PIGMENT DRAWING (SIMPLE DESIGN) NYAMUTIN (UNENHANCED PHOTOGRAPH AND PHOTO-TRACING) . 287
FIGURE 53. NOONGAR ROCK ART MOTIF LENGTHS ................................................................................................... 289
FIGURE 54. LARGEST MOTIF SIZE BY SHELTER MOTIFS NUMBERS ........................................................................ 289
FIGURE 55. LARGEST MOTIF SIZE BY SHELTER LENGTH .......................................................................................... 290
FIGURE 56. CONCENTRIC ARC DESIGN (LE MOIGNAN, 2004) .................................................................................... 297
FIGURE 57. ART PANEL SHOWING CENTRAL LINE SET WITH CONCENTRIC ARCS AND ANIMAL TRACKS (DE-ERANNING, 2003)
............................................................................................................................................................................... 298
FIGURE 58. “CARNARVON RANGES – SERPENTS GLEN AND BELLA VISTA PIGMENT MOTIF ASSEMBLAGE” (FROM MCDONALD
2011:75) ................................................................................................................................................................. 300
FIGURE 59. CALVERT RANGES – PIGMENT ART MOTIFS (FROM MCDONALD 2011:58) .............................................. 301
LIST OF TABLES

TABLE 1. LIST OF TRADITIONAL OWNERS ENGAGED IN THIS RESEARCH PROJECT, GROUPED BY SIX-FAMILY GOVERNANCE STRUCTURE ................................................................................................................................. 15
TABLE 2. EXPECTATIONS OF TECHNOLOGICAL PROVISIONING AND LAND-USE STRATEGIES (GRAF 2010: 214) .......................................................... 152
TABLE 3. THE MARBALEERUP COMPLEX SITE PREDICTIONS .......................................................................................................................... 168
TABLE 4. PERCENTAGE RAW MATERIAL BY AREA (MARBALEERUP) .................................................................................................................. 170
TABLE 5. PERCENTAGE OF ARTEFACT CLASSES, BY AREA (MARBALEERUP) ........................................................................................................ 171
TABLE 6. NUMBER OF FORMAL IMPLEMENTS, BY AREA (MARBALEERUP) ........................................................................................................ 171
TABLE 7. PERCENTAGE OF ARTEFACTS WITH CORTEX, BY AREA, ARTEFACT CLASS AND RAW MATERIAL TYPE (MARBALEERUP) .............................................................................................. 171
TABLE 8. MARBALEERUP COMPLEX: SUMMARY OF PREDICTIONS AND RESULTS .......................................................................................... 179
TABLE 9. BELINUP SITE PREDICTIONS ................................................................................................................................................ 181
TABLE 10. PERCENTAGE RAW MATERIAL BY AREA (BELINUP) ................................................................................................................ 184
TABLE 11. PERCENTAGE OF ARTEFACT CLASSES BY AREA (BELINUP) ........................................................................................................ 184
TABLE 12. NUMBER OF FORMAL IMPLEMENTS BY AREA (BELINUP) ........................................................................................................ 185
TABLE 13. PERCENTAGE OF ARTEFACTS WITH CORTEX, BY AREA, ARTEFACT CLASS AND RAW MATERIAL TYPE (BELINUP) .......................................................................................... 185
TABLE 14. BELINUP COMPLEX: SUMMARY OF PREDICTIONS AND RESULTS .......................................................................................... 195
TABLE 15. COMPONENT PARTS (BELINUP AND BUDJARI YORG) .................................................................................................................. 211
TABLE 16. TABLE OF MOTIFS AT BELINUP AND BUDJARI YORG .............................................................................................................. 212
TABLE 17. SUMMARY OF AVAILABLE INFORMATION FOR ALL COMPARATIVE SITES ................................................................................ 228
TABLE 18. MOTIF TYPES PRESENT OR ABSENT, BY SITE .................................................................................................................. 232
TABLE 19. MARBALEERUP ART SITES RECORDED .................................................................................................................. 247
TABLE 20. MR-01 AND MR-02 COLOUR BY TECHNIQUE .............................................................................................................. 249
TABLE 21. MR-01 AND MR-02 FORM FREQUENCIES .................................................................................................................. 251
TABLE 22. MR-01 AND MR-02 MOTIF TYPE NUMBERS BY TECHNIQUE ........................................................................................................ 251
TABLE 23. MR-01 MAIN PANEL MOTIF SUPERIMPOSITIONS .................................................................................................................. 252
TABLE 24. MARBALEERUP SITES MR-03 TO MR-11: NUMBER OF MOTIF TYPES BY COLOUR, TECHNIQUE AND SITE .................................................................................................................. 257
TABLE 25. ESPERANCE MOTIF TYPES PER SITE COMPLEX (NUMBERS) .................................................................................................. 259
TABLE 26. ESPERANCE COLOURS BY SITE COMPLEX (NUMBERS) ........................................................................................................ 259
TABLE 27. LIST OF NOONGAR ROCK ART SITES RECORDED .............................................................................................................. 272
TABLE 28. TECHNIQUE FREQUENCIES IN NOONGAR ROCK ART .................................................................................................................. 276
TABLE 29. MAJOR TECHNIQUES IN NOONGAR ROCK ART .................................................................................................................. 277
TABLE 30. NOONGAR COLOURS BY SITE COMPLEX (NUMBERS) ........................................................................................................... 278
TABLE 31. HANDEDNESS BY TECHNIQUE AT MULKA’S CAVE AND ALL OTHER NOONGAR SITES (%) ............................................................................................................................................. 279
TABLE 32. NOONGAR PAINTED MOTIF TYPES PER SITE COMPLEX (NUMBERS) .................................................................................................................. 281
TABLE 33. DRAWN MOTIF TYPES PER NOONGAR SITE COMPLEX (NUMBERS) .................................................................................................................. 287
TABLE 34. NOONGAR SUPERIMPOSITION FREQUENCIES (NUMBERS) .................................................................................................................. 290
TABLE 35. NOONGAR SUPERIMPOSITION SUMMARY FOR RED AND WHITE WET PIGMENTS .................................................................................................................. 291
1 INTRODUCTION

On the 14th of March 2014, the Federal Court of Australia determined the continuing existence of Native Title rights and interests of The Esperance Nyungars. The name under which they chose to be recognised, *The Esperance Nyungars*, is a strong statement of identity that connects them with their country, centred around the coastal town of Esperance, and with the broader Noongar nation who occupy the south-west corner of the Australian continent and maintain their own languages and law.

While their title appears to be an unambiguous statement of identity, just like the lines on the map which now delineate their country (Figure 1), the historical construction of Esperance Nyungar identity is anything but clear. Instead it is fraught with dynamic negotiations over territory, identity and law. The ethno-historic record presents an intriguing but deeply confused picture of a rapidly changing and highly politicized frontier within the intersecting space between the Esperance Nyungars and their desert, and semi-desert dwelling neighbours to the north and east. These negotiations were at the same time antagonistic and cooperative. Their origins predate the arrival of Europeans in the 19th century, and are still relevant today.

The frontier of cultural change that intersected with the Esperance Nyungars during this period has its origins in the Western Desert around 1500 years ago (Gibbs and Veth 2002), where a group of people occupied a discrete area of land, spoke their own language and had their own strong system of law. Since this time, Western Desert law and culture has undergone a dramatic geographical expansion, and today that language and law is active across approximately one
sixth of the Australian continent (Veth 2006). This dynamic and ongoing process represents a remarkable phenomenon in Australia’s culture-history and has far reaching impacts on the socio-economic landscape of Aboriginal Australia, now and into the distant past.

The history and ethno-history of the negotiations in the Esperance area are intriguing and in some cases illuminative, but they are also contradictory, sometimes unreliable, and end up posing more questions than they answer. So, what can be learnt from the archaeological record about the historical construction of Esperance Nyungar identity? This is the topic of my thesis.
1.1 RESEARCH AIMS

This thesis documents the results of an Aboriginal community-based archaeological research project in the Esperance region of southern Western Australia. The research involves archaeological analysis of three aspects of material culture: rock art, stone arrangements and flaked stone artefacts. The aim is to understand more about the role of two important cultural places Belinup and Marbaleerup, within regional patterns of movement that underpinned Aboriginal society and economy in this region during the late-Holocene. The research explores concepts of identity (Jones 1997; Meskell and Preucel 2004) relating to the local Esperance Nyungar people, and neighbouring Ngadju and Mirning people who occupied the lands to the north and east. At a larger scale it explores identity in relation to the broader Noongar and Western Desert cultural blocs, which intersect at the edge of Esperance Nyungar country. It has been suggested that negotiations of territory, law and identity that were taking place in the region during the period leading up to European settlement were directly related to the broad-scale expansion of the Western Desert cultural bloc (Bates and White 1985; Gibbs and Veth 2002; Tindale 1974). The trajectory of this expansion situates the northern and eastern edge of Esperance Nyungar country at a dynamic and rapidly shifting frontier between two distinct cultural blocs (Figure 1). Despite not living in the Western Desert itself, the Ngadju and Mirning are part of that cultural bloc, while the Esperance Nyungar are part of the Noongar bloc. The exploration of these questions leads to a discussion about the historical construction of Esperance Nyungar identity.

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1 While ‘Noongar’ is the more commonly accepted spelling, there is some variation which probably reflects different dialects. ‘The Esperance Nyungars’ is the formal name of the Native Title holders in the Esperance region. I use ‘Noongar’ when referring to the broader cultural bloc, and ‘Nyungar’ in reference to The Esperance Nyungars.

2 In this thesis I use the term ‘law’ rather than ‘lore’ because Aboriginal law is not only a mythology and world view, it is a set of entrenched and enforceable governing principles that dictate how people should behave and interact with one other, thus law is an appropriate term.
Marbaleerp and Belinup have been selected as the study sites because of their diverse archaeological assemblages and because contemporary Esperance Nyungar knowledge suggests that they functioned in the past as inter-group meeting places, presenting an ethnographic account of site-use that is consistent with what Margaret Conkey has termed aggregation locales (Conkey 1980). Conkey explored the concept of aggregation locales, in the context of aggregation/dispersion patterns, which predict hunter-gatherer cycles of movement that require people to periodically aggregate together before they disperse into smaller groups and travel elsewhere. She argued that where previous studies (eg. Wilmsen 1974) had emphasized factors of subsistence ecology as the basis for aggregation they had neglected the importance of social and ritual aspects of aggregation. Conkey therefore broadened the definition of aggregation to incorporate the social and ritual dimensions and defined the term aggregation locale to describe places periodically used to host such events. The aggregation concept has become an important tool for archaeological research into hunter-gatherer societies, but has also received criticism, which rightly highlights the challenges in identifying aggregation within the archaeological record and reminds us that if applied uncritically, aggregation can be a conceptual ‘red herring’. That is, it can be used to provide a behavioural explanation for large and diverse concentrations of archaeological materials, without properly accounting for other potential explanations, such as repeated use of the same site by small groups over time.

This thesis addresses the limitations, arguing for a pluralistic approach which tests the aggregation hypothesis against multiple sets of data and considers it within a broader assessment of mobility. Through application of the aggregation concept and its archaeological correlates to the ethnographic model, the aim is to better understand the interwoven social and
economic systems that underpinned Esperance Nyungar movement cycles. This is done through a consideration of symbolic assemblages (rock art and stone arrangements) which are hypothesised to reflect social functions, in conjunction with technological assemblages (lithics) to understand their role in provisioning for the economic requirements of aggregation. The results inform a discussion on how concepts of mobility (Binford 1980; Kelly 1992) and aggregation can be usefully applied together to investigate the intersections of social and economic elements in hunter-gatherer settlement.

The applicability of identity as a conceptual tool in archaeology is challenging because it relies upon some understanding of the relationship between material culture and identity. At the core of this challenge is the knowledge that identity is multifaceted and cannot be directly interpreted from material culture in a simple way. Put another way, it is not sufficient to say A=B, where A is an item of material culture and B is identity. There may be many layers of identity reflected in a single item of material culture, and many or all of them may be invisible to the archaeologist without an informed context, and no matter how informed we become some layers of identity will remain invisible. Despite the challenges, identity is an important tool in archaeology’s quest to understand more about past societies. This demands theoretical and methodological responses that enable us to unpack the relationships between material culture and identity in order to interrogate the archaeological record.

The approach applied in this thesis embraces the pluralistic nature of identity and accepts that many layers will remain invisible. Broad-scale notions of identity are investigated through archaeological methods, with the aim to unpack the relationship between the symbols found in rock art and stone arrangements, with regional identities of Noongar and non-Noongar people. As a starting point, I accept that identifying quintessentially Noongar or non-Noongar symbols
is deeply challenging. However, it is possible to map the occurrence of symbols across landscapes and consider how these may, or may not relate to regional notions of identity and connections between people and places. The approach begins with what is known, and works towards the unknown. Therefore, we may take contemporary Esperance Nyungar identity and connections to place as a known, and work backwards through time and outwards through space towards the unknown. This approach allows for consideration of the inherent mutability in identity across time and space. The mutability and diversity of contemporary Esperance Nyungar identity is also acknowledged and discussed. The results help to articulate some of the complexities in unpacking the relationship between material culture and identity. Ultimately, identity links the archaeological past with the contemporary descendent community, and to this end the thesis demonstrates how and why identity is a critical tool for archaeology.

Archaeology around the world has sought to embrace the perspectives of descendent communities through direct and active engagement, in an effort to decolonize the discipline and ensure that research is culturally relevant and appropriate (McNiven and Russell 2005; Smith and Wobst 2005). Despite the advances that this movement has made and the extent to which it has enriched our discipline, there are still many impediments to effective implementation and the challenges remain potent (Hemming and Rigney 2010). This thesis documents the process of undertaking a research partnership with a descendent community, and provides critical reflection on the challenges and successes in theory and in practice. Ultimately, the community partnership underpins the success of this doctoral research project, so an argument is presented for how and why Aboriginal community input and ownership is pivotal to the success of archaeological research into Aboriginal pasts in Australia and elsewhere.
1.2 RESEARCH QUESTIONS

1. What information does the archaeological record provide about Marbaleerup and Belinup in regards to suggested interaction with people from the north and east (including Ngadju and Mirning people) during the late-Holocene?

2. How can archaeological methods be used to provide information about movement cycles of Esperance Nyungar people, and the role of Marbaleerup and Belinup within local and regional settlement/mobility systems? What does this mean for the application of mobility as a concept in hunter-gatherer archaeology?

3. How can archaeological methods be used to distinguish between:
   a) aggregation events of large groups of people from around the surrounding regions, and
   b) sustained or repeated use of the site by small and medium sized groups of local people?

4. How can archaeological methods be used to test Gibbs and Veth’s (2002) hypothesis that Esperance Nyungar people were involved in a dynamic negotiation of territory and identity, as a result of the geographical expansion of Western Desert culture, language, and law? Can archaeological methods be used to understand more about the dynamics of such negotiations of territory, identity and law?

5. How can a working model of decolonized Indigenous archaeology (McNiven and Russell 2005; Smith and Wobst 2005) be used to ensure that archaeological research is relevant to the lives and culture of contemporary custodians?
1.3 THESIS STRUCTURE

This is a *thesis by compilation*, which means it is composed of a mixture of chapters, some of which are published articles, and some are traditional chapters, all of which fit together to form a cohesive, focussed thesis. Chapters 1 to 4 are traditional style chapters (not published), and form the background section to this thesis, including the literature review and theoretical underpinning. Chapter 5 is a published manuscript (Mitchell et al. 2013) that discusses the theoretical and structural basis of the community research partnership that underpins the research. Chapter 6 outlines the methodology, data analysis, results and interpretation of lithic (flaked stone) assemblages. This is written as a traditional style chapter, but is largely a self-contained manuscript and is suitable for publication at a later stage. Chapter 7 is a manuscript accepted for publication (Mitchell in press) that outlines the methodology, data analysis, results and interpretation of stone arrangements. Chapter 8 is a manuscript accepted for publication (Gunn et al. in press), which outlines the methodology, data analysis, results and interpretation of rock art assemblages at the study sites. Chapter 9 is a traditional style chapter, which discusses the results in relation to the research questions, and draws conclusions about how this thesis contributes to the broader fields of research outlined in section 1.1.

The principal drawback to the thesis by compilation structure, is that it is necessary to repeat some information through the course of the thesis, to ensure that published manuscripts are self-contained documents. This means that some of the background information presented in the introductory chapters, is repeated in the published chapters. This is regrettable for readers of the full thesis, but unavoidable if the published chapters are to be properly contextualized. A further drawback is that due to the different publication dates, certain things may be updated and it is not possible to retrospectively change the published manuscript. The most notable
example in this thesis is use of the term ‘Wudjari’ in Chapter 5 (published 2013), in place of ‘Esperance Nyungars’, the collective name that is used throughout the thesis, which represents more updated terminology. The reasons underpinning the discrepancy between these two terms are discussed in section 2.2.

The advantages of the thesis by compilation, are that it allows for more widespread dissemination of results, broadens the peer review base, and in my case allowed for collaborative research to contribute to certain components of the thesis. The collaborations relate specifically to Chapters 5 and 8. In the case of Chapter 5 the collaborative nature of the paper enhanced the content because it is about a collaborative research process. The co-authorship reflects the shared contribution of archaeologists and Aboriginal community members to the structure and process for community-based research. Collaboration on Chapter 8 came about because there were no detailed published accounts of rock art in Southwest Australia, but detailed field recordings had been made by my co-authors, who lacked an impetus and specific research questions through which to investigate the data. I had the research questions but lacked the data, so the collaboration was mutually beneficial and has made an important contribution to this thesis. Ultimately the responsibility to ensure that the thesis fits together to form a cohesive document is my own and to this end I am confident that the three published chapters are directly relevant to the thesis topic and contribute greatly to the overall results.
1.4 ESPERANCE NYUNGAR RESEARCH PARTNERSHIP

The foundation of this doctorate is a research partnership between myself and the Esperance Nyungar community. The partnership, which is based on a two-way knowledge exchange, has informed the research from start to finish. Part of the knowledge exchange process also involves the co-creation of new knowledge as we bring together our pre-existing ideas and information and collectively investigate new questions.

This section is organised into three parts. The first explores the theoretical and methodological basis of the research partnership through a review of relevant literature; the second is about the Esperance Nyungar people who have taken part in this research, including a discussion about representation and cultural governance; and the third examines the structure and process for implementation of the partnership through the Gabbie Kylie Foundation. These three topics are discussed in more detail in Chapter 5 (Mitchell et al. 2013).

1.4.1 Theoretical and Methodological Basis

The theoretical and methodological underpinning for this research partnership is based on the related concepts of decolonized archaeology and community-based archaeology. Decolonizing Aboriginal archaeology in Australia has been widely explored in literature over the past three decades (Allen 1988; Clarke 2002; Hemming and Rigney 2010; Langford 1983; Marshall 2002(a)(b); McBryde 1985; McNiven and Russell 2005; Smith and Wobst 2005; Thomas 1994). Other scholars have explored the concept in other parts of the world, such as in Canada and the United States (Ferguson 1996; Nicholas 2000; Nicholas and Andrews 1997; Thomas
Ian McNiven and Lynette Russell present a vision for decolonized archaeology in Australia:

For Australian archaeology, the goal is the creation of a community-based archaeology built around partnerships between Indigenous communities and archaeologists that employ mutually acceptable research agendas, work practices, and interpretive frameworks (McNiven and Russell 2005:258).

Central to the vision of a decolonized archaeology are the issues of ownership and control of cultural heritage, and the prerogative of custodians to have real power in decisions and actions affecting their heritage. In 1983, Rosalind Langford set out the issues from the perspective of the Tasmanian Aboriginal Community:

The issue is control… we say that it is our past, our culture and heritage, and forms part of our present life. As such it is ours to control and it is ours to share on our own terms (Langford 1983: 2).

This statement was at the heart of Langford’s paper, which was a seminal work in the development of decolonized archaeology in Australia. In the years following its publication, much scholarly work in archaeology aimed to address questions relating to this theme, particularly in Australia. Isabel McBryde explored concepts of ownership and control of heritage explicitly in the introductory text to her edited volume Who Owns the Past? Papers from the Annual Symposium of the Australian Academy of the Humanities (1985). Contributions include Bruce Trigger in The Past as Power: Anthropology and the North American Indian, and Sharon Sullivan in The Custodianship of Aboriginal Sites in Southeastern Australia. This volume provided a forum for questioning the politics of ownership and control in heritage and archaeology, and may be considered an important contribution toward the decolonization of archaeology.

McNiven and Russell explore the dichotomy between viewing Aboriginal people as either “stakeholders” or “owners” in managing cultural heritage (McNiven and Russell, 2005:236).
They disagree with the stakeholder model, arguing that it has appeal among many archaeologists because it mediates conflicts over how archaeological and cultural features or places are managed; but “under the guise of democratization of the management process” the issue of ownership is completely avoided and “Indigenous peoples are reduced to mere participants in the management of Indigenous sites” (McNiven and Russell, 2005:236). As an alternative they propose a “host-guest” or a partnership model; the premise of which is a fundamental restructuring of power within archaeology which aims to empower Aboriginal communities as the leading partner in research, “not as equal stakeholders, but as the owners and controllers of their heritage” (McNiven and Russell 2005: 236).

Writing from the perspective of the Ngarrindjeri Nation of South Australia, Hemming and Rigney (2010) call for a restructuring of the colonial power relations that underpin the supposedly ‘post-colonial’ systems of heritage management and archaeology in Australia. They argue that understanding and acknowledging the historical construction of “contemporary colonizing relations of power” is critical in planning and implementing partnership programs between Indigenous people/groups and universities/researchers; and that “long-term, Indigenous-driven, collaborative research projects and partnerships” are essential if improvements are to be achieved in Indigenous well-being (Hemming and Rigney 2010: 94).

Decolonized models of archaeology in Australia are often closely associated with community-based archaeology (Clarke 2002; Greer 2010; Greer et al. 2001; Ross and Coghill 2000). Greer et al. (2001) draw an important distinction between consultative archaeology and community-based archaeology. They argue that consultative archaeology is reactive because it only provides community the chance to react to an already set research agenda; where community-based archaeology is interactive because the research is defined/instructed by “elements of
contemporary community identity” (Greer et al. 2001:267-8). This requires a level of effective interaction and meaningful engagement between researchers and custodian communities before and during a research project, so that researchers may have enough understanding of the community in order to undertake community-based research. The issue of contemporary identity is fundamental to the approach defined by Greer et al. (2001) in that they suggest not only should community-based research be informed by identity, but it may also inform identity. As Greer et al. (2001: 268) argue, “community-based research is aimed at empowering communities by contributing to the construction of local identity”. This quote also invokes the idea of the co-creation of new knowledge through collaborative research partnerships, which is an exciting prospect for a model of decolonized archaeology that seeks to have relevance to present and future descendent communities.

This doctoral research embraces the critical underpinnings of decolonized archaeology, within an effective model of community-based archaeology. It is argued here that there are two main practical parts to achieving this goal. The first is relationships between researcher and community. The second is a structure and process to formalize these relationships into a working model. Both are discussed in the next sections.

1.4.2 People, Representation and Cultural Governance

The Esperance Nyungars operate under a clearly articulated six-family governance system. This has been in place for a number of years under the Native Title claim process and has continued after the determination in March 2014, when the new Native Title holders set up the Prescribed Bodies Corporate (PBC) in the name Esperance Tjaltjraak Native Title Aboriginal Corporation (ETNTAC). PBCs (more formally known as Registered Native Title Bodies Corporate) are
organisations set up by Native Title holders to represent them and their interests (Native Title Corporations 2016). Throughout these changing organisational structures, the six-family system has remained the overriding principle for governance for the Esperance Nyungars. The six families are the Bullen, Dabb, Reynolds, Tucker, Yorkshire/Knapp and Rogers families. As part of a culturally dictated governance structure, formalized through the Native Title system, each family has a nominated senior individual who represents the family in heritage and cultural matters. In some cases, the nominated senior representative might change, but the membership has remained mostly the same throughout this research project. For all cultural activities and projects in the Esperance region, these six representatives form a working party. In the event that the senior representative cannot attend or wishes to send someone else, another member of the family comes in their place. This clear, functional governance structure and existing system of representation provides a simple and effective foundation for collaborating with the Esperance Nyungar community for cultural research.

Table 1 is a list of Traditional Owners who were engaged in this research project. The list provides the name of the nominated senior Elders of each family. Listed below the senior Elders are the ‘proxy’ family representatives who have been engaged in the research, with details of relationship to the senior Elder:
1. **Dabb family** – Henry Dabb, Annie Dabb (Senior Elders/siblings)

2. **Rogers family** – Diane Clinch, Nicky Whitby (Senior Elders/siblings)
   a. Gavin Clinch (son/nephew)

3. **Reynolds family** – Veronica Williams-Bennell (Senior Elder)
   a. Wayne Williams (son)
   b. Kevin Reynolds (brother)
   c. Doc Reynolds (brother)
   d. Gail Reynolds-Adamson (sister)

4. **Yorkshire/Knapp family** – Terrence Yorkshire Snr (Senior Elder)
   a. Gail Yorkshire-Selby (sister)
   b. Terrence ‘Bubba Lee’ Yorkshire Jnr (son)

5. **Bullen family** – Elaine Bullen (Senior Elder; deceased)
   a. Murray Bullen (son)
   b. Jeremy Smith (son)
   c. Candice Smith (daughter)

6. **Tucker family** – Graham Tucker
   a. Donald Abdulla (Nephew)

**TABLE 1.** List of Traditional Owners engaged in this research project, grouped by six-family governance structure.

### 1.4.3 Structure

The community-based partnership model for this doctoral research is based on three things. Firstly, upon relationships between myself and the community; secondly on existing Esperance Nyungar governance structures and systems of representation (outlined above in section 1.4.2);
andthirdlyonthemodelandstructureprovidedbytheGabbieKylieFoundation(GKF).This sectiondiscusseshowthefirsttwoditems,thetheexistingrelationshipsandgovernance,weres formalizedintoastructuretounderpinaneffectiveresearchpartnership.

TheformalstructureforcommunityengagementinthisresearchprojecthasbeenGKF.GKF wassetupin2007bymembersoftheEsperanceNyungarcommunityledbyDocReynolds,in partnershipwithNTWAtoconservelandinterprettheAboriginalheritageoftheEsperanceregion,andempowerTraditionalOwnersinmanagingtheirheritage.GKFoperatedunderthe auspicesoftheNationalTrustofAustralia–WesternAustralia(NTWA)throughouttheperiod oftheresearchbutwillnowbeoperatingundertheEsperanceTjal tjraakNativeTitleAboriginal Corporation(ETNTAC)from2016onward. TheNTWAprovidedadministrativeandstrategic supportbutdidnotengagedirectlyintheday-todayoperationsofGKF.GKFwillnowfulfill acultureandheritagerolewithinETNTAC,andalloperateinbroadlythesameway.

GKFemploysapartnershipmodel,whichseekstoembracethecriticalreflectionsof decolonizedarchaeology,inensuringcontrolandownershipofheritageistheprerogativeof TraditionalOwners. AsdiscussedinChapter5(Mitchelletal.2013),thismodelisbasedon thepremisesofsituatingcustodiansatthecentreofheritagemanagement,withindependencetoworkundertraditionalcustoms,practicesandprotocolswhilebeingintegratedandempowered inmainstreamlandmanagementregimes. Thisissignificantbecauseitre-establishespowers structures topo sition Traditional Owners at the centre of heritage management rather than at thefringes(seeChapter5-Mitchelletal.2013). GKFoperatesunderasimpleframeworkin whichtheEsperanceNyungarc ommunity,representedthroughthesix-familygovernance structure,undertakesabroadscopeofworkstherelatingtoheritageandenvironmental
management, based on cultural practices/protocols and heritage management practices. Archaeology is used as a prominent tool in this process.

### 1.4.4 Setting Up the Research Partnership

This section is an account of the steps undertaken to set up the research partnership in such a way as to engage participants in the research from the very beginning, at the research design stage.

In September 2009, one-on-one and group conversations were held with all of the senior family representatives at the time (Graham Tucker, Veronica Williams-Bennell, Diane Clinch, Elaine Bullen, Henry Dabb and Terrence Yorkshire), as well as a group discussion, about the idea for this research project. The conversations included presenting each person with a written research proposal and a verbal explanation of the research ideas, discussing the ideas and getting feedback from the Elders individually and as a group. This provided the opportunity to understand firstly whether the Elders supported the research, and secondly, whether they thought the research was valuable, interesting, realistic, and relevant. Feedback from these conversations informed the redrafting process of the original research proposal. The discussions were an important part of ensuring that the research made sense to the Elders based on their perspectives, which are informed by cultural knowledge and understanding, something a non-Esperance Nyungar researcher can never fully emulate. This perspective allowed for the research to be framed in such a way as to be relevant to the Esperance Nyungars in its very design.
As part of those original discussions, each of the six family representatives not only provided verbal and written consent for the research to proceed, but also offered advice and information, thus having an influence on the research topic from the beginning. The conversations indicated that the research questions were not just founded on some abstract questions arising from the ethno-historic literature, but are indeed relevant to the contemporary community. Following the discussions, a revised research proposal was written, leading to my enrolment with The Australian National University in May 2010.\(^3\)

Before enrolling it was necessary to contact the Native Title representative body Goldfields Land and Sea Council (GLSC), to get formal support for the research. In order to provide written support for the research project, the GLSC required formal approval from three separate Native Title claim groups: the Esperance Nyungars, the Ngadju and the WA Mirning, which required presenting and discussing the research proposal at three separate claim group meetings. A claim group meeting is open to all extended Traditional Owner families, and can be a very large forum. The meetings are infrequent and are held locally in the claim area so often require extensive travel. Due to some unfortunate date clashes with the very few and infrequent Esperance claim group meetings during this period, it was not possible to present at an Esperance claim group meeting until November 2011, a full two years since gaining initial support from the six senior representatives. As a consequence of the delays in presenting to the Esperance Nyungar claim group, the formal process of obtaining ethics approval for the research was very protracted. However, during this time a number of projects undertaken by the Gabbie Kylie Foundation allowed for continued development of the research in

\(^3\) Initially I was enrolled as a Master of Philosophy (MPhil) candidate, but upgraded my candidacy in January 2013 to a Doctor of Philosophy (PhD) because the scope of the research was proving too large for the MPhil and was better suited to a PhD.
collaboration with Traditional Owners. In this way the actual mechanics of the research partnership kept operating and developing, despite hold-ups in formalising the partnership.

Ultimately, the practical steps undertaken to establish this research partnership were successful in creating the right mix of formal and informal elements to provide for an effective, operational research project that upholds the ideals and tenets of decolonized archaeology espoused in section 1.4.1 and in more detail in Chapter 5.

1.5 TIME PERIOD FOR THE RESEARCH

Taking the present as a starting point, this research works back in time and looks at the historical construction of modern Esperance Nyungar identity. The ethnographic information obtained from the current generations is used as a foundation, and the historical information obtained through archaeology, ethno-history and other sources is then added to that, to create a historically informed picture of Esperance Nyungar identity. No attempt is made to piece together any detailed chronology, or to provide precise dates. A series of acknowledged assumptions and relevant dating methods are employed to roughly assign the time period to the late-Holocene, and particularly the period leading up to, and including, European settlement during the latter half of the 19th Century. The time period for the research questions is broadly based on the work of Gibbs and Veth, who propose a chronology for the spread of Western Desert language and law, suggesting “500 BP to contact” as roughly the time period that Western Desert practices start to come into the Southwest (Gibbs and Veth 2002: 13). However, as is discussed below, and in more detail in section 6.2.4, there is no way to ensure that the
production, use and discard of the archaeological materials analysed in this study were confined to the past 500 years.

During the 20\textsuperscript{th} century the increased settlement of European people and associated impacts on Aboriginal movement patterns disrupted traditional use of the study sites; therefore, the archaeological investigation for this research is only relevant up to the end of the 19\textsuperscript{th} century for the most part, although some of the activities may have continued into the 20\textsuperscript{th} century as part of post-contact landscape use. Pastoral activities such as droving and station work, which began in the 1860s, included local Aboriginal people. Numerous flaked glass artefacts at Marbaleerup and on Thomas River Station near Belinup provide evidence of traditional activities continuing to be practiced after contact. Activities undertaken at the sites by Aboriginal and non-Aboriginal people throughout the 20\textsuperscript{th} and 21\textsuperscript{st} centuries must also be considered part of the entirety of site formation processes.

The archaeological materials represent a palimpsest of different activities carried out at many different times over an unknown duration. This research does not incorporate absolute dating methods as part of archaeological analysis so the strong possibility of some archaeological features having been used, created or discarded before the study period is acknowledged. Both Marbaleerup and Belinup are known through historical, ethnographic and ethno-historical records to have been occupied by Aboriginal people at the time of European arrival in the mid-to-late nineteenth century (Curr 1886, I: 393; Forrest 1875: 90; Smith 1993: 79, 84). The ethno-historic evidence confirms that both locations were being actively used by Aboriginal people and, therefore, the cultural features were part of an active cultural system at that time, thus confirming that both study sites were used contemporaneously with one another. This is important because it establishes temporal association between the study sites, and the associated
ethno-historic evidence relating to the research questions (discussed in Chapter 2). It also provides a known time of Aboriginal occupation and use, from which to work back through hitherto unknown periods of occupation. In the absence of absolute dating methods, the 19th century is currently the earliest time that the occupation of these places can be confirmed, but it can be reasonably assumed that the study sites were also occupied leading up to this time. Nyungar knowledge about traditional settlement practices supports this assumption (see Section 3.2.1). Given the abundance of freshwater and other available resources for Aboriginal people at both locations, making them highly suitable for occupation, there is reason to expect that these places and landscapes have been occupied for long periods of time.

Use life of archaeological features is also a consideration and a distinction needs to be made between the original production and subsequent use, re-use, maintenance and discard of archaeological materials. It is not possible to prove all of the study assemblages were produced during the late-Holocene, but certainly many of them were maintained, modified, used and re-used during this period. Obtaining absolute dates and fine-grained chronologies for the production of the assemblages is not the aim of this research project, nor is it critical to the research questions. What is important is to establish temporal association between each of the assemblage types and their active incorporation into Aboriginal society, which may be undertaken based on the following rationale.

While the dates of rock art production are unknown, the symbols remain fixed in the landscape, and as it is known that these places were actively used during the 19th century, it can be reasonably argued that the assemblages existed as part of an active cultural system at this time, and perhaps earlier. Likewise, stone arrangements situated at prominent locations within the landscape must certainly have been active cultural symbols during the 19th century when the
study sites were known to have been occupied. Therefore, regardless of the original dates of construction, the arrangements remained in place at these locations during this period and therefore have implications for the research questions. Analysing surface lithic assemblages presents many challenges for temporal control, as artefacts may be relocated from their primary context through erosion or other post-depositional processes, which means an assemblage may have artefacts of mixed date ranges. Some surfaces such as granite outcrops are very old, and therefore may contain artefacts of great antiquity alongside modern, or relatively modern features. Issues of temporal control with regard to surface artefact assemblages are considered in more detail in section 6.2.4.

1.6 OVERVIEW OF THESIS

Chapter 2 collates current knowledge from Esperance Nyungar participants and a literature review to provide a background to the socio-cultural context of the research. An argument is made here that the eastern and northern edges of Esperance Nyungar country are at a socio-cultural frontier. The chapter reviews the broader socio-cultural context of Noongar country and of Western Desert cultural expansion and includes a review of relevant ethno-historical information. Esperance Nyungar knowledge is integrated throughout the text.

Chapter 3 collates current knowledge and includes a literature review to provide a background to the archaeological and environmental context of the research. The chapter provides an introduction to the study sites and discussion of previous archaeological research in Esperance Nyungar country. The environmental background section provides a general geographical
context and argues that Esperance Nyungar country is at a geographical frontier as well as a cultural frontier.

**Chapter 4** is the theoretical foundation of this thesis and discusses three theoretical frameworks - *mobility, aggregation* and *identity* – as they relate to the research questions.

**Chapter 5** is a published manuscript, co-authored with David Guilfoyle, Doc Reynolds and Cat Morgan, entitled *Towards Sustainable Community Heritage Management and the Role of Archaeology: a case study from Western Australia*. The manuscript was published in *Heritage and Society Journal* in May 2013. It discusses the theoretical and structural basis of the community research partnership that underpins this thesis, through a critical assessment of the Gabbie Kylie Foundation. This chapter addresses research question five.

**Chapter 6** presents the lithics analysis, beginning with the theoretical underpinning that connects lithic technologies with mobility. A methodology is outlined to connect this theoretical framework to a system of analysis. An introduction to the study sites focuses on the lithic artefacts and their context, including the availability of raw material. A methods section outlines how the data was collected, and the implications for temporal control, when analysing surface artefact scatters. The results of data analysis are then presented, before a discussion section for each site. The discussion section outlines how the results of analysis are interpreted for each site respectively, before some final conclusions are made about lithic analysis and Esperance Nyungar landuse at the close of the chapter. This chapter addresses research questions one, two, and three.

**Chapter 7** is a sole-authored manuscript entitled *Stone Arrangements as Symbols: an archaeological approach in Esperance Nyungar Country, Western Australia*. The manuscript
has been accepted for publication and is currently in press as part of a special volume entitled *The Archaeology of Australian Aboriginal Stone Arrangements*. The manuscript presents an investigation of the stone arrangement complexes at Belinup and Budjarri Yorg, which proposes a theoretical framework that considers the arrangements as symbols, and then applies a methodology that is broadly based on conventions established through the field of rock art studies. A regional comparative analysis between the Esperance study sites, and other arrangements from across the Southwest and the Western Desert is conducted and the results are discussed. This chapter addresses research questions one, four and five.

**Chapter 8** is a manuscript co-authored with Robert (Ben) Gunn and Esmee Webb, entitled *Rock art of the Esperance region and its place in the Noongar art traditions of Southwest Western Australia*. The manuscript has been accepted for publication in the journal *Rock Art Research*. The manuscript presents a formal analysis of the rock art at Marbaleerup and Boyatup, and compares and contrasts the assemblages with the characteristics of 43 other known rock art sites in the Noongar lands of the Southwest. The analysis seeks to determine the prominent formal characteristics of the art at Marbaleerup and Boyatup: do they share some or all of the characteristics of rock art in other Noongar areas? The results are discussed and interpreted. This chapter addresses research questions one, three and four.

**Chapter 9** is the discussion and conclusions chapter, which presents the overall results in relation to the research questions, and the conclusions formed in response to the research aims outlined in section 1.1.
2 SOCIO-CULTURAL CONTEXT: AT THE FRONTIER

2.1 CHAPTER INTRODUCTION

This chapter reviews relevant literature and discusses Esperance Nyungar knowledge about the socio-cultural context of the study area. A range of literary and firsthand accounts are used as evidence to highlight the frontier situation at the edge of Esperance Nyungar country, in terms of Aboriginal society. Nyungar knowledge is incorporated throughout the text in the form of quotes and paraphrasing. No attempt has been made to talk with Western Desert people about their knowledge of the places and subject matter of this thesis, however it is likely that such discussions would yield interesting information and would be well worthy of further research.

It is argued in this chapter that a dynamic history of cultural interaction based on the negotiation and re-negotiation of territory and identity was taking place in Aboriginal society, and that these processes, which had emanated out of the Western Desert, were impacting the Esperance region during the late Holocene. The first part (section 2.2) considers the historical underpinnings of Esperance Nyungar culture, identity and law in relation to the broader Noongar cultural bloc and neighbouring Western Desert cultural bloc. The second part (section 2.3) discusses Esperance Nyungar identity, governance and representation during the Native Title era. The third part (section 2.4) provides a brief social history of the Esperance Nyungars focussing on the processes of disruption and dislocation imposed by colonial policies, and the resilience of people’s sense of identity and connection to country. The fourth part (section 2.5) looks at the history of Western Desert cultural expansion and the processes by which it took place. The fifth part (section 2.6) looks specifically at the ethno-historic evidence for the Esperance region as a
frontier of cultural change between the expansionist Western Desert bloc and the extant Noongar bloc.

2.2 CULTURE, IDENTITY AND LAW

Esperance Nyungar culture is part of the broader Noongar cultural bloc, also referred to as the “South-West cultural bloc” by Berndt (1980b: 84). While the Southwest forms its own distinct bloc, far from existing in isolation, Noongar people interacted on many different levels with their non-Noongar neighbours. This is particularly the case for those who lived in border areas. The Noongar cultural bloc is internally linked by shared language and cultural traditions that included practising male initiation rituals of upper body cicatrisation and piercing of the nasal septum, which follows what Berndt describes as the “Old Australian Tradition” (1980a, b). These initiation practices distinguish Noongars from their neighbours in the desert and semi-desert areas, who maintain distinctly different cultural practices, including different male initiation rites. Details of the male initiation rites of the desert area are discussed by Gibbs and Veth (2002) and Tindale (1974) and are not repeated here. The fact that the desert rites are distinct from those practised by the Noongar is important because they are a key determinant of identity. That is, if a man is initiated into the desert rites, becoming what is known to Esperance Nyungars as a Wati, then he takes that on as part of his identity and is bestowed with certain rights and obligations of the cultural group to which he is initiated. There are some current Esperance Nyungar men who have been initiated as a Wati. The men still identify as Esperance Nyungar, but also identify closely with the (non-Nyungar) group into which they have been initiated. Being initiated as a Wati in today’s society, as in the past, has important implications for many facets of life, including territoriality, spirituality, marriage rites, access
to resources, and identity. The remainder of this thesis refers to either *desert law* or *Noongar law* to distinguish between the two initiation regimes and associated belief systems.

Esperance Nyungar country is situated at the edge of the Noongar cultural bloc, being the south-easternmost of the thirteen cultural sub-groups of Noongar people. The thirteen sub-groups are based on cultural and linguistic distinctions. Berndt (1980b: 82) described them as “dialectal units” of the broader Noongar linguistic group but also identified detailed distinctions among the affiliated groups on the basis of social organisation. He divides them into four distinct categories. The first incorporates seven sub-groups encompassing the northern and western majority of Noongar country and is based on social organisation which adheres to a matrilineal descent system and paternal ritual affiliation (Berndt 1980b: 82). The second comprises two sub-groups, Bibelmen and Mineng, and is based on similar organisation to the first, but uses a patrilineal descent system. The third comprises the Ballardong and Nyaginyagi, and utilizes two alternating descent systems between different generations, but is focussed on patrilineal local decent groups, which Berndt suggests is similar to the social organisation of Western Desert people (Berndt 1980b: 83-4). Berndt’s fourth category refers to the Wudjari (Esperance Nyungars) and Goreng. Berndt describes the Wudjari and Goreng as similar to the third category (Ballardong and Nyaginyagi) because they are based on patrilineal descent. However, he distinguished between the third and fourth categories on the basis that the Wudjari and Goreng maintained named totemic groups, which he suggests, are probably “patrilocal descent units” (Berndt 1980b: 84). Indeed, the contemporary Esperance Nyungars follow patrilineal descent lines, which means they define their primary identity and connection to country on the basis of their father’s identity/country. This is not at the complete exclusion of matrilineal descent, which is also an important part of identity and connection, but patrilineal descent is dominant.
According to the AIATSIS Map of Aboriginal Australia (Horton 1996), Wudjari is the traditional cultural name for the Esperance Nyungars. However, Wudjari is a conflicted term in many regards and the ethno-historic literature demonstrates a long and confused history of the meaning of Wudjari (see section 2.2). It is still a conflicted term in the current descendent community, some of whom identify as Wudjari while others do not. For example, in response to the question of whether he identifies as Nyungar or Wudjari, Henry Dabb (19 February 2014) said, “Always known to be Nyungar you know. I don’t know who reckon we Wudjari or whatever? Always known to be Nyungar.”. As part of the same conversation, Terrence Yorkshire Senior agreed with Henry answering “that’s right” when asked if he too identified as Nyungar rather than Wudjari. However, Terrence’s sister Gail Yorkshire-Selby does identify as Wudjari and in fact incorporates both titles identifying as “Noongar-Wudjari” (Yorkshire-Selby 2011). Graham Tucker (25 February 2014) explains it like this. “The term [Wudjari] no I don’t identify with it but know of it. Its basically all part of it, Wudjari, its all part of it.”. As Esperance Nyungars is now an agreed upon title for the group, it is used in this thesis rather than Wudjari.

Within the Esperance Nyungars there are further sub-groups, the Nookgurring, Tjaltjraak and Bardok people (Elaine Bullen and Doc Reynolds, pers. comm., 11 October 2011). The Bardok are traditionally associated with the western side of Esperance Nyungar country from the Hopetoun area over towards Quagi beach (west of Esperance town). The Nookgurring are associated with the eastern area from around Duke of Orleans Bay and out further east to Belinup, and further still towards Israelite Bay. The Tjaltjraak are associated with the area in

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4 ‘pers. comm.’ is used in this thesis to reference information obtained through personal communication and paraphrased in the text. Direct verbal quotes are referenced with a name and date only.
the middle, which incorporates the current town of Esperance. Esperance Nyungars still acknowledge the sub-groups and understand their place in relation to specific ancestors who spent most of their lifetimes within one of these three areas, while maintaining connection to the area more broadly. However, in modern conceptions of identity, the distinctions within these sub-groups hold little importance, as people generally only identify as Esperance Nyungar and everyone is in agreement that the six Esperance Nyungar families speak for the entire area collectively.

Following the Native Title determination, a decision was made by the group to take the title Tjaltjraak as the name for the prescribed body corporate (PBC) and as a collective name for the group. This decision was made to honour the wishes of the late Tom Bullen, a renowned senior knowledge holder and founder of the original Native Title claim. According to the group, it was Tom Bullen’s wish that they be known as Tjaltjraak. The rationale for this title relates to territory and identity. The Tjaltjraak is a traditional Nyungar name for the blue mallee gum. The current understanding is that the term Tjaltjraak incorporates two closely related species: *Eucalyptus pleurocarpa* (blue leafed) and *Eucalyptus extrica* (green leafed) (Stephen Hopper and Alison Lullfitz, pers. comm., 25 January 2016). Esperance Nyungar people believe that the distribution of the Tjaltjraak corresponds closely to their territory and that as far as the Tjaltjraak grow to the east and north, so extends their country. Thus the Tjaltjraak is a marker of territory and a marker of identity. By taking on the name Tjaltjraak, the Esperance Nyungar people are further affiliating themselves with this plant and its distribution as a marker of identity and territory. This formal name change was an interesting shift which occurred late in the preparation of this thesis. It highlights the way in which identity is a mutable concept for people and how different events, decisions and individuals can influence shifts in identity that may
have far reaching impacts through time. It also highlights the way notions of identity may be reused, reinterpreted and reinvented.

In the interest of clarity, and to remain consistent with current conceptions of identity, this thesis restricts the layers of social organisation to three scales: Noongar (regional cultural affiliation), Esperance Nyungars (local cultural affiliation), and the six traditional owner family groups, who are the modern incarnation of what Berndt describes as the “patri-local descent group” (1980b: 84). The current leadership group of Elders maintain a common Esperance Nyungar identity, along with their own family identity. The term ‘Esperance Nyungar’ is interchangeable with ‘Tjaltjraak’ and both terms are now regularly used in common parlance. However, in this thesis, I use ‘Esperance Nyungar’ to remain consistent.

An important part of culture and identity is kinship and social organisation. Traditional Esperance Nyungar marriage systems were based on four totemic “skin groups” which took their totems from animals (Doc Reynolds, pers. comm., 21 October 2012). They are, Gnow (Malleefowl), Waitch (Emu), Yonga (Kangaroo) and Coomal (Possum). Within these four groups, an individual was only allowed to marry their opposite, so the mammals could only marry birds and visa-versa. If someone with a Gnow totem were to marry someone with a Waitch totem it would break the law and was punishable by spearing, in some cases to the death. This law and the broader system of which it was a part, provided social order and maintained the gene pool by regulating relationships. Still however, the Esperance Nyungars sought to broaden the availability of suitable marriage partners through exchange with neighbouring groups, including the Ngadju and Mirning (Doc Reynolds, pers. comm., 21 October 2012). These marriage systems are still relevant, however due to the impacts of colonial disruption, particularly the stolen generations (see section 2.4), the knowledge of who
belongs to which group has sometimes become confused, an issue that has caused inter-family conflicts in some cases.

As a result of their geographical position at the fringe of Noongar country, the Esperance Nyungars maintain close family ties with non-Nyungar cultural groups, the Ngadju (Malba), Mirning and others (see Figure 2). While these links are influenced by modern situations, they are also influenced by traditional (pre-European) relationships. Many of the Elders involved in this research are the children of Esperance Nyungar-Ngadju or Esperance Nyungar-Mirning marriages as well as marriages between Esperance Nyungars and other Noongar people from further west. Inter-marriage between these groups continues in current generations, ensuring deep family ties continue to exist, as the following two quotes serve to illustrate:

I identify as Nyungar, but I could identify as Ngadju. But more so Nyungar because this is where I’ve spent most of my time in this area. Went to school here. We were in Goldfields in the earlier days but Dad sort of more or less said I will bring you back to your proper country you know, I will show you the country (Graham Tucker, 25 February 2014).

We’re close with all these mob Norseman [Ngadju country], here (Esperance), Albany (Noongar country). Everybody knows each other, mainly the old people (Terrence Yorkshire Senior, 19 February 2015).

Figure 2. Extract of Horton Aboriginal Australia Map (1996), depicting Wudjari Country in relation to neighbouring culture groups (Note: the Malpa and Ngatjumay areas pictured here, are referred to as Ngadju Country in text).
2.3 IDENTIFY AND NATIVE TITLE

Esperance Nyungar identity is a multi-layered composite of the regional culture-history that extends from traditional times, through the severe disruptions of colonial settlement, to the post-Mabo Native Title era, which saw a renewed emphasis and questioning of Aboriginal identity and territory. The Esperance Nyungars were no exception and after withstanding the intense scrutiny of the Native Title process, had their Native Title rights recognised in March 2014, a legal validation by the Crown that these six extended family groups have maintained an unbroken connection to their country. As senior Esperance Nyungar Elder Graham Tucker said, “they [the Government] have it back to front, we know who we are and where we come from, it should be up to them [the Government] to prove we are not from here, but instead they make us prove it” (12 February 2013). This is a potent statement not only as a political commentary about the tenets of Australian Native Title processes, but of the strength and resolve underpinning Esperance Nyungar identity. It may be this resolve that has enabled the Esperance Nyungars to withstand a protracted questioning of their identity and territory during the past 160 years at least. The 2014 Native Title determination stands as a strong testament to the enduring strength of Esperance Nyungar identity.

The Esperance Nyungar Native Title area encompasses 28 895sq km of land bordered by the rabbit proof fence to the west, a line that traverses to the north of Salmon Gums, and meets the coast in the east between Israelite Bay and Belinup. The coastal town of Esperance is central to the area. The eastern and northern boundary of Esperance Nyungar land shares a border with the Ngadju. To the west, the Esperance Nyungars share borders with other Noongar groups: Wagyl Kaip due west, and the Ballardong to the north-west. Wagyl Kaip and Ballardong are part of the Single Noongar Claim. To the east is the WA Mirning although their claim does not actually share a border with the Esperance Nyungar Native Title area.
The current Native Title boundaries and neighbouring culture/language groups are the result of a dynamic culture-history of interaction between Esperance Nyungars with neighbouring groups, including Noongar people to the west, and non-Noongar people to the north and east. This cultural-historic background underpins much of the current Esperance Nyungar identity and connections to land and people in the region. Native Title boundaries have attempted to formalise the traditional territorial ‘boundaries’ within Aboriginal society. This is in accordance with Native Title legislation, which uses the common law concept of exclusive possession, and has led to ‘hard’ lines being drawn in establishing Aboriginal territoriality where the lines may once have been ‘soft’, incorporating notions of ‘shared country’ or ‘interaction zones’ and allowing for the ongoing negotiation and renegotiation of territory and identity. Some scholars have challenged the validity of exclusive possession in Native Title law, on the basis that Aboriginal notions of identity, territory and boundaries do not fit into this narrow legal framework, and that the disciplines of archaeology and anthropology may in many cases challenge the legal frameworks of Native Title on this basis (e.g. Veth and McDonald 2004).

‘The Esperance Nyungars’ as the name of the Native Title claim is in itself an interesting reference to the dynamics of identity within the Native Title era. Rather than referring to the claim as Wudjari, Tjaltjraak or any other local affiliations, The Esperance Nyungars chose to emphasise their connection to the Noongar cultural bloc over their local identity, thus also distinguishing themselves from the non-Noongar groups represented by the Goldfields Land and Sea Council (GLSC). The Esperance Nyungars are the only Noongar group represented by the GLSC, the rest of the claims handled by the GLSC being semi-desert or desert groups, including the Ngadju and the WA Mirning. Interestingly, the Esperance Nyungars were not included in the Single Noongar Claim, which is a united Native Title claim for all the other
Noongar groups occupying the Southwest region. The Single Noongar Claim is represented by South West Aboriginal Land and Sea Council (SWALSC), which is the Southwest counterpart of GLSC. The emphasis that the Esperance Nyungars place on their affiliation with Noongar culture, while being separate from the Single Noongar Claim, and being represented by the GLSC, highlights their position on a cultural frontier.

The Native Title system requires a boundary line to be drawn between The Esperance Nyungars and neighboring Wagyl Kaip claimants to the west (who identify as Noongar and are part of the Single Noongar Claim). However, the people represented by these neighbouring claims maintain a much closer association with one another than the separate claims would suggest. In February 2012 the Gabbie Kylie Foundation and the Esperance Nyungars hosted a cultural workshop in Munglinup (120km west of Esperance), inviting 12 senior Wagyl Kaip Elders from the Albany area to discuss land and heritage management in the region. During the workshop, both Esperance Nyungar and Wagyl Kaip Elders emphasised repeatedly that despite the boundary drawn between them through the Native Title process, they are closely affiliated through cultural and family ties and still represent ‘one people’ (Mitchell et al. 2013). This is a strong statement of identity and belonging, emphasising a shared Noongar identity, and reinforcing ties between Noongar groups represented by different Native Title claims and a different land council.

It appears that the traditional areas of Esperance Nyungar territory probably extended further east and west, but did not extend as far north as the current native title boundary reflects. The reasons for this relate to the shift in Nyungar settlement following European arrival. This means that Marbaleerup was probably much closer to Ngadju settlement areas than the current Native
Title boundaries suggest and thus was probably close to the northern periphery of Esperance Nyungar territory, directly within an interaction zone.

In the west, another shift in territory occurred following European settlement, as a result of the Cocanarup Massacre (Forrest 2004) which meant that Esperance Nyungar people shifted eastward and subsequently avoided the Cocanarup area around the Phillips River and the town of Ravensthorpe (Doc Reynolds, pers. comm., 24 August 2015). The Native Title mapping ultimately reflected this eastward shift and the current boundary actually follows the historically constructed rabbit proof fence rather than a boundary conceived of within traditional notions of territory. To the east, the Nyungars maintain a connection to Tooklejenna and Israelite Bay which they say reflects their traditional connections. This locality is part of the currently recognised Ngadju lands. There appear to be shared connections to this area which sometimes become a matter of mild contention between the Nyungars and the Ngadju, such are the modern incarnations the dynamics of interaction between these groups.

2.4 A BRIEF SOCIAL HISTORY FOLLOWING EUROPEAN SETTLEMENT

Non-Aboriginal settlement in the Esperance region began with the establishment of early whaling and sealing colonies along the coast and in the islands of the Recherche Archipelago at the beginning of the 19th century. The first of these were outside of any official colonial settlement and thus were essentially ungoverned (Ross Anderson, pers. comm., December 2, 2015). Whaling operations officially sanctioned by the Colonial Government were set up later

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5 A massacre of a group of Noongar people by early European settlers took place in the Ravensthorpe area in 1880
during the early to mid 19th century following the establishment of the King George Sound Colony (now Albany 500km west of Esperance) in 1828. The early whalers and sealers appear to have had limited interaction with the Esperance Nyungars. This is probably due to the brutality of some early interactions which involved the killing of Aboriginal men and the abduction of women and children (Manning 1835), ensuring the Esperance Nyungars generally avoided contact where possible (Nelson nd: 4). Nonetheless, as time progressed and whaling became more entrenched in the area, Aboriginal involvement increased and by 1850 Aboriginal men are said to have made up 30% of the shore whaling industry labour force on Western Australia’s South Coast (Gibbs 1995:91) and thus it is likely that this must have included Esperance Nyungar people. Stories and knowledge about contact with early maritime activities, have continued to be passed down the generations of Esperance Nyungars and are still known about today. One such story relates directly to the rock art at Marbaleerup where a particular motif is said to be a depiction of a sailing vessel painted by coastal Nyungar people as a means of communicating to the inland people about activities taking place on the coast (Doc Reynolds, pers. comm., 26 July 2012). Esperance Nyungar woman Gail Yorkshire-Selby indicated that she is descended from a sealer who operated in the Esperance area (Anderson 2016).

The first colonial settlers in the Esperance area were the Dempster family in the 1860s who began farming. They were the catalyst for more farmers moving to the region and the beginning of the town of Esperance. The Dempsters treatment of Aboriginal people was purportedly poor and Andrew Dempster was reprimanded by the Colonial Government for his actions (Erickson 1978). None the less there were said to be a number of Aboriginal people ‘employed’ by the Dempsters (though it is unlikely that there was any monetary payment involved), and so began a long history of Esperance Nyungar involvement with agriculture, which continues to this day.
The ongoing interactions between the Esperance Nyungars and the settlers were somewhat typical of other agricultural districts across the Southwest and included murders, rapes, at least one massacre (Forrest 2004), and many altercations surrounding accusations of Aboriginal people stealing livestock and ‘trespassing’. At the same time, the Nyungars were intimately involved in the process of European settlement in various ways, particularly through agriculture, and as guides for early exploration. Amid the negative interactions there were also positive ones and today the Nyungars are proud of their contributions to the establishment of agriculture in the region at the same time as they are resentful of the environmental degradation and social dislocation that it has caused. Such is the paradox of the colonial experience. The history of interaction from the Nyungar perspective can perhaps be most concisely summarised in the following quote from Doc Reynolds which describes the conflict that ensued when fences were built and European notions of proprietary land ownership were imposed on the Nyungars.

The contributions of Nyungar people as guides and farm workers are for the most part ignored in the mainstream history of European settlement:

> When they turned country into real estate. Well its always been noted and said that the impacts on lifestyles changes quite significantly. Principally because of food sources drying up and [other] food sources were readily available because Aboriginal people used to rustle sheep. Because it was much easier and much nicer to eat than chasing kangaroo around, and of course that caused a lot of conflict. And of course you’ve got to look at the other issue of for example these two girls now coming out from America [two visiting interns] and saying okay then you’ve got to go and start a farm over there and how in the hell would they know where to walk if they didn’t have Aboriginal people guiding them? And this is the myth that we are always going to get up against and they just think these guys were unsung heroes. They were rapists and f…n murderers and using Aboriginal people for their advantage, but they cop all the accolades and the Aboriginal people cop all the bad stuff (Doc Reynolds 25 August 2015).

From the mid 19th century onward many Esperance Nyungar people became involved in agriculture and relied on it as part of their subsistence strategy. This continued through the 20th century. As in other parts of Noongar country (Guilfoyle et al. 2015), people adapted their settlement structure to incorporate the new economic imperatives and moved seasonally to
make use of farm employment as well as traditional hunting and gathering. Nyungar settlement shifted northward following the continued expansion of agricultural areas. As a result, Esperance Nyungar people developed strong ties to the agricultural lands northward of their traditional settlement areas. The current Native Title settlement reflects these historical connections as well as traditional ones and thus the current boundary actually follows the northern frontier of the Esperance agricultural district, despite this being northward of traditional (pre-European) Esperance Nyungar settlement, thus the Native Title area incorporates the expanded northern areas as well as the traditional southern core settlement areas (Graham Tucker, pers. comm., 2 September 2015). This is significant because it demonstrates the way Esperance Nyungar conceptions of territory have shifted over time as a direct result of European settlement and Nyungar involvement in agriculture. Today, through their corporations, the Esperance Nyungars control major agricultural landholdings in the district. However, most of the farming work is done by non-Nyungar people through share farming and lease agreements (Gail-Reynolds-Adamson, pers. comm., 11 Aug 2015). This is the inverse of the historical situation in which the farming land was predominantly owned by non-Nyungar people and Nyungars were employed to do the labour, often only for rations rather than wages.

Despite the northward shift in settlement that resulted from their involvement in agriculture, the Nyungars maintained a strong connection to the coast and they travelled there at every opportunity. During a 2014 ethnographic survey at Lucky Bay (73km west of Belinup) the Nyungar Elders all recounted their memories of coming to the coast as children, travelling in family groups and camping for as long as they could before returning to the farms for work. Graham Tucker talked about his memories of coming out to Lucky Bay and other bays nearby when he was a child in the 1940s:
It wasn’t a National Park back then, and these roads weren’t here, they were just old tracks. We used to come out here for a night or two, the Tuckers and the Dimers [families], we would come out together…. We sometimes saw other [Nyungar] families out here too, I remember seeing the Dabbs and the Reynolds from time to time, we would bump into each other out here (Graham Tucker, 10 December 2014).

Graham explained that they used to come out in whatever vehicle was available, “old model Ts and stuff like that”, always bringing roo dogs (to assist with hunting) (10 December 2014). They used to bring out some provisions, like flour and tea, and supplement that with bush tucker, including kangaroo and fish. They fished using hand lines, with the old thick white nylon lines. On 10 December 2014 Veronica Williams-Bennell recounted her memories of coming out and camping at Mississippi Bay (now Rossiters Bay) in the 1940s, “before Doccy [her younger brother, Doc Reynolds] was even born”. As part of the same conversation, Doc, in turn, remembers their family continuing to come out there in the 1950s and 60s. He says they used to target Lucky Bay because of a ‘groper hole’ (groper fishing spot), “just off the rocks there”. Also as part of the same conversation, Henry Dabb and Diane Clinch both remember coming out as kids too. “We used to light fires down here, anytime back then to cook our feed, never started a bushfire” Diane explains (10 December 2014). These testimonies demonstrate the way Esperance Nyungar people maintained a connection to the coastal areas and cultural practices associated with the coast (particularly fishing), by regularly visiting the coast for recreation and camping. They recounted these stories as part of an assessment of cultural significance for the area (Guilfoyle et al. 2016) indicating that for them these coastal camping expeditions were significant because in this way they maintained their connection to the coast which was important for their identity as Esperance Nyungar people.

As the town of Esperance developed and continued to grow, the Nyungars were progressively pushed out of town due to curfews, enforced by police, that disallowed Aboriginal people from being in the town after dark. Fringe camps were utilized in various locations and as the town
continued to grow the camps were relocated further and further out of town. The fringe camps were generally located in dune systems that offered shelter from prevailing winds, and were associated with key resources, particularly fresh water. One such location was by a natural waterhole in sand dunes next to what is now the Old Cannery Arts Centre. Now well within the town of Esperance, at the time of its use (1940s and 50s) this location was on the outskirts of town. Other locations included the dunes north of what is now Brazier Street and along the Norseman Road near what was then a piggery. Subsequently, probably sometime in the early 1960s, all these locations would become restricted to the Nyungars. Bandy Creek, which was significantly further out of town, became the principal fringe camp and was used right up until the late 1970s (Wright and Guilfoyle 2007). Now in her 70s, Veronica Williams-Bennell recounts staying in various locations, including the Old Cannery, Bandy Creek and other fringe camp locations:

See, back then [in the 1950s] we weren’t allowed in the town. We used to camp on the old Norseman Road where the Wesfarmers were. There used to be a piggery. Old Effy Turner used to have a piggery there. And we used to camp there.... And as soon as the cops found out we were there they chased us, and we had to come out to Bandy Creek- we came out here. I was 16 then.

I went to school [from] here, for a while... my grandparents had a little camping ground where the Cannery is now. And Dad used to break in horses for old Moggy Bow, who had a farm out Gibson way. And I used to walk from the cannery into school. And sometimes I’d get a dink into school over the corrugated road (Wright and Guilfoyle 2007: 13-14).

Wright and Guilfoyle summarize the process of exclusion and the importance of fringe camps for living, and for the continuation of cultural practices:

For much of the 20th century, Indigenous people were significantly restricted in their movements and the places they were permitted to reside, as European society moved into the land, took up stations and farms, and established townsites. In and around Esperance there were a limited number of places that Indigenous people could use for living. One such place, nearer the town, was an area of dunes north of Brazier Street, which was used from at least the late 1940s into the 1960s (Smith and Wright 1991:3). However, the Bandy Creek area offered more distance from wadjella [white] society, and easier access to wild resources, fish, and game (Wright and Guilfoyle 2007: 13).
The impacts of the ‘stolen generations’ (forced government removal and institutionalisation of Aboriginal children) on the Esperance Nyungars cannot be underestimated. The social dislocation and emotional suffering that this caused still reverberates through the entire Nyungar community and is responsible for a great deal of breakdowns in social cohesion within and between families. One interesting aspect of the stolen generations as experienced by the Esperance Nyungars, is the way in which such removals were inflicted on some Nyungar families and not others. This means that while some families were able to remain together and continue to live in fringe camps and practice culture, others were not. This differential history has clear implications for people’s understanding of their identity and territory because while some individuals were able to maintain a continuous connection to their country and identity by living on country and ‘being’ Nyungar by virtue of undertaking cultural practice, others were forcibly removed from their country and restricted from partaking in some cultural practices for much of their childhoods. For those individuals who were taken away, some of their subsequent engagement with culture and heritage has been about re-affirming their connections with Nyungar identity and country. The implications of the stolen generations are not discussed in great detail in this thesis other than to acknowledge the significance for individuals, families and the entire community. The continuing sense of identity and connection to country within the Esperance Nyungar community, despite the upheaval of forced removal is testament to the strength and resilience of Esperance Nyungar identity. The following quote from Gail Yorkshire-Selby, a member of the stolen generations, is an example of how that resilience was maintained through interactions with family during her childhood in the mission:

My education and life skills were given to me during my upbringing. I used to go away from the mission to be with my mother, Dorothy Yorkshire, who taught me knowledge of my culture. My mother’s sister, Aunty Eileen, Uncle Peter Flynn and other relatives, took me and my siblings and taught us stories and culture. I have always had a deep compassion for my family, culture and language (Yorkshire-Selby 2011: 91).

One further matter for discussion here is the pronounced and outspoken racism within
Esperance society. “Esperance is a very prejudiced town, always has been” (Graham Tucker, 31 August 2015). One of the ways that racism is openly manifest in Esperance society is through non-Aboriginal people’s attempts to deny pre-European Aboriginal occupation of the area. I have witnessed multiple individuals within the town of Esperance laying the erroneous claim that Aboriginal people never occupied the region prior to European settlement. As an archaeologist working in the Esperance area since 2006 I have heard multiple claims from different people at different times that the archaeological materials around the area, including the rock art at Marbaleerup, are part of some elaborate hoax created by Aboriginal people to legitimate claims of connection. This kind of outward prejudice presents an obvious attack on Esperance Nyungar identity and is part of a new era of non-Aboriginal people questioning Esperance Nyungar identity and connections to country. It also indicates the importance of archaeological materials and their role in evidencing occupation, and the lengths by which those who wish to deny such occupation will go to claim such evidence as fraudulent.

Amid the pressures and prolonged questioning outlined above and in previous sections, Esperance Nyungar identity and connection to place remains strong. One salient feature of that identity is the concept of belonging to land (as opposed to owning it) and assuming the ongoing responsibility to care for it. This point is regularly expressed by senior Elder Graham Tucker at the beginning of meetings between the Nyungars and proponents of various development projects in the area. One such occasion was on 31 March 2015 when Graham made the following statement to representatives of a mining company with interests in the region, “they call us the Traditional Owners of this area, but we don’t own the land, we belong to it, and it is our responsibility to look after it”.

This sentiment about land has been incorporated into a prepared statement that is now at the
beginning of every heritage report prepared for Esperance Tjaltjraak Native Title Aboriginal Corporation (ETNTAC). The words for this statement were agreed upon by the senior Esperance Nyungar Elders on 11 September 2015 and upheld by the ETNTAC Board on 13 October 2015:

We are the Esperance Tjaltjraak. Our title is Traditional Owners of the Esperance region in Western Australia, but we don’t own the land, we belong to it. Our land and sea is part of our identity. As individuals, as families, and collectively as the Esperance Tjaltjraak. We know that it is our responsibility to care for our land and sea. We inherit this responsibility from our ancestors, and bequeath it to our children (Guilfoyle et al. 2015: V).

2.5 WESTERN DESERT CULTURAL EXPANSION

This section provides a background to the Western Desert cultural influence relevant to Esperance, in a brief literature review. The literature is cross-referenced with Nyungar knowledge. A particular focus is on Gibbs and Veth’s paper *Ritual Engines and the Archaeology of Territorial Ascendency* (2002) because it is the only work that discusses the expansion of Western Desert culture and language with specific reference to Esperance Nyungar country. The model they propose is an ethnographic one based on a synthesis of what is known about Western Desert cultural dynamism and expansion from other geographical areas. Their synthesis considers a range of ethnographic and ethno-historic sources relating to the interactions of Esperance Nyungar and Ngadju people, but the model they propose is not based on archaeological data from Esperance Nyungar country, leaving a knowledge gap that this thesis addresses.

Esperance Nyungar country does not share a border with the Western Desert region proper. However, through the Ngadju people who occupy the fringing desert areas of the southern Goldfields region and share a direct border with the Esperance Nyungars, there are strong
cultural and linguistic links to the people of the Western Desert. These links are important because some of the research questions underpinning this thesis relate to Western Desert cultural influence at the study sites. As a conduit between the Esperance Nyungars and the people of the Western Desert, the Ngadju are strategically located, and it is argued here that they were pivotal to the broader expansion of Western Desert cultural influence into the Esperance area. For the purposes of this doctoral research it is important to recognise that Western Desert culture and language extends much further than the confines of the geographical realities of the desert itself, which is a direct result of the process of cultural expansion.

Western Desert language and culture currently extends over one sixth of Aboriginal Australia, having expanded from a localised language group in the inland Pilbara region as little as 1500 years ago (Veth 2006). The Western Desert cultural bloc consists of numerous autonomous cultural groups who maintain their own local identity which conforms to certain linguistic and cultural norms, said to have originated in the Western Desert region, in the area currently known as Mardu country (Veth 2006). The term ‘Western Desert culture and language’ used throughout this thesis, refers to these cultural origins, even though it includes Aboriginal groups whose territory is not technically in the Western Desert, including the Ngadju and Mirning.

Early archaeological characterizations of Western Desert culture painted a picture of a conservative system of risk minimisation that saw people resisting change in the face of extreme resource paucity (Gould 1977). In response to these early characterizations of cultural conservatism, some scholars (Gibbs and Veth 2002; Tonkinson 1991; Veth 2006), have argued to the contrary that archaeological, linguistic and ethnographic evidence from the Western Desert is reflective of social dynamism within Aboriginal society during the last 13 000 years,
which saw dynamic ritual and ceremonial transmissions being enacted through time, against a backdrop of climatic and resource unpredictability and extreme aridity. In an analysis of the significant territorial expansion of the past 1500 years, focussing in particular on the posited areas of expansion during the past 500 years (including the Southwest), Gibbs and Veth (2002) propose an explanatory model for *how* and *why* such a dynamic expansion may have taken place, which they describe as the ritual engines of territorial ascendency (2002). Their explanatory model for *how* the expansion may have taken place is explicitly socio-cultural, suggesting that through expanding ceremonial and ritual aggregation cycles, Western Desert people were able to gain access “across old boundaries” to neighboring areas through the spread of “ceremonies, song cycles [and] the ‘pressing’ of novitiates” into ritual practices, including Western Desert law (Gibbs and Veth 2002: 17). The question of *why* is addressed by Gibbs and Veth (2002:14) on a socio-economic basis, whereby risk and stress imposed by extreme resource unpredictability and paucity is minimised through opening up reciprocal access to land and resources across vast territories.

Gibbs and Veth (2002) apply this explanatory framework in relation to the boundary between Western Desert affiliated culture groups who border the Southwest (eg. Njadju, Mirning, Wangai) and the Esperance Nyungars, focussing on law after Tindale’s (1974) map. However, they argue that rather than a boundary, the ‘line’ should be considered more like a “rapidly moving frontier of cultural change” (Gibbs and Veth 2002: 11). They draw links between the archaeological record of the “emergence and spread of Western Desert cultural practices” over the past 1500 years, with the “historically-documented processes of the introduction of desert law into central and south-west Western Australia within the last 160 years” (Gibbs and Veth 2002: 11).
A potent Nyungar knowledge cross-referencing of Gibbs and Veth’s ethnographic model was provided by Murray Bullen (2 Sept 2015). Grandson of Esperance Nyungar Elder Tom Bullen (dec.) and and his Ngadju wife Betty Shultz (dec.), Murray has long represented the Bullen family for all Esperance Nyungar heritage and cultural matters. Murray told me his grandmother Betty’s father was an important Ngadjus lawman. “Nanna told me they used to come down here and grab them young boys” (Murray Bullen, 2 Sept 2015). The term ‘grab’ in this context is a particular Aboriginal slang used around Western Australia referring to young men being ‘put through law’ – initiated. This was a short statement by Murray but gets to the core of the relations between these two groups whereby the Wati law that the Ngadjus practiced, was being strongly proselytised onto the Esperance Nyungars. This was principally done through the initiation of young men which would then create strong reciprocal bonds between the initiates and their initiators, thus opening up new social networks and powerful alliances. Many Noongar resisted this and ‘stayed clear’ of the Ngadjus as best they could to avoid ‘being grabbed’. I asked Murray whether this would have meant they stayed more toward the coast. He said yes this was probably true, but cited other examples such as his “Pop’s” (Tom Bullen’s) grandfather Wainbert, who was a Nyungar man who apparently spent lots of time in Ngadju country, also corroborated through ethno-historic sources (see section 2.6) (Murray Bullen, 2 Sept 2015). Murray himself identifies as both Nyungar and Ngadju but lives in Esperance and is more actively involved in Esperance Nyungar cultural matters than Ngadju. Marriages such as that of Murray’s grandparents, Tom and Betty, demonstrate the interconnections of Ngadju and Nyungar people and how powerful alliances may be formed through marriage that then have implications for multiple generations to come.

In their analysis of potential archaeological correlates for the posited spread of cultural practice, Gibbs and Veth (2002) (after Veth and McDonald 2002) emphasise the importance of
incorporating aggregation *cycles*, and their archaeological correlate, aggregation *locales* (after Conkey 1980), into an assessment of Western Desert mobility (Gibbs and Veth 2002: 14; Veth and McDonald 2002). They discuss aggregation in regards to a number of archaeological sites in the Western Desert containing extensive rock art assemblages, which exhibit a “high degree of stylistic variability” in engraved and painted motifs (Gibbs and Veth 2002: 14). They use the rock art assemblages as evidence to interpret these places as aggregation locales, adding that:

Such aggregation sites are believed to have served as important centres of ritual production, in addition to facilitating the rapid exchange of linguistic elements, material goods and genes. The paradox of arid zone hunter-gatherer settlement behaviour is that groups must periodically coalesce in order to renegotiate the social contracts and relations of reciprocity that set the necessary conditions for subsequent dispersal (Gibbs and Veth 2002: 14).

Building on the concept of aggregation sites as ritual engines for cultural transmission of Western Desert culture and language, Gibbs and Veth (2002) explore the ethno-historic literature pertaining to the introduction of desert law into the Southwest. Their synopsis is largely based on the work of Daisy Bates and her suggestion that a source of tension between the Noongar bloc and their northern and eastern neighbours was the introduction of a new ritual form from the interior which was aggressively taking over from local ritual forms (Gibbs and Veth 2002: 15). The reliability of Daisy Bates’ work has been questioned by some scholars (Standish 1999), but she is still widely referenced within the literature. Gibbs and Veth (2002) corroborate Bates’ material where possible with other sources, largely the work of Norman Tindale from his Western Australian surveys during the 1930s, which supports Bates’ claims to some degree. A key element that Gibbs and Veth (2002) draw out of the ethno-historic literature is the mechanisms by which the cultural transmission was enacted. Largely on the basis of Bates’ work they discuss four mechanisms: (1) *ceremonial visits*, (2) *kidnap of initiates*, (3) *sorcery and retribution*, and (4) *proselytization and generational continuity* (Gibbs and Veth 2002: 15).
A brief discussion of the four mechanisms bears relevance here. (1) *Ceremonial visits* refer to Bates’ suggestion that groups from the interior regions made “periodic ceremonial visits to the Southwest areas, bringing new dances, magic, ritual objects and other inducements” (Gibbs and Veth 2002: 15). Notably the transmission of ritual form in this case was ‘one-way’, with Southwest people purportedly being initiated into the desert law, but not the reverse. (2) *Kidnap of initiates* was another posited mechanism for cultural/ritual transmission. Bates’ work suggested that some of the older male informants whom she interviewed were originally from coastal areas and had been captured and initiated into the desert ways as young men/boys, by men from the interior (Gibbs and Veth 2002: 15). This suggestion can be corroborated by some current ethnographic accounts. One example from Murray Bullen has been provided above. Another is provided by Gail Yorkshire-Selby (Esperance Traditional Owner) who recalled stories about Yorkshire Bob, a historical period Nyungar man of whom she descended, who had fled from the Ngadjus as a young man to avoid being “put through the law”. He purportedly had to “go bush” for extended periods of time to evade capture (Gail Yorkshire-Selby, 22 February 2012). (3) *The threat of sorcery* and to a lesser extent *physical retribution* was purportedly used as a mechanism of cultural transmission by the desert people to coerce new initiates (Gibbs and Veth 2002: 15). Gibbs and Veth (2002: 15) mention that the eastern and northern people were identified by Noongar populations as the source of dangerous and hostile magic. This can still be observed today amongst many Noongar people who talk of the powerful and potentially dangerous lawmen from the desert with fear and reverence (anecdotal evidence based on personal experience). The final mechanism discussed by Gibbs and Veth (2002: 15) is that of (4) *proselytisation and generational continuity* in which recent initiates would often be used as proselytising agents, promoting the virtues and power of this new law. Further, those that had become initiated would in turn choose to initiate their offspring, ensuring generational

Of particular interest to this thesis, are ceremonial visits. Gibbs and Veth (2002: 15) describe such events as “large inter-group gatherings, involving a combination of ceremonial performance, social negotiation, trade and exchange of initiates”. As Gibbs and Veth (2002: 15) suggest, “these events usually occurred within closely-allied kinship and ritual networks, whereas meetings across network boundaries, such as between [desert initiated] and [non-desert initiated] peoples, were likely to happen irregularly” with the aim of facilitating “longer-range ceremonial cycles and exchange systems”. It is posited in this thesis that the study sites Marbaleerup and Belinup hosted such ceremonial occasions and the research seeks to test whether or not this is reflected in the archaeological record.

2.6 ETHNO-HISTORICAL EVIDENCE FOR THE ESPERANCE REGION AS A CULTURAL FRONTIER

This section assesses the ethno-historic literature about interaction and territorial negotiation in the Esperance region during the past 170 years, with a discussion of the range of (often conflicting) perspectives obtained through ethno-historic sources, and what this means for territory and identity in Esperance Nyungar country. It is important to note that this consideration of the shifting nature of Esperance Nyungar/Wudjari identity and territory over time, is not questioning contemporary notions of identity or territory. Contemporary Esperance Nyungar identity and territory are the result of historical processes, some of which are discussed
below. The term Wudjari is used to denote Esperance Nyungar people where it has been used in the literature reviewed.

There is a range of ethno-historic sources relating to this topic, published over a period of almost one hundred years. For clarity the discussion is organised chronologically, beginning with the journal of early explorers Edward Eyre in 1845, and John Forrest in 1875. The next source is a volume on Indigenous languages published by Edward Curr in 1886, followed by the ethnographic work of botanist Richard Helms who published information about the Esperance area in 1896. Moving to the 20th century, a discussion is provided of the later anthropological work of Norman Tindal and Daisy Bates whose field research was conducted mostly during the 1930s but published later. Following discussion about the ethno-historical literature, an appraisal is provided of the later linguistic work of Karl Von Brandenstein who published in the 1980s. While many details of the sources discussed are contradictory to one another, and together present a confusing picture, they present a common theme of the dynamic and shifting nature of identity and territory in Aboriginal society, which was subject to ongoing negotiation and re-negotiation within the study area during early colonial times.

When assessing the claims of different researchers and their informants, it is important to consider the highly political nature of the topic, both at the time of the ethnographic consultations, and indeed through to the present day. It appears that many of these early ethnographers recorded their information about the Esperance Nyungars from people closely affiliated with Ngadju culture and it is likely that their notions of identity differed somewhat from other Esperance Nyungar people’s notion of identity. Perspectives will also differ between individuals within a given group, and as most of these ethnographies were conducted with only one or two individuals, it is necessary to acknowledge that these may be only representative of a small number of people. Furthermore, these perspectives will differ depending not only upon
whom the researchers were interviewing, but when. Given the state of flux and constant negotiation and re-negotiation of these issues over time, a range of different perspectives are to be expected. Indeed, this topic remains dynamic to this day and different individuals will still give different perspectives. Also, as is demonstrated in modern Esperance Nyungar society where people also identity as Tjaltjraak or Wudjari, or just as Noongar, there may be multiple terms that refer to the same group of people.

Edward Eyre and John Forrest

The earliest ethno-historic account, that of Edward Eyre, has little detail pertaining to identity and territoriality. However, it does attest to the linguistic connections between Aboriginal people of the Esperance region, and those of the broader Southwest. The following account was recorded in 1845, when Eyre was about 50km west of Belinup. The passage demonstrates that Wylie, a Noongar man from a different region, was able to converse fluently with the local Aboriginal people he encountered in what is now known as Esperance Nyungar country:

During the time I remained on board the vessel [the *Mississippi*], a party of natives once or twice came down to the beach, and as I was anxious to enter into communication with them, two were induced to get into the boat and come on board. As I expected, my boy Wylie (from King George Sound [Albany]) fully understood the language spoken in this part of the country and could converse with them fluently (Eyre 1845:75).

In 1875, the accounts of John Forrest attest to the strategic location of the area between Thomas River and Israelite Bay with regard to territorial distinctions. This source demonstrates that the people from Thomas River maintained territorial connection only as far as Israelite Bay, which corresponds with modern Esperance Nyungar territorial claims, although their Native Title determination does not extend that far east.

[we] moved east accompanied by the two natives ... for about 21 miles ... to Israelite Bay ... after bidding goodbye to the two natives we had with us from Thomas River, who were now at the end of their country and were afraid to come any further (Forrest 1875:90).
Edward Curr

In 1886, Edward Curr published a wordlist compiled by the landholder at Thomas River Station (which incorporated the area of Belinup, at the Thomas River mouth), who attributes the language to an [unnamed] “tribe occupying the coast between Doubtful Bay and Israelite Bay” (Curr 1886 I: vii), an area which broadly corresponds with Esperance Nyungar country. The word list clearly demonstrates Noongar origins, with the common Noongar suffix ‘up’ being prevalent throughout. Another linguistic example is the word for ‘black man’ which is listed as ‘Youngar’ in the Doubtful Bay area [Esperance], which closely corresponds with word lists from other areas of the Southwest.

Curr’s volume also presents additional interesting information with regard to neighbouring Aboriginal groups to the east, in an area he refers to as Eyre’s Sand Patch (on the Nullarbor plain). He says the area was occupied by the Wonunda Meening Tribe, whose country stretched east from Point Culver for about 140 miles (Curr 1886 I: 394). In name and location, the term Meening (used by Curr), broadly corresponds with the modern Mirning culture group. Curr suggests that in 1877 when the “Whites” first settled, the Wonunda Meening numbered about 80 persons made up of about fifteen men, fifteen women and around fifty children and adolescents (Curr 1886 I: 395). The text says that “both males and females are marked with scars on the breasts and upper portion of the arms, and the septum of the nose is pierced” (Curr 1886 I: 396) which would appear to be consistent with Noongar initiation practices and what Bernt referred to as the “Old Australian Tradition” (1980a,b). It also claims that desert initiation rites were observed among the Wonunda Meening (Curr 1886 I: 396), which is consistent with modern Mirning culture which adheres to desert rites. This is interesting and pertinent because it suggests that the ancestors of the Mirning people practiced both Noongar and Western Desert law and identified as a coherent single group.
In the ethno-historical account, which Curr obtained from a Mr W. Williams, who in turn had obtained it from a Mr W. Graham, it is suggested that during consultations, the Wonunda Meening people refer to a “tribe” immediately to the west (which is certainly Esperance Nyungar country) as “Bardook” or “know nothings” (Curr 1886 I: 394). The term Bardook or similar derivatives, appear in a number of different sources (discussed below), and it is interesting to note that the term is applied to different demographic and territorial groupings depending upon whom is being consulted and when. It may be that ‘Bardok’ was a term used to signify ‘neighbours’ or ‘others’ or some sort of generic meaning that was interpreted by Curr, Tindale and others to denote a specific group of people. The meaning of Bardok (and its derivatives) remains unclear. However, as outlined above, Bardok is a term still used by modern Esperance Nyungar people today, when referring to a sub-group or territory, within the western portion of their country. Nonetheless, as can be seen in the text below, Bardok, like Wudjari is a disputed term and there are a range of different claims about whom or where it refers to, and what it means.

Richard Helms

In the 1890s, Richard Helms, a naturalist who took an active interest in Aboriginal culture, conducted interviews with Aboriginal people around the Esperance region. Helms talks of the “Yunga” as a coastal tribe, whose territory is centred around Esperance Bay (Helms 1896: 281). He suggests that the Yunga were in serious dispute with the Bardok at that time, which is interesting because this conception of the Bardok differs from other sources, such as Tindale (discussed below) who claims that the Yunga and the Bardok are the same people, but that Bardok was the name used to refer to them by the people living west of Fanny Cove (people who had not adopted desert law). However, it should be noted that Tindale conducted his
consultations during the 1930s, some 40 years later than Helms. Helms suggested that the
Yunga did not practice initiation rites of either the desert or the Southwest in 1896, but they
were aware that the Bardok did so. Presumably Helms is referring to the Bardok practicing
Southwest initiation rites but the text is not clear on this point.

During a consultation session for a commercial heritage assessment in October 2011 (Guilfoyle
and Mitchell 2011: 10), a group of contemporary Esperance Nyungar Elders disagreed with
Helms and Tindale’s discussion of the Bardok. They agreed that the people of the area were
known as Wudjari and that the Bardok were a sub-group associated with the western part of
Wudjari country but disagreed with Tindale’s suggestion that Bardok were a separate tribe.

Helms obtained his information from a man named Wainbret (Tom Bullen’s grandfather) who
was purportedly of the “Yunga tribe” (Helms 1896: 281). Helms met Wainbret in the Fraser
Range, which is deep in Ngadju country, so Wainbret likely had close affiliations with the
Ngadju and it is difficult to make a critical assessment of his stated identity, based on available
ethno-historic information. However, Wainbert was cited by Murray Bullen as his great-great
grandfather and is an important ancestor for the Esperance Nyungars who is known to have
spent a lot of time in Ngadju country (see Section 2.6). Wainbret apparently laid claims about
the Bardok engaging in cannibalism, which likely reflects political tensions between Wainbret
(and perhaps the ‘Yunga’ more broadly) and the Bardok. Unfortunately, Helms changes topic
at this point and begins discussing claims of cannibalism in distant parts of Australia and no
more information is provided about Wainbret, the Yunga or the Bardok.
Norman Tindale

Based upon fieldwork undertaken in the 1930s, Norman Tindale (1974: 78) discussed the notion of a “disputed boundary” between Thomas River and Israelite Bay, describing the dispute over territory in some detail, which he argues was between the “Njunga” who occupied what is now known as Esperance Nyungar country, and the Ngadjunmaia (Ngadju). Tindale referred to the term “Wudjari” as an “earlier name”, and claimed that the Wudjari had split as a result of some members accepting the “desert influence” while others maintained their Southwest cultural affiliations. He suggested that at the time of the interviews, the people living east of Fanny Cove (in Esperance Nyungar Country) preferred to be called “Njunga” (which he says means ‘men’) or even “Bardonjunga” (initiated men), rather than Wudjari. Tindale described the territorial dispute between the Njunga and the Ngadjunmaia (Ngadju) and ends up offering his own evaluation in favour of the Njunga on account of the original place names in the area between Thomas River and Israelite Bay being of “Njunga” linguistic origins. He claims that the Ngadju tried to usurp this territory by adapting the place names through the addition of linguistic suffixes reflecting Ngadju language, for example the original Nyungar place name “Tjitjalap” being adapted to “Tjitjilanja” with a Ngadju suffix (Tindale 1974: 78).

While the details of their accounts are slightly at odds, both Tindale and Helms appear to have been discussing the same territorial and cultural dispute and to this extent they corroborate one another. There is some discrepancy in the details, which may reflect a number of complexities, including shifting alliances through time (there was about 30-40 years between their respective research) as well as different perspectives between different informants. This was clearly a highly political issue in a state of flux, so competing accounts are to be expected. It is likely that Tindale’s use of the term “Nyunga” for the Esperance people, and Helms’ “Yunga” were both different derivatives of what Curr (1886: Vol. 4 pg. 8) lists as “Youngar”, meaning man.
It appears likely that these various derivations were early precursors to the modern term ‘Noongar/Nyungar’, though this suggestion has been disputed by other scholars (e.g. Von Brandenstein 1988: VI)

The varying derivations of the word meaning ‘man’, may have been used by Tindale and Helms’ informants as a way to assert their masculinity in reference to other cultural groups, who may have practiced different male initiation rites. This would be consistent with Daisy Bates’ (discussed below) claims that desert-initiated people, often tried to assert their masculine prominence over the Nyungar initiates, referring to themselves as men, and the Nyungar initiates as boys or women (Bates and White 1985: 86). However, linguist Karl Von Brandenstein (discussed below) strongly disagrees with this suggestion and with the translation of ‘Nyunga’ as ‘man’. Instead, Von Brandenstein argues that the term “Nyungar” (he used this spelling in reference to what Tindale spells as ‘Nyunga’) means something more like “ally” or “brother” – essentially person of the same identity (Von Brandenstein 1988: VI). He bases this assertion on his own research in Esperance and the Southwest more broadly, and on the very early historical linguistic work of George Grey who published *A Vocabulary of the Dialects of Southern Western Australia* in 1840, which cites the word “Eungar a brother, one of the same race, used to denote the natives generally” (Von Brandenstein 1988: VI). Von Brandenstein dismisses Tindale’s and Bates’ suggestions that the Ngadju called the Southerners ‘women’, and the Southerners responded by referring to themselves as ‘men’, as an “ad-hoc” interpretation and disagrees with it entirely (Von Brandenstein 1988: VI). Von Brandenstein, Tindale and Bates were probably all tapping into different linguistic nuances of meaning relating to the precursor of the modern term Noongar, the meaning of which, has changed over time. While ‘Noongar’ is now clearly understood as referring to the Aboriginal people of the Southwest, the term is commonly thought to have originally meant man or something similar.
Von Brandenstein’s interpretation has some validity because in many regards the term ‘Noongar’ today connects Aboriginal people of the Southwest and in doing so is part of an allied Noongar identity.

**Daisy Bates**

Daisy Bates’ accounts of culture-history in the region have also been discussed in section 2.5, because rather than focussing on the Esperance area, she discusses the expansion of Western Desert cultural practice more broadly. However, she did conduct some consultations in the Esperance area as part of her broader study. Bates (1936) appears to have tapped into similar dynamics of interaction in the Esperance area as other early ethnographers, demonstrated in the following excerpt of her work printed in *The Advertiser* in Adelaide:

> At Esperance there were but two old brothers, Deebungool and Dabungool, known to the Dempster family as Dib and Dab. I rode a draft horse fifteen miles to interview Dib. He told me that the [desert initiated] tribes had by this time encroached upon his home ground. They had given him a woman, but had taken his little son Ro, and initiated him into their tribal practices (*The Advertiser, Adelaide, SA: Monday 20 January 1936, page 18*).

This short passage seems to get to the core of interrelations between the groups through this period, whereby the desert people used a combination of friendly and antagonistic means of coercion to initiate people into their law as a means to open up access to land and resources. Dabungool is a known ancestor of the current Dabb family, from whose name their surname is derived.

**Carl Von Brandenstein**

Carl Von Brandenstein was a German born linguist who worked extensively around Western Australia with various Aboriginal language groups from the 1960s to the 1980s. Most of his research was conducted in the Pilbara region but he also worked with the Ngadju and Esperance
Nyungars during the latter part of his career. His “style” of linguistic research has been described as “idiosyncratic” and he was never considered part of the mainstream of Australian linguistics, which, during that time primarily focussed on “utilitarian” or “structuralist approaches”, whereas he was more interested in the “poetic side of Aboriginal languages” (Thieberger 2006: 321,324). He conducted linguistic studies in Esperance during the 1980s. He explored many of the same points as earlier ethnographers and refers to many of them, particularly Tindale. However, Von Brandenstein draws very different conclusions. He contends that the entire Nyungar language, spoken throughout the Southwest, was a new language, invented during the past 500 years by Wudjari people, fleeing the desert initiation practices being imposed on them by the Ngadju. He claims that the terms Wudjari, and Nyungar are Ngadju words, adopted into a “new” language that developed as a result of the Ngadju imposition:

Based on Tindale’s and my own enquiries, the situation on the south coast between Bremer Bay and Israelite Bay prior to full annexation by the whites can be assessed broadly as follows: as elsewhere in Australia, frequent clashes occurred between aggressive ‘law’ factions of the interior tribes and the more defensive and conservative [non-desert initiated] tribes along the coast. During one of these clashes, most likely just prior to the outgoing 18th century, the […] northern Ngadjumaya [Ngadju] succeeded in converting substantial numbers of young Shell-people to the law of the Western Desert people. Those who ‘joined’ were called ‘allies’ by the Ngadjumaya and accepted the new name Nyungurra (Von Brandenstein 1988: VI).

Von Brandenstein argues that the term Nyungar (and all its derivatives, including Tindale’s ‘Nyunga’) were linguistic variations on the Ngadju language word “Nyungurra”, meaning allies (Von Brandenstein 1988: VI). He also contends that “Wudjaarri”, which he says means “runaways”, was a new name “provided” by the Ngadju people in reference to the members of the “shell-people” who “objected to the conversion of their kinsfolk and resented the alien rites”, and thus moved westward to the other side of the Young River (Von Brandenstein 1988: VI). He argues that it was these “runaways” who invented the Nyungar language. This view implies that the Southwest had been either some sort of linguistic ‘terra nullius’, or that the old language was rapidly usurped by the new. Either way, this seems unlikely and does not receive support from other scholars, though I have not been able to find a specific critique of Von
Brandenstein’s “Nyungar Anew” hypothesis elsewhere in the literature. Von Brandenstein (1988: VII) argues that:

We may take it for granted that the westward movement of the Wudjaarri initiated a major migration. The last good Nyungar speaker from Esperance Charlie Dab (taap), told me that the Wudjaarri extended their territory from Cape Arid in the east to Ravensthorpe in the west. The original ‘Runaways’ must have moved farther to the west, partly as migrants and partly being taken away young from their homes, like those taken by Bishop Salvado to New Norcia.

This statement is unclear, given that Von Brandenstein initially introduces Charlie Dab as a “Nyungar speaker from Esperance” (Von Brandenstein 1988: VII) and cites Dab’s own statement about the geographic area of Wudjari country which corresponds closely to Esperance Nyungar country; but then goes on to discuss the “original ‘Runaways’” (Von Brandenstein 1988: VII), implying that Von Brandenstein did not consider Charlie Dab to be related to the original Wudjari “Runaways”. Von Brandenstein does not offer any further clarification on this point, nor does he make any mention of Charlie Dab’s perspective on this matter, which is unfortunate because it may be that Dab himself did not identify as Wudjari, or it may simply be a result of Von Brandenstein’s interpretation. This point is of relevance, because Charlie Dab’s descendants are traditional owners in Esperance (Dabb family), and have been actively involved in this research project.

Annie Dabb, niece of Charlie Dab, supports some of Von Brandenstein’s claims, particularly the meaning of Wudjari. She agrees with the translation ‘runaways’ and cites Charlie Dab as her source for this information (Annie Dabb, pers. comm., 10 September 2015). Henry Dabb also talked about Charlie Dab in a separate conversation and stated that Charlie Dab identified as a Nyungar man and was initiated in Nyungar law (Henry Dabb, pers. comm., 19 Feb 2014).

Von Brandenstein goes on to talk about the “Nyungurra Shell-People remaining east of Esperance and calling themselves Nyungar” who experienced “another onslaught from the
north some time later” in the form of a dispute with the Ngadju about the territorial boundary at Gegelup near Israelite Bay (Von Brandenstein 1988: VII). Von Brandenstein suggests that heavy fighting was involved. He bases this assertion on the translation of a name for a disputed waterhole, which he translates as “Water-spear-to-spear” (Von Brandenstein 1988: VII). Like Tindale, Von Brandenstein offers his own adjudication of the territorial dispute, and again like Tindale, he supports the Nyungar perspective:

But there can be no doubt about the disputed triangular portion of land from Point Malcom to Mt Ragged and Point Gegelup being Shell-People’s, now Nyungar’s, land right and not Ngadjumaya’s [Ngadju’s] (Von Brandenstein 1988: VII).

While much of Von Brandenstein’s claims appear a bit unrealistic and outside of more commonly accepted accounts, he has clearly tapped into some real dynamics that are consistent in general terms with those described by others, and which are also supported by direct descendants of his primary informant. His linguistic methodology for the “Nyungar Anew” hypothesis has not been specifically critiqued within the literature so it is difficult to assess his primary thesis which is all based on linguistic evidence. However, a strong critique of his methodology has been made more broadly (Thieberger 2006: 321,324), suggesting caution should be applied when assessing Von Brandenstein’s claims. On this basis, Von Brandenstein’s theories have not been given significant prominence in this thesis, except where they can be corroborated by another source.

2.7 CHAPTER SUMMARY: AT THE FRONTIER

The issues of identity and territory discussed throughout this section present a confusing and conflicted picture, from which it is difficult to piece together a single, clear passage of events to explain the historical construction of Esperance Nyungar identity. It is clear that each of these
sources attest to dynamic negotiations of territory and identity, amid a backdrop of shifting alliances and enmities, which span multiple generations and remain dynamic and politicized up to the present day. The area around Israelite Bay is still a matter of mild contention between the Esperance Nyungars and Ngadju, and while the Native Title process has drawn a ‘hard’ line between them, in reality both groups maintain interwoven connections to this area. The Esperance Nyungars today clearly identify as Nyungar and some (but not all) identify as Wudjari, along with the recognition that most also have Ngadju heritage. The further sub-groups of Nookgurring, Tjaltjraak and Bardok are acknowledged but not used in the current socio-political structure of the group. In the most current map of Aboriginal Australia (Horton 1996), the entire area is mapped as Wudjari, in contrast to Tindale’s map of this area which had them listed as Njunga. The current map is more consistent with the views of the Esperance Nyungars but is not widely accepted among the group because many do not identify with Wudjari. It is likely that Tindale’s and other accounts were (more or less) accurate representations of particular perspectives at particular times.

What can be understood from the ethno-historic literature is that the historical development of Esperance Nyungar identity was dynamic, and involved the negotiation and re-negotiation of competing loyalties to Nyungar and non-Nyungar identities over time, which continues to the present day. Fundamental to these negotiations was the issue of law, and in particular the aggressive imposition of desert law over the extant Noongar law as a means to open up reciprocal networks and access to new territory and resources. While many of the details are disputed, these broad themes from the literature are supported by Nyungar knowledge today, which suggests that these dynamics of interaction have underpinned the historical construction of Esperance Nyungar identity and are still highly relevant in today’s society.
3 ARCHAEOLOGICAL AND GEOGRAPHICAL CONTEXT: AT THE FRONTIER

3.1 CHAPTER INTRODUCTION

This chapter provides an introduction to the study sites and a background to the archaeological and geographical context of Esperance Nyungar country. A brief background about Noongar material culture is also provided, which is relevant because this thesis presents an investigation of the relationship between material culture and identity. The chapter brings together Esperance Nyungar knowledge with archaeological and geographical knowledge to outline what is currently known and identify the gaps that this thesis addresses.

3.2 ARCHAEOLOGICAL CONTEXT

3.2.1 Introduction to Study Sites

The locations at which this research has been conducted are:

- Marbaleerup (Mount Ridley; see Figure 20, Chapter 8) and surrounding sites, including the stone arrangement site in the Wittenoom Hills called Budjari Yorg (13km south-east of Marbaleerup; see Figure 16A, Chapter 7), both situated around 80km north-east of Esperance town in the Mallee bio-geographic sub-region (hinterland) (see Figure 3);

- Belinup (Thomas River mouth; see Figure 15A, Chapter 7) and surrounding sites, including the rock art site of Boyatup (13km north-east of Belinup; see Figure 21, Chapter 8), both situated some 105km south-east of Marbaleerup, at the coastline of the Southern Ocean in the Cape Arid National Park, toward the eastern end of the Esperance Plains bio-geographic sub-region (see Figure 3).
Marbaleerup and Belinup (and their associated sites as described above) present the only known rock art in Esperance Nyungar country and both are associated with extensive stone arrangement complexes. In both cases, the rock art is situated 13km away from the stone arrangements. The symbolic features (rock art and stone arrangements) are associated with stone artefact scatters, as well as common features such as lizard traps and gnamma holes.  

Both areas provide fresh water sources and abundant resources including lithic materials and a range of food sources. Both areas are strategically located in terms of interaction with non-Noongar groups; Marbaleerup being situated toward the northern edge of Esperance Nyungar country, and Belinup toward the eastern edge. Both locations are strategic in terms of resource provisioning and the socio-cultural landscape. The following sections provide a brief introduction to each of the study sites, incorporating Nyungar knowledge and a description of the archaeological materials.

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6 Despite the name ‘lizard traps’, these features, which are common on granite outcrops throughout Southwest Australia, are not in fact traps, but artificially created habitats. They are made by propping up a flat slab of granite on a smaller stone, creating a small shelter suitable for lizards to hide beneath, while being easily accessible to human hunters. While some of these simple structures may well occur naturally as a result of the fracturing properties of granite, many are clearly constructed, especially those that have multiple ‘prop’ stones neatly stacked on top of one another.

7 ‘gnamma holes’, are holes in stone (usually granite) which provide important water catchment and storage properties. They can be natural features, or artificially enhanced/created by Aboriginal people through the controlled use of fire and water to heat and then rapidly cool the granite, which has the effect of cracking or weakening it in order to deepen the hole. Whether they are natural or artificial, gnamma holes were regularly maintained (cleaned out) by Aboriginal people to ensure a supply of freshwater could be found at predictable locations.
Marbaleerup

Marbaleerup is the traditional Nyungar name for Mount Ridley, a distinctive granite dome on the flat open plain, amid the mallee woodlands and frequent salt lakes which characterize the Esperance mallee country (hinterland). Situated 80km north of the coastline and some 40km south of the current Nyungar-Ngadju Native Title boundary, its peak is only 297m above sea level and a mere 100m above the surrounding plain, but is a definite high point in the landscape, with 360 degree views as far as each horizon, with the distant ocean and white sand dunes to the south, and the expanse of the open plain to the north, east and west, occasionally dotted by other granite domes.

Marbaleerup is comprised of Archaean granite that is part of the Yilgarn Craton, an Archaean shield that covers most of the southern part of Western Australia. The outcrop forms a granite dome, on which a number of huge granite boulders sit. The boulders are hollow inside, many
of them decorated with rock art. Part of the granite dome itself is formed in a curved concave shape that resembles a huge wave about to break. This distinctive geological formation is very similar to the well-known Wave Rock near Hyden, some 300km north-east, which is situated close to Mulka’s Cave, a rock art assemblage of comparable size and motif diversity to Marbaleerup, also near a Noongar-Ngadju interaction zone. Marbaleerup and Mulka’s Cave are the two largest painted rock art sites in the Southwest. The granite outcrop of Marbaleerup creates a significant water catchment, with numerous waterholes and rock pools (many natural and some made/enhanced by Aboriginal people, and early settlers). In one location there is a large gnamma hole immediately adjacent to a historical well and water-catchment wall created by early European settlers the Dempster family (Smith 1993: 311). The freshwater catchment properties create a significant ecological node, attracting diverse animal and plant life, making it a resource rich node for Aboriginal people.

Marbaleerup is a focal point in the physical landscape just as it is in the cultural landscape, although it may be argued that its cultural prominence extends much further than its geographical prominence. It is an important place within the Esperance Nyungar cultural landscape because of its extensive rock art and archaeological features, historical associations for contemporary custodians, spiritual associations and other cultural values. Marbaleerup’s renown also extends much further, as it is well known by Noongar people in Albany (500km west) and Busselton (further west), and to the Ngadju and Wangai people to the north in Norseman and Kalgoorlie (personal communication).

Marbaleerup is known as a meeting place between the Esperance Nyungars, the Ngadju and the Mirning (Doc Reynolds, pers. comm., 26 July 2012; Smith 1993: 311). According to Doc Reynolds (26 July 2012), a large stone on Marbaleerup which is more than 2m high and has the
appearance of an upside down pyramid is a meeting point between the Ngadju, Mirning and Nyungars. This information was passed to Doc from the late Tom Bullen. Murray Bullen confirms that his Nyungar grandfather (Tom Bullen) and Ngadju grandmother (Betty Shultz) both attested to Marbaleerup’s position as a meeting place between the Nyungars, Ngadju and Mirning (Murray Bullen, pers. comm., 19 February 2014). So there is a well-provenanced oral history supporting the idea of Marbaleerup functioning in the past as an aggregation locale for different Aboriginal groups. It is also known by Esperance Nyungar people as an important male ceremonial centre. While the overall place is not restricted to men only, some specific parts are restricted to men and there is a male dominated association with the place. It would have played host to men of high status, especially senior lawmen.

The following transcript from 19 February 2014 is part of a lengthy discussion between myself (MM), Murray Bullen (MB), Terrence Yorkshire Senior (TY), Henry Dabb (HD) and Kevin Reynolds (KR). This passage of conversation illustrates how multiple layers of identity and inter-connection characterise current Aboriginal society in southern Western Australia and ways in which knowledge about Marbaleerup is shared between Nyungar people and non-Nyungar people from the desert, and the role of law.

TY: We’re close with all these mob Norseman [Ngadju], here (Esperance), Albany (Noongars). Everybody knows each other, mainly the old people.
HD: We just connect ourselves like from Esperance Nyungars right through to Albany
MM: Murray do you identify more as Noongar or Ngadju?
KR: Lot of that culture’s gone [songlines and dreaming stories] we got to almost go back to the initiated people [desert lawmen] and all that stuff to get all these old stories. They’ve probably got them out there now out the bush there they got all the stories around this area here. You gotta sit down and listen to all them mob tell you about who was here and all that, they know. They know what tribes were all around Ridley [Marbaleerup] all tribes that came down through this way. They know, they got it in their bloomin’ diary there all the time.
[…]
KR: More or less from our generation that’s where it [law] died out from there sort of thing, where we come into it. Just before us, our fathers, they would have known all the law then. Old Tom Bullen and Sammy Dabb and that.

MM: So they would have been Noongar lawmen?

HD: Yeah.

MM: So did they have the scaring on their chest and stuff?

HD: Yeah

[...]

MM: Does that fit with your understanding Murray [of the rock art being used] by the coastal mob for teaching or showing the inland mob about what they were seeing on the coast [whales, ships]?

MB: Yeah that’s what Nan and Pop used to say. A lot of Norseman mob used to come down this way see.

In May 2004, Veronica Williams-Bennell contacted Elders in the desert community of Tjuntjuntjara via correspondence with Paupiliyala Tjarutja Aboriginal Corporation. In the written correspondence (shown to me by Veronica), she enquired as to whether Marbaleerup is of significance to the people of Tjuntjutjara, which is situated 650km north-east in the Great Victoria Desert (Veronica Williams-Bennell, pers. comm., 21 February 2014). The Tjuntjutjara Elders responded that they know the [dreaming] story for Marbaleerup as it is “connected to a spinifex [desert] story but traditionally belongs to the coastal people” [presumably Esperance Nyungars and/or Mirning but the correspondence is not clear on this point]. This information indicates that Marbaleerup has far-reaching cultural significance and connects with Western Desert culture today and in the past. This thesis relies on Esperance Nyungar knowledge about Marbaleerup and Belinup and no attempt has been made to talk with Western Desert people about their knowledge of the places. The aforementioned correspondence with the Tjuntjutjara people suggests that further research into Western Desert knowledge of the Esperance sites may provide interesting insights into the topics addressed in this thesis and would be well worthy of further research.

Archaeological features at the site of Marbaleerup include a rich and varied painted rock art assemblage, stone artefact scatters, gnamma holes and lizard traps. These archaeological
features extend out in different directions surrounding the dome, some of which may be considered part of the broader site around the base of the dome and others that are argued to have functioned as satellite sites or features. In this regard, Marbaleerup is the focal point in a local cultural and archaeological landscape. One of the associated places is the stone arrangement site Budjari Yorg, which is described in the next section.

**Budjari Yorg**

There is a set of extensive stone arrangements situated on a low granite rise, 13 km south-east of Marbaleerup, which are known locally as Budjari Yorg or Wittenoom Hills. The arrangements have been suggested by the Elders to be related to Marbaleerup on the basis of proximity and their conceptions of inter-connected places within the cultural landscape. In this research, the arrangements are therefore considered part of the Marbaleerup cultural landscape.

Gunn reiterates the connection between the two locations based on their proximity to one another:

> Given the proximity of the *Budjarri Yorg* stone arrangement, the two site groups [Wittenoom and Mt Ridley] should be considered and managed as a single site complex. (Gunn 2008: 76)

The Budjari Yorg stone arrangements consist of a series of curvilinear lines, small clusters of stones, cairns and other features situated on a low undulating granite outcrop amid open mallee bushland. These arrangements are broadly comparable with those at Belinup in terms of form, size, orientation and landscape placement. The Budjari Yorg site is within line of site from Marbaleerup.

In this thesis, the term Budjari Yorg and Wittenoom Hills stone arrangements are used to refer to the same place. Wittenoom Hills is how it is often referred to by local Esperance Nyungar people, which relates to the stone arrangements’ location on a low granite rise associated with
the granite domes and peaks, known as the Wittenoom Hills. The term Budjari Yorg is a traditional Nyungar name for the place, cited by Doc Reynolds (9 December 2014), meaning pregnant (budjari) woman (yorg). This name is in reference to the appearance of the Wittenoom Hills when viewed from the north, in particular from Marbaleerup, which has the appearance of a pregnant woman lying on her back. The provenance of this story is unknown as Doc does not recall where he heard it originally, but says it was probably from Tom Bullen. Other Esperance Nyungars present during this discussion were not familiar with origin of the term Budjari Yorg either. Gunn uses the term Budjarri Yorg in reference to the stone arrangement site in his Marbaleerup report (2008). Gunn explains that the name refers to the arrangements’ association with the “two women” dreaming, as explained to him by the Esperance Nyungar survey participants (Gunn 2008:76).

Archaeological and cultural places extend out from Marbaleerup as a series of satellite features around a central hub (Marbaleerup itself), and therefore may be considered part of the Marbaleerup cultural landscape, including the Budjari Yorg stone arrangement complex. Artefact scatters cover much of the area in various concentrations. MO1 and MO2 are two such scatters on small granite exposures on the flat plain surrounding the mount itself and have been selected for artefact sampling on the basis of their close association, but apparent spatial delineation from the main scatter at the base of the mount. MO1 and MO2 are both features within the Marbaleerup site complex.

Those places Ridley [Marbaleerup] and Wittenoom [Budjari Yorg] and all that they all seem to be part of the umm, line up together, part of the travelling through sort of thing. That’s what it appears to me that it was. And it lines up right up north as far as even Norseman [Ngadju Country], maybe further to the Goldfields (Graham Tucker 25 Feb 2014).

The Esperance Nyungars say that Marbaleerup functioned as a ceremonial hub and aggregation locale for gatherings between Nyungar, Ngadju and Mirning people in the past. There are
restricted male areas at Marbaleerup that are associated with desert law, but they are quite discreet and the rest of the place is open for men and women. The Nyungars say both men and women visited and camped here in the past. The subsistence economics associated with Marbaleerup facilitated the usage of this place. However, it is described by Nyungars today as much more than an economic hub, it was a centre of social, spiritual and ritual exchange.

**Belinup**

In the winter of 2007, the Bushland surrounding Belinup had been completely burnt out by the destructive bush fires of the previous summer, providing almost one hundred percent ground surface visibility over an area of approximately 5 square kilometres, in a location generally covered by thick low lying scrub. Surveying areas for cultural materials after bushfires is the preferred method of the Esperance Nyungar Elders, who instigated this particular survey expedition on that basis. The survey resulted in the discovery of hitherto undocumented and extensive archaeological remains of past Aboriginal use of the area. These consisted of an extensive stone arrangement site on a granite outcrop at Belinup and thousands of stone artefacts, which seemed to continue in various densities for at least 3km west and 4km north of the Thomas River mouth. The survey gave rise to many potential research questions about the archaeological features at Belinup, including how the stone arrangements relate to those of similar form at Budjari Yorg. Other questions centred around the sheer number of lithics and their spatial extent, which had been revealed by the bushfire. While they were well aware that their ancestors lived around Thomas River, the extent of the archaeological materials in the area was previously unknown to the Traditional Owner group.

Since the fire in 2007 the Esperance Nyungars have initiated multiple field seasons of archaeological and cultural surveys which have uncovered a rich array of cultural features. It
seems like every foray out to new areas in this vicinity, or even revisiting areas, gives rise to new finds of archaeological materials, and with it the provocation of more questions than answers. Each time more stone artefacts, or lizard traps, or gnamma holes or common cultural features are found, it is not uncommon to hear one of the Esperance Nyungars say something like “you can’t walk anywhere around here without tripping over that stuff, lets find something out of the ordinary”, and thus making the point, with great pride, that Aboriginal occupation and activity along this coastal district was so prolific that stone artefacts and other archaeological materials are ubiquitous within the landscape. This is important because it is one of the ways in which people connect with their heritage today, and also one of the ways they counter claims made by some local non-Indigenous people that there was no Aboriginal presence in the area prior to contact.

The prevalence of archaeological materials around Belinup has also led to interpretations being drawn about how it was used in the past by Esperance Nyungar people. The idea of Belinup having been used as an aggregation locale has been discussed between myself and the Esperance Nyungars at some length and there is general agreement that this is a reasonable interpretation of the archaeological and geographical features at Belinup. However, in contrast to Marbaleerup, such interpretation is not based upon information passed down through oral history. So while Nyungar knowledge supports the hypothesis that both locations functioned as aggregation locales in the past, at Marbaleerup the aggregation hypothesis is based on a much stronger ethnographic foundation than that of Belinup.

Belinup consists of a granite outcrop that forms a low mount around which the Thomas River flows as it veers in a westerly direction and parallels the coast, before meeting the Southern Ocean in a trickle across the beach. Though small (less than 10km long), the Thomas River is
a resource rich estuarine environment for Aboriginal subsistence. The Esperance Nyungars favour the estuaries as food sources over the Southern Ocean coastline. During each field session at Belinup the Nyungars were successful in catching and eating lots of estuarine resources from the Thomas River, particularly mullet and bream. It is highly likely that these conditions were also favourable for Esperance Nyungar people living here in the past. One site considered to be associated with Belinup is Boyatup, which is described in the next section.

**Boyatup**

Boyatup Hill is situated 13km NNE of Belinup. It is a medium size granite outcrop, which contains a small rock art site inside a rock shelter. Boyatup and Marbaleerup are the only known rock art sites in Esperance Nyungar country. The Boyatup art assemblage is much smaller than Marbaleerup and consists of 13 hand stencils and one simple linear motif. There are stone artefact assemblages around Boyatup, mostly visible around some flat granite terraces. Visibility is obscured through most of the area by thick low scrub. On the basis of proximity, just as in the case of Marbeleerup and Budjari Jorg, the Boyatup rock art site and the Belinup stone arrangements site are considered related cultural features. Other locations around the Belinup precinct and along the river have been targeted for archaeological sampling too (see Chapter 6). It should be clarified that the sample areas are by no means the extent of archaeological features in the Belinup cultural landscape. They have been selected on the basis of 1) their ability to answer the research questions; 2) availability of relevant ethnographic interpretations; 3) ability to offer insights into spatial patterning; 4) accessibility and visibility; 5) archaeological materials appropriate for field analysis.

The sample areas within the Belinup complex include the Belinup stone arrangements; an open terrace next to Boyatup; a coastal granite ridgetop adjacent to the Belinup arrangements; a chert
quarrying area less than 100m from the arrangements; an artefact scatter interpreted as a campsite; and another concentration of artefacts further up river at the headwaters of Thomas River. These areas were identified by Elder Gail Yorkshire-Selby and myself as good areas for sampling due to their strategic location and the presence of stone artefacts (22 February 2012). Gail provided her interpretation of how these areas could have been used by her ancestors, which provided a basis for developing testable archaeological hypotheses (see section 6.4). It is relevant to note that the information provided by Gail was a culturally informed interpretation, rather than a direct oral history. This means that Gail was using her cultural knowledge to assist in interpreting the confluence of landscape features and archaeological remains, which is different from reciting a direct oral history about the place. Much of Gail’s knowledge is from her experience in Western Desert communities. She highlights how strategic the location of Belinup would have been for intergroup interactions between Nyungar and non-Nyungar people and suggests that Nyungar people would have hosted non-Nyungar people for aggregation events at certain times (Gail Yorkshire-Selby, pers. comm., 20 February 2012).

Graham Tucker emphasises how well provisioned Belinup was for Aboriginal subsistence and cites this as the reason why local people would have camped here on a semi-permanent basis, offering an additional site use interpretation to that provided by Gail Yorkshire-Selby (above):

Yeah Thomas River would have been more of a permanent settlement [than Marbaleerup]. I don’t say permanent permanent, but more they would stay there longer than most of the other places because there was everything there that they wanted, they’ve got the fish, the water and the whole lot. When I say water, I mean fresh water. Everything was there, the wildlife. They would have stayed (Graham Tucker, 25 Feb 2014).

Belinup continued to be an important place for Nyungars after European settlement and people remained living around the area. Some worked on the early agricultural properties including Thomas River Station and Lynburn Station. Annie Dabb feels a special connection to Lynburn
because her Great Grandparents Charlie Nine and Queen Dickerman lived on the station during the 19th Century, when they were working for Campbell Taylor, the station owner (Annie Dabb, pers. comm., 10 September 2015). Charlie Nine worked as a Shepherd. As well as working and living on Lynburn, Charlie and Dickerman brought up many children there including “Nanna Annie” (Annie Dabb’s grandmother, born at Thomas River) who was known as an “Aboriginal princess”, a status she inherited from her mother Queen Dickerman. Nanna Annie would later marry Joe Dabungle (Referred to as Dabungle in Bates 1936; see section 2.5) and their direct line of descendants would include current Elders Annie Dabb, Henry Dabb and Phyllis Wicker (grandchildren) and Murray Bullen (great, great grandson). Dabungle would later be abbreviated to Dabb and thus became the surname of the Dabb family. Annie Dabungle spoke both Noongar and Ngadju languages. Annie Dabb explained that this is because she learnt these languages from her parents (Charlie Nine and Dickerman). Charlie was Nyungar, while Dickerman was Ngadju. The connections between people and places in the past are highly significant for Esperance Nyungar identity and connections to place in the present, as highlighted by the following quote. “I just feel so emotional being here [Lynburn Station near Belinup] and walking in the footsteps of my ancestors and where my great grandparents worked and lived” (Annie Dabb, 10 September 2016).

Many Esperance Nyungar people trace their ancestry and thus a part of their identity to Thomas River (Belinup). For example, Gail Yorkshire-Selby connects her identity back to Thomas River through her family connections in her book:

My Great Grandmother Maggie walked between Eucla [non-Noongar territory east of Esperance on the Nullarbor], and Albany [Noongar territory west of Esperance] with her brother and sister. Maggie and her sister walked to Baledonia [Ngadju country] and ended up at Israelite Bay [shared Nyungar/Ngadju connections] and Thomas River [Belinup]. My grandmother Bessie was born at Thomas River, and my grandfather, Yorkshire Bob, was born at Esperance Bay. This place is called Kep Kurl (place where the water lies like a boomerang) (Yorkshire-Selby 2011:91).
In summary, Belinup is a prominent cultural location, being situated at the mouth of the last river of its size before the eastern boundary of Esperance Nyungar country, and thus also Noongar, country. For Aboriginal people it is resource rich, with ocean, estuarine and a wide range of terrestrial resources, including high quality chert and many bush tucker plant species as part of exceptionally high floristic biodiversity (Prof. Steven Hopper, pers. comm., 22 October 2012).

The presence of stone arrangements on a large granite outcrop in such a key location, associated with extensive stone artefact scatters and a near-by rock art site, suggests that these were once very prominent places within regional and local cultural landscapes. The stone arrangements are extensive (with a range of features/motifs that extend across an area over 500m in length and 80m in width, incorporating more than 1000 stones in total) and are one of only two known stone arrangement sites of this size in Esperance Nyungar country (the other being Budjari Yorg), which highlights the prominence of these features within the regional cultural landscape. As one of only two known rock art sites in Esperance Nyungar country the Boyatup art site further highlights the prominence of this area within the regional context. The numerical and spatial extent of stone artefacts around Belinup add another layer of data that supports the argument that this was a highly significant cultural place. This research aims to understand more about the kinds of cultural activities and functions that underpinned Belinup’s importance in Esperance Nyungar cultural systems, that were in operation in the period immediately prior to European settlement. No systematic archaeological study has been undertaken at Belinup or Boyatup prior to this doctoral research, and no previous study, archaeological or otherwise, has

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8 A botanist who specialized in this region and has worked extensively in the Cape Arid National Park and conducted an assessment of the ‘bush tucker’ potential at Belinup as part of ethno-botanical studies.
considered the function of Belinup in regards to aggregation, regional communication networks or the historical construction of Esperance Nyungar identity.

### 3.2.2 Previous Archaeological Research

This section presents a literature review of the archaeology of Esperance Nyungar country. Moya Smith’s doctoral thesis (1993) was the first intensive research project focusing on the archaeology of the Esperance region and remains the most comprehensive source of information to the present day. It also has the most archaeological information relevant to my research questions, so for these reasons Smith’s research is the main focus in this review.

Other work on the archaeology of Esperance Nyungar country has been predominantly produced within a commercial archaeology or community based context (e.g. Guilfoyle and Wright 2007; Guilfoyle 2011; Guilfoyle et al. 2011; Guilfoyle and Mitchell 2011; Guilfoyle et al. 2015; Morse et al. 2007) which provides some additional information. Most of the sources from commercial contexts are focused on managing the archaeological resources within the given study area and offer descriptions of the archaeological resources present, along with a significance assessment and management recommendations but do not present much interpretation or research conclusions. What they do provide is a picture of the density of known archaeological features in Esperance Nyungar country. Similarly, a number of community conservation reports have added much to our understanding of Esperance Nyungar archaeology, and particularly demonstrate the outcomes of Nyungar involvement and input into the research. Additionally, they provide descriptive information, and management recommendations.
The Esperance Nyungars take a central role in all of these research initiatives and as such are able to coordinate archaeological research in their country. This central coordination allows for the collation of data across different fields. The map below (Figure 4), compiled by Cat Morgan (Applied Archaeology Australia) on behalf of the Gabbie Kylie Foundation and Esperance Tjaltjraak Native Title Aboriginal Corporation shows all the archaeological places that have been assessed by the Esperance Nyungars between 2006 and 2016.

Other research-based sources (Dortch 2007; Dortch and Morse 1984) focus on Aboriginal occupation of the islands of the Recherche Archipelago during the period when the islands were connected to the mainland (before sea level stabilization c. 6000 years ago). Their research demonstrates that Aboriginal people exploited the now submerged continental shelf during periods of low sea levels. During these times the islands would have been inland granite domes similar to Marbaleerup and Belinup. Their work demonstrates the antiquity of people occupying these types of sites. While this is an interesting topic it is not very relevant to this thesis because of the significant time depth of the occupation and therefore is not discussed in further detail. Literature on the rock art of Marbaleerup is discussed separately in Chapter 7. On the whole, a review of the available literature demonstrates the relative dearth of formal academic studies into the archaeology of Esperance Nyungar country. This creates opportunities for research such as that undertaken within this thesis to broaden understanding of Esperance Nyungar archaeology. As noted by Dortch (2007: 9):

Further field study... is greatly needed in formulating a more complete conception of Aboriginal hunter-gatherer land usage and cultural history from late Pleistocene times to the historic period along the 600-km-long coastal zone between King George Sound and Israelite Bay.
Moya Smith

The largest and most comprehensive academic study undertaken in the region to date was the PhD research of Dr Moya Smith, conducted in the late 1980s early 90s. Her research provides the foundation for understanding the archaeology of the Esperance region. Smith concisely summarized the results and conclusions of her PhD research in a 2011 paper: *Moving On: An archaeological record of mobility in the Esperance area of south Western Australia*. Smith’s research was very broad and so is summarized below under the following themes (1) overview; (2) Esperance region as a cultural frontier; (3) site distribution and the importance of granite; (4) site size, site density and mobility: proximity to freshwater, outlook, aspect, and sheltering from prevailing winds; (5) lithic analysis; and (6) mobility.

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Dr Smith was an advisor on the supervisory panel for my doctoral research.
In her doctoral research Smith analysed data from 217 archaeological sites within Esperance Nyungar country, which comprised 215 sites with stone artefacts, and one ochre quarry. She describes the Esperance assemblages as mostly consisting of stone artefact scatters, “sometimes with additional features such as shell or other food refuse or tools, and constructed features or modified landscape elements” (Smith 2011: 17). Smith’s research was underpinned by a cultural ecology framework which she employed as she “sought to construct a regional prehistory” that looked at human-environmental interactions and adaptations over time. Her research addresses two demographic models proposed by archaeologists in the Southwest: mid-Holocene depopulation (Ferguson 1985), and late-Holocene intensification (Lourandos 1983) (Smith 2011: 17). It should be noted that both Ferguson and Lourandos’ respective models were applied to the Southwest more broadly, and were not based on any results from the Esperance region. Smith was testing the models using the Esperance data from her research. Her data did not conform to either model; there was no evidence from Smith’s research to support the case for mid-Holocene depopulation and little to support late-Holocene intensification. In the latter model, Smith does note that lizard traps, capped gnamma holes and the possibility of trade networks in lithic raw material are possible indicators of intensification, but acknowledges that there is insufficient evidence to restrict these assemblages to the late-Holocene. One line of evidence used in support of Lourandos’ mid-Holocene intensification hypothesis was Macrozamia leaching technology (Lourandos 1997). However, Smith found evidence of the leaching technology at Cheetup Cave dated to 13 000 B.P, which proved to be far earlier than this technology was previously thought to have occurred in Australia, and would predate the mid-late Holocene timeframe by at least 8000 years. It is this early date for Macrozamia processing that now affords Cheetup a place on the National Heritage List.
Smith also sought to understand more about whether the, “late 19th century socially marginal position of Esperance people in relationship to their neighbours, the remainder of the Southwest cultural bloc to the west and fringing desert to the north, was reflected in the chipped stone assemblages and other archaeological materials” (Smith 2011:17). She found that the evidence manifest in the flaked stone assemblages did not reflect the social ‘frontier’ suggested by ethnography, on the basis that there were no typologically characteristic ‘desert’ artefacts in the Esperance assemblages. These findings are relevant for the current research and may indicate that technologies can stay constant while identity politics are in flux. Or, it may be a matter of methodology. Smith used a typological approach which has limitations given that a lot of lithic debris does not fit comfortably within defined archaeological typologies. One characteristic type of lithic artefact that are specific to the Western Desert, are tula adzes (Veth et al. 2011). Smith’s research did not identify any of these distinctive items in the Esperance assemblages (Smith 2011: 23).

Smith’s cultural ecology framework seeks to understand the interactions of people and environment through a particular focus on subsistence economics within a given environmental system. An important component of her research looks at the region’s “resource reliability and predictability”, which Smith characterises broadly as “marginal” (Smith 2011:17). However, she draws a clear distinction between the coastal zone (Esperance sandplain) and the inland zone (Esperance mallee). As Smith articulates, the coastal zone shows “remarkable predictability in rainfall, evaporation, temperature and prevailing wind direction”, whereas the inland zone (which in places begins a mere 10km from the coast) can be extremely
unpredictable, to an extent that Smith suggests is similar to the Nullarbor and arid zone to the east and north (2011:18).

Within the cultural ecology framework, Smith addresses issues of site density and site size, demonstrating that site density differs markedly between the coastal zone (1 site per 3.94km$^2$) and the inland zone (1 site per 6.25km$^2$). Interestingly, site density on granite outcrops is roughly the same for both coastal sandplain (1 site per 2.01km$^2$) and inland mallee areas (1 site per 2.07km$^2$), which highlights the prominence of granite outcrops in regional settlement patterns, across both bio-geographic zones. The results also suggest that in the inland mallee area, which has much sparser resource availability and less predictability than the coastal zone (especially in regard to rainfall and fresh water), people were relying more heavily on granite outcrops for resource acquisition. There is likely to be a strong cultural-ecological reason for this as granite outcrops have significant water catchment properties, and are therefore ecologically rich nodes within the landscape, providing important resources for subsistence.

The prominence of granite outcrops in local settlement patterns has direct relevance for this thesis as the study sites are all situated on granite outcrops. While there are many granite outcrops with archaeological materials in the region, Marbaleerup and Belinup stand out due to their rock art and stone arrangement assemblages. In this discussion of granite outcrops it is important to account for survey biases pertaining to visibility. That is, granite outcrops provide some of the best visibility for archaeological survey in the region because they are not obscured by vegetation, and for this reason will always be at least slightly over-represented in survey results. There is no question that additional archaeological sites have been, and will continue to be, overlooked due to the thick vegetation within the study area, and this has implications for Smith’s results. However, Nyungar knowledge supports Smith’s results because the Nyungars
themselves emphasize the importance of granite outcrops within Esperance Nyungar settlement.

_Smith - Site Size, Site Density and Mobility_

Smith notes that the Esperance area exhibits the lowest site densities and assemblage sizes so far known in the Southwest region. She demonstrates this through comparable data from the Fitzgerald River region and King George Sound (Albany) area, both located deep into Noongar country to the west of Esperance within broadly comparable environmental zones. All of these areas have similar visibility issues based on vegetation cover so this variable should not affect the comparative results. Of the 193 artefact scatters recorded by Smith, 167 (86%) have fewer than 351 artefacts including debitage and formal tools (Smith 2011:20-21). As Smith observes, this is markedly less than other parts of the Southwest and the arid zone (2011:20-21). Smith uses this data as a large part of her rationale for characterizing Esperance settlement patterns as reflecting high residential mobility – small groups of people regularly moving camp to exploit resources – and low overall population (see section 6.2 for a detailed discussion of logistical and residential mobility strategies based on Binford 1980). She posits that the reason for low site numbers is related to poor resource availability. However, the poor resource availability theorem does not account for the smaller size of the Esperance sites when compared with those of the arid zone, which is also resource poor. One way that the discrepancy between Esperance and the arid zone could be explained, is on the basis that arid zone settlement patterns produced large sites as people clung to refuges in response to severe resource stress (Veth 1993).

_Smith - Proximity to Freshwater, Outlook, Aspect, and Sheltering from Prevailing Winds_

Smith’s research demonstrated that proximity to freshwater was the most important variable for site selection. She cites granite outcrops as the best example of reliable water sources and
associated ecological richness. 58% of coastal and interior sites are located on granite outcrops, while 68% of coastal artefacts and 75% of inland artefacts were recorded on granite outcrops (Smith 2011:20). Smith’s research suggests that proximity to resources other than fresh water and granite outcrops is not an obvious factor in site patterning (2011:23). She notes that lithic materials suitable for knapping are plentiful and relatively ubiquitous in the area, particularly coastal chert and vein quartz.

Her site patterning assessment also takes *aspect* and *outlook* into account; she observed marked patterning within the coastal zone in which 78% of sites are positioned to maximize shelter from the prevailing south-westerly winds and frontal weather systems that lash the Esperance area throughout the year. Of the remaining 22% of coastal zone sites not situated in shelter of prevailing winds, all but one are situated so as to maintain 360° views of the surrounding landscape. In the interior, 52% are situated to maintain shelter from prevailing conditions, while 46% have 360° views.

As Smith notes, site patterning in the Gairdner River region (situated approximately 300km west of the study area), also indicates a distinct preference for sites to be situated in locations that are sheltered from south-westerly winds (this region is subject to the same prevailing wind/weather directions as Esperance). However, site patterning in the Gairdner region does not exhibit the same preference toward locations with 360° views as observed in the Esperance region (Bird 1985:156; Smith 2011:23). Smith (2011: 23) suggests that greater preference for sites with 360° views in the Esperence is related to resource monitoring, not only in the immediate vicinity but also to monitor rainfall within the surrounding landscape, and proposed that this as an adaptation to the unpredictable and highly localized rainfall patterns that characterize the Esperance interior. Another possible reason for the prevalence of sites with a
360° outlook, may be related to monitoring the landscape for the presence of visiting and/or intruding people coming from the north. If the ethno-historic suggestions are correct about the dynamic negotiations of territory and identity in the Esperance interior (see section 2.6) it might be expected that Esperance Nyungar people would want to maintain a close watch over country so as to know ahead of time about any visiting non-local people (friendly or otherwise). The combination of Smith’s cultural-ecological explanation and the socio-economic/socio-cultural explanation presented here may both have been factors in Esperance Nyungar preferences for sites with 360° outlook in the Esperance interior.

**Smith - Lithic Analysis**

Smith’s lithic analysis had two approaches: a typological framework based on formal tools, and a classification system based on technological attributes and simple morphology of debitage, cores and tools (Smith 1993:115). Her morphological analysis indicated that unlike the Jerramungup region to the west, people in the Esperance region did not make much effort to conserve raw material, whether local or exotic (Smith 2011:23). Smith did not identify a great deal of variation within lithic assemblages and she characterises the assemblages as demonstrating “a reasonable degree of uniformity, with few diagnostic tools” (Smith 2011:23). In this way they resemble other Southwest Noongar assemblages (Smith 2011:23). Large arid zone tula adzes like those described by Hiscock and Veth for the Western Desert (1991) are absent. Those adzes which are present are flat and elongated like those described elsewhere in the Southwest (Ferguson 1985:371; Smith 2011:23). Backed pieces found in the Esperance region are small, and are similar in range of shapes and sizes to those found in the Jerramungup region (Bird 1985: 210-211; Smith 2011: 23). Backed artefacts are also found in the desert region and are ubiquitous over much of the Australian continent. Smith (2011: 23) identified *Xanthorrhoea* (*balga* or grass tree) resin on various pieces including on the retouched ‘back’
of a backed artefact, on the proximal margins of small adzes and on “many small flakes and chips” with resin that seemed to indicate hafting to a ‘taap’ (Southwest style knife) or a ‘gidgi’ (spear). _Xanthorrhoea_ resin is the typical hafting agent used for tool making within the Southwest region, due to the widespread and reliable distribution of the plant. This is distinct from the Western Desert where spinifex is used as a hafting agent (spinifex does not grow in the Esperance region and _Xanthorrhoea_ does not grow in the Western Desert). Grindstones found around Esperance are typical of the Southwest, being small and dimpled (Smith 2011: 23-24) and are therefore distinct from the large flat grindstones of the Western Desert.

_Smith - Mobility_

Smith (2011:25) suggests that the archaeological record in Esperance is indicative of mostly small groups of people practicing high residential mobility. She bases this interpretation partly on the location of sites across the region, which are almost always situated close to resources (and particularly granite outcrops), but primarily on the size (number of artefacts and spatial extent) of artefact scatters. Smith’s research did not identify many large artefact scatters (only four sites in the coastal zone with more than 1000 artefacts), though it should be noted that her research occurred before the discovery of the large artefact scatter at Belinup. She interprets the relative absence of large artefact scatters as a relative absence of base camps, and interprets the lack of base camps as an indicator of _residential_ mobility rather than _logistical_ mobility (see section 6.2 for a detailed discussion of logistical and residential mobility strategies based on Binford 1980). Smith’s interpretation is formed around the idea that logistical mobility strategies utilize a base camp, from which forays are undertaken to obtain resources. This thesis tests the hypothesis that Belinup was used as a base camp as part of aggregation events, around which it was necessary to employ logistical mobility strategies. In this sense, this thesis complicates Smith’s characterization of mobility in the Esperance region, by suggesting that
during the late-Holocene at least, logistical mobility strategies were employed around specific locations and specific aggregation events, as part of a broader settlement pattern that employs a combination of residential and logistical mobility. This claim does not necessarily refute Smith’s residential mobility hypothesis, as any hunter-gather settlement system may employ a combination of both residential and logistical mobility. Smith did in fact predict the re-interpretation of her residential mobility hypothesis in the sense that she interpreted the four sites with over 1000 artefacts as possible “foci of group, and perhaps inter-group, gatherings”.

It is at such locations that she predicts other archaeological features such as rock art or stone arrangements to occur (Smith 2011:25), and she proposes Marbaleerup as one such foci of inter-group gatherings (1993: 311).

Although the Belinup site had been recorded by Smith, at the time of her research (late 1980s-90s), the extent of the site was unknown due to the lack of visibility caused by thick vegetation cover. Belinup does not therefore figure in Smith’s analysis as a large site that may be interpreted as a base camp, potentially indicative of inter-group gatherings. The 2007 fires exposed stone arrangements and more than a thousand artefacts at Belinup, spread over an area exceeding 4km² with fairly distinct spatial patterning, found in association with other features such as the previously known rock art site at Boyatup situated 13km north of the stone arrangements. The 2007 finds suggest that Belinup may be an example of a site that supported larger groups of people staying in one place for longer periods of time and utilizing logistical mobility strategies, or an aggregation locale, or both. This supports the argument that within the dominant settlement pattern of high residential mobility proposed by Smith, there are some locations at which logistical mobility strategies were employed. Thus, Smith provides a useful platform on which to build further research about past Esperance Nyungar mobility.
David Guilfoyle

Outside the field of research archaeology, there have been a number of other commercial and community-based archaeology projects conducted in Esperance Nyungar country. The largest and most comprehensive was a commercial archaeology project conducted in 2011 by Applied Archaeology Australia in collaboration with Kepa Kurl, Context Anthropology and Outback Heritage (Guilfoyle et al. 2011). 10 The study was commissioned by Horizon Power and required archaeological and ethnographic assessment of the Esperance electricity network, which traverses the extent of Esperance Nyungar country.

The project included a large ethnographic component in addition to the archaeological assessment. Most of the results were focused on management of archaeological resources within the operations of the utility company and are not necessarily related to the research questions of this thesis. However, the combined archaeological and ethnographic report provides some interesting points for consideration. Perhaps most notably, the report paints a picture of Esperance Nyungar country that differs slightly from that of Smith (at least in the coastal zone), in terms of resource availability and the ability of Esperance Nyungar people to readily exploit these resources. Where Smith characterizes the Esperance region as resource poor for Aboriginal occupation, the following statement encapsulates a different perspective:

The Traditional Owners paint a picture of traditional use of Esperance town as one of movement that focused around resource acquisition and self-sustainability. There were favoured camping areas which dotted the landscape, between which people moved to obtain resources on a seasonal basis. The resources were plentiful and varied enough to sustain year-round residence in the area, and the abundant fresh-water also facilitated year-round occupation. Most of the landform systems encompassing the survey areas were a part of this system of movement and resource acquisition; however, they did not function in isolation from the other parts of the landscape, including the lower sandplain adjacent the foreshore, the ocean, the granite domes, the many lakes surrounding

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10 Applied Archaeology Australia is an archaeological consultancy with which I have worked since April 2011. Kepa Kurl is a cultural tourism and cultural services company run by Esperance Traditional Owners (members of the Reynolds family) with whom Applied Archaeology Australia regularly conducts joint projects. Context Anthropology was an anthropological consultancy which have subsequently closed down. Outback Heritage is another anthropological consulting company.
the town (both fresh and salt water), the rivers and creeks, and the waterholes (Guilfoyle et al. 2011: 232).

This excerpt reflects an ethnographic picture of Esperance Nyungar movement and resource acquisition. The associated archaeological assessment conducted as part of the Horizon Power study was primarily focused on the identification and management of archaeological resources within the powerline network, and therefore the results do not really address the kind of movement patterns and resource availability suggested in ethnographic picture. Smith’s interpretation is based on archaeological analysis. A separate study (also by Guilfoyle) further reinforces these themes as part of a community-based archaeological project conducted by the Gabbie Kylie Foundation in 2011, which assessed the archaeology of the Cape Le Grande National Park (Guilfoyle 2011: 97, see Figure 5 below). The park is located exclusively in the coastal zone, and is situated between Belinup and the town of Esperance to the west. Based on the results of the archaeological investigation, the authors produced a land-use model that presents a picture of mobility/settlement patterns supported by the archaeological record and Nyungar knowledge. The settlement patterns depicted in the map show a complex of residential and logistical mobility. However, logistical mobility dominates in the form of large coastal base camps, which were central to localized patterns of logistical resource provisioning and mobility.

The land-use model presented by Guilfoyle (2011) is partly at odds with Smith’s model of high residential mobility, in that Guilfoyle presents a localized picture of logistical mobility, at least within Cape Le Grande National Park, which is exclusively within the coastal sandplain. Smith does make a distinction between the coastal sandplain and the inland mallee hinterland in terms

11 I was involved in the fieldwork for this project as a field archaeologist and ethnographer working for Applied Archaeology Australia and the Gabbie Kylie Foundation.
of resource availability (the coastal sandplain has significantly more predictable and plentiful rainfall and resources than the hinterland) and much of her residential mobility hypothesis is based on evidence from the hinterland. However, there remains a disjuncture between these two conceptions of mobility: Guilfoyle’s model suggests a greater prevalence of logistical mobility strategies, while Smith’s model suggests a greater prevalence of residential mobility strategies. Logistical and residential mobility strategies need not be considered mutually exclusive within a hunter-gatherer settlement system, so the differences between the models presented by Guilfoyle and Smith are differences of degree rather than absolute. It is becoming increasingly clear that Esperance Nyungar settlement incorporated logistical and residential mobility strategies to varying extents across space and time. The challenge for archaeology is to identify when, where and how these different strategies were employed. Smith’s residential mobility hypothesis is still a basis for understanding Esperance Nyungar settlement, and the addition of localized models of logistical mobility strategies is further refining the picture. To date, logistical mobility strategies have only been identified in the coastal sandplain, so Smith’s model of high residential mobility remains the primary basis for an understanding of inland settlement. However, there has been more archaeological research conducted in the coastal zone than the interior, and this research bias may account for at least some of the perceived differences between the two areas. Further refining of the temporal sequence is also required to better understand these patterns.
Despite the relative dearth of archaeological research conducted in Esperance to date that is directly relevant to the research questions in this thesis, these studies indicate some preliminary patterns. The first is that there are distinct differences between the coastal sandplain and the hinterland. The former has had more research conducted to date, which may be reflected in biases of researchers and traditional owners in choosing to work near to the coast, as well as land access issues. Most of the coastal areas east of Esperance town are part of two large National Parks (Cape Arid and Cape Le Grande), as well as coastal reserves and accessible land elsewhere along the coast. In contrast, the vast majority of the hinterland is taken up by private landholders engaged in broad-acre agriculture, which prevents access by archaeologists and traditional owners and often impacts upon archaeological materials. However, commercial archaeology projects such as the recent State Barrier Fence Esperance Extension heritage survey (Guilfoyle et al. 2015), which covered a linear transect of more than 700km, have helped to provide more data for the interior. As more data is collected there is still an emerging pattern of greater density of archaeological materials along the coast, which has been interpreted as
greater levels of activity during past Aboriginal settlement. Further, the available evidence suggests that settlement in coastal areas was based primarily on logistical mobility patterns with some residential mobility, whereas the hinterland settlement appears to have been more focused on residential mobility. Further research is required to refine these interpretations.

3.2.3 Noongar Material Culture

The material culture of Noongar country is generally consistent with the understanding that people of the Southwest maintained culture and life ways that are at once distinct from, and connected to, other Aboriginal people. As with cultural identity, the archaeology of Noongar country reflects people who maintained their own localised material culture, which relates to localised identity and cultural practice, but forms a part of, and is consistent with, broader Aboriginal material culture, identity and life ways. That is, the archaeology of Noongar country reflects multiple layers of connection that may be observed at three levels; local (thirteen sub-groups), regional (Noongar cultural bloc), and continental (common elements with other parts of Aboriginal Australia).

A general description of Noongar material culture is offered by Smith (1993: 88):

Classic Southwest material culture items include kodj axes, taap knives, spears with flat wooden detachable barbs, undecorated short, broad leaf-like spearthrowers, boomerangs with one slightly concave arm, kangaroo skin cloaks and folded skin containers.

Smith (1993: 91) also offers some general descriptions of lithics that are characteristic of the Southwest:

Stone artefact assemblages also contain formal implements uncommon in regions adjacent to the Southwest. The most notable of these are ‘burren’ adzes or ‘flat adzes’
(Bird 1985; Ferguson 1985; Hallam 1981). These have characteristic step-flaking and undercutting on lateral margins. Small tula-shaped adzes also occur though these are infrequent […] Examples of both types of adzes in local assemblages bear *Xanthorrhoea* resin and were apparently hafted.

The Southwest also maintains many items of material culture that are common with other parts of the country, such as backed blades and other backed artefacts which are found throughout Noongar country, including at the study sites. Some other items of materiality not mentioned in the above excerpts from Smith include lizard traps, which are numerous on granite outcrops throughout the Southwest (Dortch et al. 2010), and fish traps, which can be found in numerous inlets, rivers and estuaries in the coastal areas of Noongar country (Dortch 1997) and are known to have been used in some cases to provision for aggregation events through bulk harvesting of fish (Gibbs 2011). Another common feature are gnamma holes, which are either natural or artificially created/enhanced holes, that form important water sources in granite outcrops (Guilfoyle et al. 2011). Stone arrangements in various forms can be found throughout much of the Southwest, some of which have evident practical purposes (such as fish traps), while others were constructed for ceremonial or symbolic purposes (see Chapter 7). Rock art, while not as prolific as in other parts of Australia, is also found at many locations throughout the Southwest (though only two are known in Esperance Nyungar country), more pronounced in some areas than others, particularly it seems when closer to ‘border’ areas with neighboring non-Noongar people (Webb and Gunn 2004).
3.3 ENVIRONMENTAL CONTEXT: A GEOGRAPHICAL FRONTIER

This section discusses the environmental context, advancing the argument that Esperance Nyungar country lies at a geographical, as well as cultural frontier. The section begins with a discussion of the broad-scale regional context before focussing in on the Esperance area.

The Southwest Australian Floristic Region, an environmental zone that defines the south-west corner of the Australian continent based on flora and rainfall (Hopper and Gioia 2004), broadly occupies the same geographical area as the Nyungar cultural bloc. The boundary between the Nyungar cultural bloc, and the Western Desert cultural bloc, broadly follows the boundary between the Southwest Australian Floristic region and the arid inland floristic provinces. At a more local level, this same botanical boundary corresponds closely with the eastern and northern edge of Esperance Nyungar country.

The Nyungar cultural bloc also coincides with the Southwest Coast Drainage Basin (Ferguson 1985: Peterson 1976; Smith 1993: 86). The rivers of this Basin are fundamental to the economic and spiritual lives of Noongar people. During traditional times the rivers formed movement corridors and resource rich landscape features that were integral to Noongar economy and society, and Noongar culture attaches powerful spiritual associations to the rivers through creation and dreaming stories. Of particular prominence are dreaming stories associated with the ‘Waugal’, a spiritual snake responsible for carving out and creating many landscape features, particularly the rivers.

The geographical boundaries relating to rainfall and drainage are highly relevant to this thesis because Belinup is situated at the mouth of the Thomas River, which is the easternmost of all
the rivers that form the Southwest Coast Drainage Basin. Eastward of the Thomas River, the landscape transitions to the Nullarbor Plain which is part of the Western Plateau Drainage Basin. The boundary between the two drainage basins follows a line very close to the current Native Title boundary between the Esperance Nyungars and the Ngadju. This connection highlights the importance of the drainage system in aspects of cultural identity and territory at the edge of Noongar country, and further emphasises the frontier situation of Esperance Nyungar country.

3.3.1 Climate and Rainfall

Esperance has two different climatic zones, the coastal zone (in which Belinup is located) and the interior zone (in which Marbaleerup is located). The coastal zone is typically Mediterranean with wet winters and dry summers. Temperatures range from 4°C in the winter to 47°C in the summer, with average summer maximums of 26°C, and average winter minimums of 8.5°C. The area has an average annual rainfall of 600 to 700mm (Smith 1993: 14). In the interior zone, rainfall is unpredictable and may occur at any time of the year, with an annual average of 350-400mm. Temperatures are more variable than the coastal zone with summer maximums averaging 30°C and winter minimums averaging 4.5°C (Smith 1993: 14). Esperance is a consistently windy place, particularly on the coast. The wind patterns in summer are typically from the north-east in the morning and swing around to the south-east in the afternoon (Smith 1993: 14). In the winter, strong winds and sometimes gales come from the north-west, west or south-west but appear strongest and most prevalent from the south-west (Smith 1993: 14). Prevailing weather conditions, particularly rain-bearing cold fronts generally blow in from the south-west. The prevailing winds have implications for Aboriginal settlement patterns (see section 3.2.2).
3.3.2 Geology

Marbaleerup (Mt Ridley), Budjari Yorg (Wittenoom Hills), Belinup Hill and Boyatup Hill, are all comprised of pre-Cambrian granite which is coarse, even grained to porphyritic, pink lath feldspar (Lowery et al. 1972; Lowery and Doepel 1974; Morgan 1972; Morgan and Peers 1973). These granite features are all exposed areas of the Yilgarn Craton, a huge sheet of bedrock which underlies most of southern Western Australia. The granite outcrops and domes of the Yilgarn characterise this region, continuing west along the entire South Coast region and extending up into the wheatbelt. Some say that Esperance Nyungar country finishes where the granites finish near Israelite Bay (Doc Reynolds -21 October 2012). This suggests that the geological signature of the Esperance area provides a geographical marker for Esperance Nyungar ‘connection to country’ and marks an easternmost extent of the territory to which Esperance Nyungar people feel directly connected. As discussed in previous sections, these granite outcrops also act as ecological and cultural nodes throughout the Esperance region, and were targeted by people in the past for habitation and use in a range of different activities.

Marbaleerup is surrounded by Red Inland Sandplain which is described as “deposits of red loamy sand over white limestone over grey to greenish clay” (Morgan 1972: no page number). Wittenoom Hills are surrounded by Sandplain Deposits described as “grey sand over pisolites over yellow clay” and red soil “from weathered gneiss and granite in the erosion areas near the headwaters of the younger river channels” (Morgan 1972: no page number). Boyatup is surrounded by white and yellow Pleistocene sand plains that extend north, east and west of Boyatup Hill for a considerable distance. South of Boyatup Hill, flanking the Thomas River and surrounding Belinup Hill, is Pallinup Siltstone which is a chert-bearing Upper Eocene “yellow to grey claystone, siltstone and silty sandstone with fossil sponges and molluses” (Lowery et al. 1972). The Pallinup Siltstone formation occurs in coastal areas all along the
South Coast in a westerly direction and provided high quality chert, which was regularly utilised by Aboriginal people in tool production. There is a large amount of chert outcropping around Belinup with evidence of quarrying and use. Immediately east of Belinup are expansive and partially mobile Eolian sand dunes systems, which are calcareous and siliceous (Lowery et al. 1972). The geology associated with the study sites, and with Esperance Nyungar country more broadly, is important because it defines the landscapes in which Esperance Nyungar identity is territorially embedded.

### 3.3.3 Landforms and Hydrology

The coastal zone is dominated by drifting sand dune systems on a coastal plain, punctuated by granite domes, headlands and pavements, short estuarine rivers, creeks, swamps and lakes, mostly fresh water but some saline. The interior zone is dominated by wide-open expanses of gently undulating mallee bushland, with many salt lakes which are dry much of the year. Like the coastal zone, the interior zone is punctuated with granite domes and terraces (Smith 1993: 16). Hydrology in the coastal zone is based on a series of south flowing estuarine rivers with short catchment areas (mostly around 10km), of which the Thomas River is a typical example and is the most easterly. In the interior, drainage systems are not clearly defined. Granites form localised catchments and there are often non-permanent low-lying areas of water around them. Otherwise, most of the rainfall ends up in the numerous salt lakes that characterize the area. These are subject to high evaporation and with infrequent rains in the interior, are dry much of the time. All of the landforms and geology features discussed here are integral parts of the cultural as well as natural landscapes of the study area. Having a basic understanding of these landforms is necessary to properly situate this research into the cultural landscape.
3.3.4 Vegetation

The vegetation systems of the Esperance region can be understood in terms of vegetation “provinces”, “districts”, and “systems” each representing different scales of analysis, ranging from the regional to the local (Beard 1973, 1980, 1990; summarized by Smith 1993). At the regional scale, Esperance is at the south-eastern edge of the Southwest Australian Floristic Region, which encompasses the entire Southwest of Western Australia incorporating the Wheatbelt, the South Coast, Southwest Forests and Perth (Hopper and Gioia 2004). Immediately north and east, Esperance is surrounded by the Southwestern Interzone (Great Western Woodlands, Goldfields), which separates Esperance from the true arid zone of the Desertic Eremaen Province (Western Desert). Beard (1973) has further delineated the Southwest into five Botanical Districts, two of which are found in the Esperance region; the Eyre Botanical District, in the southern (coastal) area, and the Roe Botanical District which encompasses the Esperance hinterland.

The Eyre Botanical District is further distinguished into two separate vegetation systems, the Esperance System and the Fanny’s Cove System. Belinup is situated in the latter, which hugs the coast from Fanny’s Cove west of Esperance town, to Israelite Bay in the east. Fanny’s Cove System grows in the coastal sand dunes and is characterised by scrub heath and coastal dune scrub with dominant plant species Banksia speciosa, Lambertia inermis, Nuytsia floribunda, Xanthorrhoea preissii, Grevillea hookeriana, and Hakea cinerea and in swampy areas thickets of Melaleuca, Acacia and Banksia (Smith 1993: 24).

The Esperance system is still considered coastal (Beard 1980) but it forms an east-west belt between the Fanny’s Cove System to the south and the mallee systems to the north. Indeed, it
is described as mallee heath, dominated by Tallerack (*Eucalyptus tetragona*) with other mallee species *Eucalyptus redunca* and *E. incrassata* and small patches of *E. occidentalis* (Smith 1993: 24). Granite outcrops act as water catchments and form focal points in the vegetation system with greater biodiversity including tuberous species, orchids and pin grass (*Borya nitida*). Boyatup is one such granite outcrop situated in the Esperance System, close to the intersection with the Fanny’s Cove System.

The Roe Botanical District is dominated by mallee (mostly *Eucalyptus eremophila*) and is divided into three separate vegetation systems: the Ridley System, Russell Range System and the Cooper System. The Ridley System is named after Mount Ridley (Marbaleerup), and is a mallee woodland system overlying Eocene sediments punctuated by granites, including Mt Ridley. The Cooper System is much the same, however it overlays limestone and is situated east, in the vicinity of Israelite Bay (Beard 1973, 1980; summarized in Smith 1993: 24, 25). This mallee system is connected to the entire expanse of the Great Western Woodlands which, extending north and east of Esperance for thousands of kilometres, form the largest temperate woodland in the world, before ultimately giving way to the extreme aridity of the Western Desert.

The vegetation systems that encompass the study area are fundamental to Esperance Nyungar culture and society. This is particularly true in economic terms because so many of the resources utilized by Esperance Nyungars were plant derived, but the vegetation is also important in a number of other ways, including identity and territoriality. As the vegetation changes, so too do concepts of territory, and Esperance Nyungars use vegetation as one way of defining their country. In particular, the blue mallee gum or Tjaltjraak is considered one indicator of Esperance Nyungar territory (Elaine Bullen and Doc Reynolds, 12 October, 2011; and see
The distribution of the two closely related species (*Eucalyptus pleurocarpa* and *Eucalyptus extrica*) known to Esperance Nyungars as Tjtaltjraak are presented in the two maps (Figure 6 and Figure 7). The south-eastern distribution in these maps broadly corresponds with Esperance Nyungar country.
3.4 CHAPTER SUMMARY: AT THE FRONTIER

This chapter summarized the previous archaeological research conducted in the Esperance region and has presented the argument that Esperance Nyungar country is situated at a geographical frontier as well as a cultural one. The argument is based on an assessment of the relevant literature, combined with Nyungar knowledge recorded as part of this doctoral research. The culmination of corresponding geographical and cultural frontiers is a result of the deep connection between identity and territory in Aboriginal society. Vegetation, landforms, hydrology, geology and other environmental factors, including fauna, are all fundamental not only to Esperance Nyungar territory, but to the identity of people, collectively and independently. Esperance Nyungar people today use these environmental characteristics to distinguish themselves as belonging to these kinds of landforms and to reinforce their sense of a common Esperance Nyungar identity connected by common landscape features.

The next chapter presents the theoretical foundation for this thesis.
4 THEORETICAL CONTEXT

4.1 CHAPTER INTRODUCTION

The theoretical foundation for this thesis is based on three themes: \textit{mobility}, \textit{aggregation}, and \textit{identity}. Each theme and the way it relates to the thesis is discussed sequentially in this chapter.

4.2 MOBILITY

\textit{Mobility} refers to the systems of movement across landscapes, which underpin hunter-gatherer settlement. This thesis looks at both local and regional mobility. The former considers mobility strategies employed around Marbaleerup and Belinup, and the latter considers how Marbaleerup and Belinup fit within broader mobility systems utilised by Esperance Nyungars. Mobility is fundamental to hunter-gatherer economy, and much of the scholarly work conducted on the subject has emphasised the economic underpinnings of different mobility strategies (after Binford 1980). However, another important yet sometimes overlooked aspect of mobility, is its social function. Understanding more about the interwoven economic and social functions of mobility in Esperance Nyungar society is a fundamental component of this thesis. This section provides a review of relevant literature pertaining to mobility in archaeology with a particular focus on the integration of social and economic underpinnings of hunter-gatherer mobility.

Archaeologists recognise that mobility is a critical component of hunter-gatherer culture and society. Much attention has been paid to the development of research frameworks that seek to
identify the relationships between mobility/settlement patterns and material culture. A brief review of these concepts helps to orientate a theoretical framework.

Early work conducted on the study of mobility sought to articulate ‘types’ of mobility (see for example Beardsley et al. 1956 and Murdock 1967), the most basic of which were ‘mobile’ and ‘sedentary’, and then further categorizations such as ‘semi-sedentary’, ‘semi-nomadic’ and other variations. In response to such typological approaches, Robert L. Kelly (1992: 44) argued that “mobility is a property of individuals” and typological approaches to mobility are inadequate to the extent that they account for mobility only in terms of a “single scale of group movement”, and thus fail to account for movement of individuals or sub-groups.

Lewis Binford (1980) developed the study of mobility through the differentiation between residential and logistical mobility. The tenets of this distinction being that residential mobility involved a group of people moving between, or “mapping onto” different locations and associated resources; while logistical mobility involved individuals or small task groups going out and obtaining resources to bring back to residential camps. Based on the same concept, he then distinguished between foragers who essentially follow a residential model of mobility and collectors who follow a logistical model of mobility. These distinctions need not be mutually exclusive as groups of people may adopt both residential and logistical strategies into their mobility system (Andrefsky 2005: 212). Binford used the terms residential and logistical as conceptual frameworks rather than types, and these frameworks were intended as tools in distinguishing the relationships between individual movement and group movement, and its implications for site formation (Binford 1980).
In Australia, Harry Lourandos has used the concept of mobility to build interpretations about broad scale temporal and spatial changes within Aboriginal society. Lourandos draws on Binford’s concepts of residential and logistical strategies, suggesting that they have the most utility when thought of as two ends of a “spectrum of possible economic-settlement patterns operating within any environment at any time” (Lourandos 1997:20):

While all hunter-gatherer settlement patterns may be seen as a combination of the above two strategies, these categories allow us to distinguish two ends of a spectrum of behavioural patterns which are discernable archaeologically (Lourandos 1997:20).

Based on a thorough review of the concepts and implications of mobility for archaeology, Kelly (1992: 46) argues that it is necessary to “think less typologically and more theoretically about the issue of mobility”. He subsequently explored two of the key theoretical components relating to mobility.

Kelly’s first component he termed “ecological” or “energetic” sources of variation, which broadly refers to subsistence economics (Kelly 1992: 47). Beginning with an integration of optimal foraging theory and associated concepts of costs and risk, he defined key variables that may need to be measured or explained in order to make an assessment of past people’s mobility. He discussed the archaeological implications of sub-groups or individuals within the larger group, whose mobility strategy may vary from one-another, or from the larger group (Kelly 1992: 47). Within these sub-groups Kelly particularly notes gender and age (Kelly 1992: 48).

Kelly’s second component comprised “non-energetic variables” and for these, Kelly cites cultural obligations such as religion, kinship, trade, art and the production of symbols, and “personal” reasons for mobility (Kelly 1992: 48). He hastens to add that these non-energetic variables do not negate the importance of foraging efficiency, instead he considers foraging efficiency to be a vital component in making time and resources available for “non-energetic”
pursuits (Kelly 1992: 48). In sum he states that “movements can be socially or politically motivated, as people seek spouses, allies or shamans” (Kelly 1992: 48). In addition, he argues that, “some movements made for socio/political reasons can ultimately be related to foraging concerns” (Kelly 1992: 48) and therefore also have an economic basis. As a further component he adds that mobility may be a cultural ideal and thus populations may continue mobility in situations where a more sedentary settlement system is economically viable. In conclusion Kelly argues:

By deconstructing the concepts of mobility and sedentism, we see the need to construct more useful approaches than a simple polarization of mobile vs sedentary societies. Indeed it is no longer useful to speak of a continuum between mobile and sedentary systems, since mobility is not merely variable but multi-dimensional (Kelly 1992:60).

This thesis builds on Kelly’s argument about mobility being multi-dimensional and demonstrates how archaeology can be used to unpack some of the dimensions of Esperance Nyungar mobility. As a basis for interpretation of past Esperance Nyungar mobility, this thesis draws on the previous work of Smith (1993) who characterises Esperance Nyungar society as having maintained a high level of residential mobility. Using Kelly and Binford’s concepts, this thesis seeks to complicate Smith’s interpretation of mobility, in understanding more about the role that Marbaleerup and Belinup may have played in the broader mobility structure of the Esperance region. Specifically, does the archaeology of Belinup and Marbaleerup suggest that localised logistical mobility strategies were used around these locations, within a broader system of residential mobility? Further, were these localised systems of logistical mobility related to the provisioning of aggregation events? If so, this would add to Smith’s picture of small groups of people practicing high residential mobility in the Esperance region, because it would demonstrate the presence of large groups of people gathering for aggregation events and utilizing localised logistical mobility strategies to provision for such events. Aggregation is discussed in the next section.
4.3 AGGREGATION

Aggregation is used as a theoretical concept in this thesis to understand more about Esperance Nyungar mobility, and Marbaleerup and Belinup’s place in late Holocene Aboriginal society. This section provides a review of relevant literature about aggregation, and a consideration of how it relates to the social and economic underpinnings of hunter-gatherer mobility. This includes discussion of how other scholars have looked at aggregation in Noongar country and in the Western Desert previously, which provides a basis for using the aggregation concept to interpret the study sites at the frontier between these cultural blocs.

Aggregation is an important component of hunter-gatherer mobility. In past systems of mobile hunter-gatherer society, people came together at certain times and places for aggregation events of varying duration, and at other times dispersed into smaller groups. Margaret Conkey (1980) explored the concept of aggregation locales and aggregation/dispersion settlement patterns in her research, which focussed on the Palaeolithic site of Altamira in Spain. Conkey argued that aggregation locales, which were an a priori type of hunter-gatherer site, were not just the result of ecological factors as other scholars had implied, but also served important social and cultural functions. She suggested there is no single aggregation/dispersion pattern that may be applied to all hunter-gatherer populations and that “duration, location, cyclicity, extent, personnel and activities” may vary significantly (Conkey 1980: 609). This thesis uses Conkey’s definition of aggregation:

An aggregation site amongst hunter-gatherers is a place in which affiliated groups and individuals come together. Although Lee (1979) specifies the primacy of ritual, in its basic form an aggregation refers to the concentration of individuals and groups that are otherwise fragmented. The occasions for concentration may be ecologically or ritually/socially prompted, and there must be processes that effect the integration and allow the aggregation to take
place. The duration, however, of an aggregation event may vary (Conkey 1980: 612).

This doctoral research applies the aggregation concept to better understand how Marbaleerup and Belinup were used within past mobility systems. In turn this information is used to understand more about local, regional and inter-regional mobility and the role of aggregation. Aggregation or the implications of aggregation as a component of land use strategies has not been sufficiently examined in the Esperance area so this thesis fills a research gap. Nyungar knowledge is used in conjunction with archaeological results to inform the study. A detailed and well-provenanced oral history pertaining to past inter-group aggregation events taking place at Marbaleerup (see section 3.2.1) provides an opportunity to assess the archaeological correlates of aggregation at this locale. In this way, the thesis contributes to an understanding of the implications of aggregation for site-formation and how it may be assessed archaeologically.

In Southwest Western Australia (500-800km west of the Esperance study region), Charles Dortch (2002) applied a similar framework to Conkey, distinguishing between *congregative* and *dispersive* sites. An important difference between Dortch and Conkey’s frameworks is that while Conkey is primarily interested in the symbolic assemblages at Altamira, Dortch was interpreting lithic assemblages and stone fish traps. Dortch’s model is explicitly socio-economic, which reflects the cultural ecology framework on which he bases his research. He explores the concepts of “group mobility, dispersal and amalgamation” as a mechanism for maintaining territorial organisation as it related to reciprocal agreements about access to land and resources (2002:13), and on this basis had an economic focus, but he does emphasise the inter-relatedness of social and economic aspects of Noongar society, and the importance of both as impetus for congregation. Dortch’s work presents a detailed examination of ethnographic
models from the Southwest, which highlight the importance of congregation within Noongar society. However, in his archaeological analysis Dortch’s model only distinguished between sites on the basis that they were either “congregative” or “dispersive” which does not allow for fine-grained understanding of past settlement systems. Dortch’s model for categorizing sites as either congregative or dispersive is primarily based on site size, which may be inhibitive in distinguishing between the material remains of congregation versus repeated and sustained usage of the site by small groups of local people over time. Dortch’s model is informative in highlighting the economic imperatives for aggregation, and demonstrating its relevance to Noongar mobility. It may be more effective if, similar to Lourandos, congregative and dispersive strategies are considered as two ends of a spectrum, rather than as a binary distinction.

To some extent, aggregation always has an economic component, because it is necessary to provision for the aggregation event through the employment of subsistence activities. Tonkinson’s description of aggregation events among the Mardudjara (Mardu) in the Western Desert, exemplify the economic functions necessary for the provisioning of aggregation events:

Periodically, when a relative abundance of some food staple can be predicted for a given site, and plentiful water is available, large numbers of people from widely separated areas assemble in response to invitations sent by the local group in whose territory these favourable conditions exist. This temporary aggregation or djabal (‘multitude’) is the high point of the Aborigines’ social calendar. It facilitates, among many other important things, the maintenance of a shared religious life and of cultural diffusion, which to the desert people are their lifelines of survival (Tonkinson 1978:30).

Tonkinson draws attention to the paradox of Western Desert mobility systems, which are driven by economic imperatives that drive people apart (dispersion), and social imperatives that draw them together (aggregation). Important in this example is that people’s propensity to travel predominantly in small family groups is driven by cultural tradition and deeply rooted belief systems which operate in harmony with ecological drivers rather than being dictated by them:
The mode of adaptation of the Mardudjara involves a continuing dialectic between the ecological constraints that push people apart and the cultural pressures that draw them together. Although the resulting synthesis favours dispersal, it is important to understand that the Aborigines see this condition not as one that is dictated by the physical environment, but rather as ordained by the Dreamtime. They wander in small bands because that is how the ancestral beings lived (Tonkinson 1978:30).

Tonkinson’s work is important for this thesis, firstly, because it gives a window into Western Desert people’s aggregation habits, and secondly, because it highlights that the interplay between economic and social drivers for aggregation is complex and intertwined and the two may not easily be disentangled for the purposes of analysis. Social and ritual functions may also have been important parts of aggregation along with economic drivers, as discussed by Conkey (1980) in her original conception of aggregation, as well as more recently by McDonald and Veth (2012: 95):

Obviously, the nature of the gathering could fall within a range of social contexts, and these may be characterized from purely ritual to totally social, with varying degrees of subsistence behaviours no doubt driving and feeding these two ends of the spectrum (after Conkey 1980), as follows: (1) ritual; (2) ritual and subsistence; (3) intensive subsistence; and (4) social.

There are ethnographic descriptions of aggregation events elsewhere in Noongar country, such as at Barragup Mungah on the Swan Coastal Plain near Mandurah, south of Perth (Gibbs 2011). This place has archaeological remains of a large fish trap and an ethnographic record which highlights the fish trap’s importance in provisioning for aggregation events. The following passage from Gibbs (2011) in his consideration of past aggregation events at Barragup Mungah, shows the important part that these events played in the Noongar calendar, and the interplay between social, economic and ceremonial drivers of the events:

The yearly cycle encompassed a range of intra-and inter- community gatherings at which a combination of social (e.g. betrothals, formalised fighting, sporting, friend making), economic (e.g. trading, gift giving), and ceremonial (including initiation) activities took place. These gatherings were usually based around a super-abundance of at least one animal or vegetable resource, capable of supporting a population of up to several hundred people for anywhere from a fortnight to a month or more (Gibbs 2011:5)
This thesis draws on elements of Dortch, Gibbs, Tonkinson, and Veth and McDonald’s models of aggregation from Noongar and Western Desert contexts to support the use of Conkey’s model in the Australian context. In this thesis, aggregation is assessed through a consideration of symbolic assemblages (rock art and stone arrangements) as well as technological assemblages (lithics) and their role in provisioning for aggregation. The aim of addressing these three different assemblage types is to use archaeology to try and understand something about the intersection of economic and social imperatives for aggregation at the study sites. Despite being based on a site from Palaeolithic Spain, Conkey’s concept of aggregation is highly applicable for this thesis because it focuses on symbolic assemblages and social aspects of aggregation, which relate to the research questions posed in this thesis. Conkey’s model also provides a useful methodology for identifying aggregation sites, which is focussed on spatial organisation of sites and a combination of different factors supporting an aggregation hypothesis.

Conkey’s model has drawn some criticism, particularly her application of the aggregation concept to the archaeological assemblages of Altamira, which consist largely of engraved bone and antler materials, and are based on very old excavations (Gonzales Echegaray 1980: 622). Others have criticized the link she draws between an ethnographic model derived from San hunter-gatherer people in Africa and the people of Palaeolithic Spain (Galt-Smith 1997). However, her aggregation model maintains an important utility in archaeology to this day and has been applied in the Australian archaeology context (eg. McDonald and Veth 2012). Conkey proposes eight archaeological indicators of aggregation:

We should be prepared to investigate the archaeological indicators of (1) larger group size and its relationship to the spatial extent of the occupation; (2) seasonal occupation that may or may not have been repeated, the duration of which may be congruent with the length of the ‘harvesting’ season; (3) site structuring (how the different activities were carried out); (4) maintenance of relevant site features; (5) a greater total range of
activities than at any one other (presumably dispersion) site; (6) at least some activities different from those that took place at smaller, presumably dispersion sites; (7) ecological factors that might have contributed to the aggregation; and (8) a ‘mixture’ of regional personnel (Conkey 1980: 612).

Each of these indicators is considered in relation to the results of this research. Firstly, they are used to assess whether the archaeological assemblages at Marbaleerup and Belinup are reflective of aggregation having taken place in the past. This assessment provides a platform to interpret more about Esperance Nyungar mobility at the local scale (around Belinup and Marbaleerup) and at the regional scale. Secondly, the results are then used to consider the applicability of each indicator for archaeological inquiry more broadly.

### 4.4 IDENTITY

The third theoretical theme, identity, is used here to understand how symbols in the archaeological record may be informative in understanding more about the people who created them: in particular, it is used to help understand the multiple layers of identity, including collective and individual notions of identity and group affiliation. This thesis uses the concept of identity in two ways. The first is in a consideration of its intersections with territory and group affiliation; this use of identity operates on a spatial axis starting from the location of the study sites, and the current geographical area of Esperance Nyungar country (as defined in Native Title boundaries), and works outward accordingly. This approach investigates the ever-shifting but highly significant intersections of land and identity for Aboriginal people, which highlights the fluidity of ‘borders’, and demonstrates the need for concepts such as ‘interaction zones’, that recognize shared connections to place and overlapping and intertwined identities. The second use of the concept, is in consideration of the historical construction of contemporary Esperance Nyungar identity. This application of identity operates on a temporal axis, exploring
the shifting nature of identity over time, starting with the present and working back. The use of these two axes (spatial and temporal) allows for consideration of shifting notions of identity over time and across space. Some of the challenges with such an approach are also discussed. In particular, the difficult connection between identity and the material record. This leads to the next section, which proposes a way to link identity and the material record through the analysis of symbols.

The application of identity as a theoretical tool in this thesis is based on the theoretical tenets of social archaeology, and seeks to address questions thoroughly rooted in this field:

A social archaeology conceptualized as an archaeology of social being can be located at the intersections of temporality, spatiality, and materiality. To take these concepts as a focus of research is to explore the situated experiences of material life, the constitution of the object world and its shaping of human experience. This is related to, but not necessarily the same as, studying time, space and material culture, categories that have often been identified as the dimensions of archaeology. Just as humans produce notions of time and space to mediate their existence in the world, so too do they produce notions of materiality and, indeed, these concepts are fundamentally interdependent because material culture practices serve to concretize and reproduce particular modes of space-time (Meskell and Preucel 2004: 3-4).

Recent archaeological literature on identity emphasises the heterogeneity and plurality of identity, in framing individuals and groups simultaneously in terms of sameness and difference (Meskell and Preucel 2004). The fluidity of the concept has caused some scholars to question its usefulness and the ensuing debates are fundamental to research on identity:

The debate can be characterized as oscillating between hard or soft constructionism, between those who would argue for fixed categories reliant on foundational differences and those who advocate a more mutable, fluid set of identifications that are open to re-evaluation and reflexivity. Identity remains an elusive term embodying contradictory and heterogeneous definitions. Its theoretical purview encompasses two extreme poles of thought and many diverse positions in between. Identity is thus a topos, a challenging terrain that has not only academic interest but serious real time effects for living people, descendent communities and relations among diverse interest groups (Meskell and Preucel 2004: 122).
The approach taken in this thesis leans toward a “soft constructionism” as Meskell and Preucel would have it, embracing a “mutable, fluid set of identifications that are open to re-evaluation and reflexivity”. However, such ‘fluidity’ is only embraced to the extent that it does not restrict the interpretive potential of identity as a tool for archaeological investigation. While acknowledging the need to accept the multiple and overlapping layers of identity in Aboriginal society, there is also a need to develop interpretive methodologies that are archaeologically testable. The multiplicity of layering within contemporary Esperance Nyungar identities is clearly evident (see section 2.2) and demonstrates the complexity and fluidity of identity within individuals and groups and that it is context specific. However, many components of these identities are not archaeologically identifiable, based on the assemblages at the study sites. For example, the sub-groupings of Nookgurring, Tjaltjraak and Bardok that are understood through historical and current accounts to be one layer of identity for Esperance Nyungar people, are not archaeologically identifiable within the study sites, and therefore are not used in the methodological approach to identity in this thesis. However, the broader regional identities of the Noongar cultural bloc and the Western Desert cultural bloc, which intersect at the edge of Esperance Nyungar country, do have the potential to be assessed archaeologically, and are therefore incorporated into the methodology. The respective regional identities may be archaeologically visible, because there are observable characteristics of style evident in the material record of Aboriginal society within each of these two regions, particularly evident in the symbolic assemblages – the rock art and the stone arrangements. On this basis, Esperance Nyungar identity is explored in relation to the influences and affiliations of the two broader cultural blocs, evident in the material record of symbols at the study sites. This thesis documents expressions of group identity expressed materially in the form of stone arrangements and rock art. Building on the data obtained from the study sites, the spatial axis is then expanded, through consideration of existing literature on rock art and stone arrangements across the two broad
cultural blocs (Noongar and Western Desert). The cross-regional data from Noongar country and the Western Desert is used to compare and contrast with the data from the study sites. This process of comparison situates the data sets from the study sites within their broad regional context, heightening their interpretive potential.

On the temporal axis (the second application of identity), it is necessary to account for some of the plurality of shifting notions of identity over time, within the historical construction of contemporary Esperance Nyungar identity. Modern approaches to identity are generally in opposition to traditional culture-historical approaches, which often conceived of identity in terms of well-articulated and bounded units, which could be charted in both space and time (hard constructionism). Instead, proponents of more mutable and fluid concepts of identity (soft constructionism), seek to identify the heterogeneity and complexity of identity (Jones 1997). This thesis takes care to avoid a traditional culture-history type chronicle of Esperance Nyungar people over time, and instead looks at the often imbricated layers and sometimes competing identities across a temporal expanse, while accepting that people maintain multiple different identities at the same time. The acceptance of multiple possibilities for how, why and when identity is expressed is more realistic of lived experience than trying to confine identity to bounded entities across time or space. This is important to understand for archaeological analysis because it is a reminder that all relationships between material culture and identity are mutable, contextual and multi-faceted.

The ethno-historical literature reviewed in Chapter 2 appears to suggest that concepts of identity and territory within the Esperance area during the 19th and 20th centuries were not clearly defined and were changing rapidly within relatively short periods of time. This would conform to expectations deriving from Esperance Nyungar knowledge today, who know the area as a
shared/contested zone of interaction. Fine-grained dating methods and a methodology focused on temporal sequences would be required to make any kind of advance on charting these shifting alliances over time, and even then the challenges of accuracy would be considerable. This is outside the scope of the current research and no attempt is made here to develop a detailed timeline, or even sequential account of shifting identity markers over time. Instead, this research seeks to identify visible markers of identity within the symbolic assemblages at the study sites, which are known to have been actively used right into the historical period after initial European settlement, to understand what these material signals may indicate in relation to the ongoing and ever shifting negotiations of identity and territory.

Esperance Nyungar identity has continued to be negotiated and re-negotiated through the historical period. In the post-Mabo period of Native Title legislation, identity and territory are more ‘fixed’, at least in theory, but as some scholars have argued (eg. Veth and McDonald 2004), this fixity, which is required through the legal use of exclusive possession in Native Title, presents a false picture of clarity, drawing ‘hard lines’ through ‘soft borders’, especially in interaction zones like the eastern and northern frontier of Esperance Nyungar country. Accordingly, this thesis seeks to identify shifting markers of identity along the frontier, without attempting to force them into tight chronological or spatial sequences.

4.5 IDENTITY, STYLE AND MATERIAL SIGNALLING

One way to connect identity and material culture is the concept of material signalling introduced by Wobst (1999). After Wobst (1977), this thesis analyses symbols through the application of information exchange theory, as it pertains to ‘style’ in the archaeological record. The notion of information exchange theory and stylistic variation is reviewed in detail below, but the basic
tenet is that when people produce material items they either consciously or unconsciously, imbue those items with elements of style, and that style may communicate information about the identity or group affiliation of the maker. Wobst (1999) subsequently used the term “material signalling” to refer to the act of communicating notions of identity through the production of style. The theoretical concept of material signalling has been selected for application in this thesis, because it can be readily applied to the archaeological record, and is well suited to assessments of symbolic assemblages, including rock art and stone arrangements.

The theory of style and information exchange in archaeology was originally advanced by Martin Wobst (1977), and has been subsequently critiqued and revised by a number of scholars, most notably Wiessner (1983, 1985, 1990), Sackett (1985, 1990), by Wobst himself (1999), and more recently, Conkey (2006). Wobst’s original 1977 paper was influential because it rejected traditional notions of style in archaeology, which maintained a dichotomy between style and functionalism. The dichotomy was based on the idea that functional elements of the material record were based on adaptive or practical realities, whereas stylistic elements were often random, or created in response to specific historical events. Wobst rejected this dichotomy with the simple argument that style has a function. He argued that the function of style is information exchange, and that style may be considered “that formal variability in material culture that can be related to the participation of artifacts in processes of information exchange” (Wobst 1977:321). Wobst argued that rather than being passive, style is in fact an active mechanism for communication, particularly with regard to group affiliation and individual notions of identity. As he later argued, style is “form conveying information” (Wobst 1999: 119). Wiessner (1983) built upon the work of Wobst and delineated between “emblemic style” and “assertive style”, arguing that emblemic style communicates conscious messages about group affiliation and identity; while assertive style communicates information about individual
identity (Wiessner 1983). Sackett critiqued Wiessner’s work, arguing that style is often isochrestic, which is to say that people may not intentionally express notions of style in their material culture, but instead it is a result of the traditions they have consciously and unconsciously learnt from their forebears, and the society of which they are a part (Sackett 1985). The fundamental difference therefore between Wiessner and Sackett, is that while Wiessner argues that style is actively engaged in the creation of material culture (emblemic and assertive style), Sackett argues that style can also be passive (isochrestic style). Wobst, for his part, does not consider style as passive, and in his later paper he hastens to clarify that he never intended for his work on style to suggest that group affiliation and identity are merely “reflected” in stylistic elements, or that style is a “material correlate” of identity and group affiliation. Instead he argues that material signalling through stylistic choices, is fundamental to how people conceive of their social world, and “that some important social attributes were not knowable without material signalling, and that many social attributes and even social units could not even exist without that same material signalling” (Wobst 1999: 120). Material signalling, for the purposes of this thesis may be defined as the stylistic choices people make when producing material culture, which is encoded in the form of the object/s, and communicates information about group affiliation and identity.

The debates about style in archaeology are ongoing and have thus far involved many different perspectives in the more than thirty years since Wobst’s influential paper in 1977. However, as Conkey has more recently affirmed, Wobst’s original notion of stylistic variation and information exchange has not altered, it has simply become more nuanced (Conkey 2006: 357). A further point, which Wobst emphasised in 1999, is that style is inherent in every element of material culture and while some elements may be more visible in terms of their stylistic signalling, style is none the less a part of all material culture (Wobst 1999: 122, 125). While
this statement is true in a philosophical sense, the reality for archaeology is that some elements of style are much easier to identify in the material record than others.

This thesis incorporates the original concept of style and information exchange proposed by Wobst, and applies it to the study of symbols, in the form of rock art and stone arrangements. Symbols in the material record are a good example of material signalling, because they have highly visible stylistic elements. As Wobst argues “style refers to aspects of form that ‘talk’ or ‘write’ and that are ‘listened to’ or ‘read’” (Wobst 1999: 120). Put another way, style refers to the aspects of form that communicate information (material signalling), including information about group affiliation and identity. It is argued here that this is the same function as symbols, and therefore this thesis conducts an analysis of symbols in the archaeological record, with the aim of identifying the aspects of form that communicate information (material signalling) about group affiliation and identity.

The context of the symbols at Marbaleerup and Belinup suggests that material signalling is likely to have been a prominent concern of people who created them, used them, maintained them and perhaps altered them, because of their position in a recognized cultural frontier. These two locales stand out because they contain the only known rock art and the two largest known stone arrangements in Esperance Nyungar country. Nyungar knowledge also highlights these locations as pivotal in interactions between Esperance Nyungars and their neighbours. The presence of distinctive symbols at these locations is in line with Wobst’s theoretical prediction, as follows:

If messages of group affiliation are interferences, designed to change that which preceded them, one would expect them to be particularly glaring where group affiliation is particularly contested and where people need to seriously counteract group fission (Wobst 1999: 128).
Rock art and stone arrangements are laden with symbols, and with stylistic elements, and as such, they are well suited to questions about material signalling related to group affiliations and identity. The challenge for this thesis is to understand more about how the material signalling of these assemblages may be understood, based on the study of their form. These methodological questions are addressed in Chapter 7 (with reference to stone arrangements) and Chapter 8 (with reference to rock art). Broadly, the approach looks at the form and distribution of symbols to understand where patterns may be identified in their distribution across Noongar and desert regions. In this way associations may be identified between certain kinds of symbols and different cultural blocs. This connects to identity because certain identities are regionally or locally embedded, while others transcend regional boundaries.

4.6 CHAPTER SUMMARY

This chapter provides a background to the three themes that form the theoretical foundation of this thesis: mobility, aggregation, and identity. Mobility is one of the aspects of past people’s behaviour this thesis aims to elucidate. Aggregation is used as a conceptual tool in relation to mobility. Identity, is the human element about which the research ultimately aims to learn more about. Specifically, the research aims to learn more about the historical construction of contemporary Esperance Nyungar identity. Identity is a deeply anthropological and sociological concept, interested in notions of how people conceive of themselves, both individually and collectively. When considering identity in relation to people in the past, deep challenges arise as to exactly how to interrogate such questions based on the material record. In this thesis, the means to interrogate questions of identity is approached through people’s connections and interactions with place; and their interactions with other people at particular places. This approach is based on the underlying assumption that Aboriginal identity is
intimately tied to territory and place and therefore some layers of identity are regionally embedded. The distribution of symbols therefore may be linked to regional or inter-regional identities. Through an assessment of symbols from neighbouring regions, the interactions of people at Marbaleerup and Belinup are considered within their broader spatial contexts at the regional scale (southern Western Australia, cross-cutting Noongar country and non-Noongar, Western Desert affiliated areas). These spatial questions are tied to the topic of mobility and the role of aggregation in regional patterns of movement. In this way, the theoretical frameworks of mobility and aggregation are used in conjunction with identity, to interrogate questions of past Esperance Nyungar identity, based on archaeological remains at Belinup and Marbaleerup. The next chapter looks at the community research partnership and knowledge exchange that underpins this research, addressing research question five.
5 TOWARDS SUSTAINABLE COMMUNITY HERITAGE MANAGEMENT AND THE ROLE OF ARCHAEOLOGY

5.1 CHAPTER INTRODUCTION

This chapter consists of a co-authored manuscript that was published in 2013 in the peer reviewed journal *Heritage and Society*. The text has not been altered from the original publication which means there are some discrepancies between this chapter and the rest of the thesis. The figure and sub-heading numbering systems have been changed from the published version to fit with the rest of this thesis. *Heritage and Society* is a USA based journal so requires the use of American English as opposed to Australian English, which is used throughout the rest of the document. Therefore, there is some discrepancy in spelling and grammar between this chapter and the rest of the thesis. The paper was written for an international audience so provides background to some concepts that people who have read chapters one to three will already be familiar with. Because the manuscript needed to be a stand-alone document, there is some information repeated here that has already been discussed in previous chapters. This is regrettable for readers of the entire thesis, but necessary. There are some other small discrepancies such as the use of the term ‘Wudjari’ in place of Esperance Nyungars, which represents the terminology that was being used at the time of publication but has since become outdated. Furthermore, there have been other changes since 2013, most notably the Gabbie Kylie Foundation is no longer operating under the Auspices of the National Trust of Australia (WA) as this chapter espouses. Despite the changes, the manuscript remains highly relevant to the research topic and is instrumental in outlining the community research partnership that is
fundamental to this research. Furthermore, the manuscript thoroughly addresses research question five, and on this basis is integral to the thesis.

As lead author on this manuscript, my contribution was to develop the main concepts of the paper and establish the theoretical basis for the research. I also conducted all the background research and wrote the literature review, as well as the majority of text in this paper.


5.2 INTRODUCTION

By protecting and respecting the spiritual foundations and restoring the land, we are reconnecting to, and healing, our tribal kinship systems, our families and our Law, our cultural features, places, and landscapes (Traditional Owner, Doc Reynolds).

Through formalizing a strategic vision, a core set of values, and a series of important partnerships within an operational structure manifest as the Gabbie Kylie Foundation (National Trust of Australia – Western Australia), the Esperance Wudjari Traditional Owners of southern Western Australia have embarked on a journey to manage heritage and land into the future, while upholding customary practices and protocols (Figure 8). The ultimate aim in the establishment of the Foundation was to re-establish the power structures within a heritage system that typically positions land managers, archaeologists or other heritage professionals at the center of heritage management, while traditional owners remain at the fringe of decisions and actions affecting their heritage and land (McNiven & Russell, 2005; Smith & Wobst, 2005; Hemming & Rigney, 2010). This paper reviews this program as a working model of Indigenous
community-based heritage management, whereby Traditional Owners are central to managing their heritage, with archaeology as a prominent component in achieving community-identified priorities in land and heritage management.

The broadest goal of the Gabbie Kylie Foundation is to develop a program where cultural and natural landscapes of the Esperance region are sustainably managed by Traditional Owners. This paper outlines how the Foundation was set up and the steps taken toward this goal, including the challenges that remain. It is presented as an account of the links between this program and the larger movement toward a more socially-responsible (and integrated) archaeology within the broader field of cultural heritage management. We also explore the practical, operational requirements and challenges faced when having the above-mentioned goal guiding all facets of community engagement, partnership building, research, project development, on-ground heritage management outcomes, and ongoing sustainability. This paper explores some of the reasons underpinning the success of the program as well as some of the challenges that remain. In so doing, we examine how the Gabbie Kylie Foundation (GKF)
and this community model can work toward sustainability, and how the lessons learned in this community model may be useful for other programs operating in ‘post-colonial’ contexts.

This paper is framed around the problem posed by Hemming and Rigney (2010) who, in writing from the perspective of the Ngarrindjeri Nation of South Australia, call for a restructuring of the power relations that underpin the post-colonial system of heritage management in Australia. They argue that understanding and acknowledging the historical construction of “contemporary colonizing relations of power” is critical in planning and implementing partnership programs between Indigenous nations, universities, heritage consultants, business, and governments; and that “long-term, Indigenous-driven, collaborative research projects and partnerships” are essential if improvements are to be achieved in Indigenous well-being (Hemming & Rigney, 2010: 94):

For disciplines such as archaeology, a driving force in current Aboriginal heritage management discourse and practices, this means a commitment to an engagement with Indigenous social, political, economic and research programs aimed at improved Indigenous well-being, nation building and cultural sustainability. Otherwise, the current boom in archaeological consultancies and associated university based teaching programs could be judged as a marker of the continuing colonizing tendencies of this discipline when viewed in the face of Indigenous disadvantage and community disintegration.

We see the GKF as a case study of how one community, the Wudjari people of Esperance, are approaching the issues raised by Hemming and Rigney and the Ngarrindjeri Nation in working towards re-establishing the structural dynamics of power within Indigenous cultural heritage management. The model employed in Esperance is based upon long-term, community-driven, collaborative research projects that uphold the cultural aspirations and responsibilities of the Traditional Owners. The Foundation provides a structure and entity through which the Traditional Owners may engage with universities, heritage consultants, business, and governments on their terms. While this case study is inherently local in focus and is based on
the particularities of this community, we argue that the approach employed by the GKF may have applicability for Indigenous communities in a range of different international contexts, and that some of the lessons learned to date in Esperance have global application for the field of Indigenous heritage management.

5.3 BACKGROUND CONTEXT

The Traditional Owners living in Esperance today are Wudjari people, a sub-group of the broader Nyungar cultural group of Southwestern Australia. Within the Wudjari people there are further cultural distinctions or sub-groups including the Nookgurring, Tjultjaraak and Bardok people. All of the Wudjari people, including the Bardok, Nookgurring and Tjultjaraak, identify as the Esperance Nyungars and are represented by the native title claim of the same name. Native title is the Indigenous land rights system in Australia that, through protracted legal processes that incorporate family history and genealogical research, identifies Indigenous family groups with ‘legitimate’ claims of cultural connection to specified areas of land.

The individuals belonging to these family groups are then vested with the authority to ‘speak for country.’ In the context of Aboriginal Australia the term ‘country’ refers to the tract of land that an individual or a group of Indigenous people are connected to through traditional ties and custodial responsibilities. A senior Wudjari Elder, Graham Tucker, explains this concept succinctly: “Even though we get called Traditional Owners, we don’t actually own the land; we are connected to it, and we have the responsibility to look after it” (Graham Tucker, 2011, personal communication). The Esperance Nyungars are comprised of six extended families that total just a few hundred individuals who collectively ‘speak for country’ in the Esperance region, an area encompassing almost 30,000 km² (National Native Title Tribunal 2012).
The Esperance Nyungars operate under a well-entrenched governance structure whereby each of the six families has a nominated senior representative, vested with the authority to represent that family in cultural matters. In the event that the nominated individual is not able to participate in a cultural activity, they nominate a proxy representative of the family in their absence. This system of representation underpins much of the operations of the GKF and allows us to work under a culturally defined governance structure. In this paper we regularly refer simply to the ‘Traditional Owners’ as if they were a single entity, when in fact we are really referring to a diverse and vibrant community of individuals who share a common cultural and genealogical lineage. In reality we are referring to the six nominated family representatives and their proxies, who collectively represent the broader Traditional Owner population and with whom the GKF works on a regular and ongoing basis.

The GKF was established late 2007 in response to the disillusionment of many Wudjari Traditional Owners with mainstream land and heritage management regimes in the region, from which they felt disengaged and disenfranchised. In response, the GKF adopts a holistic, community-based approach to land and heritage management based on customary practice and protocols. The GKF model evolved from a three-year project that involved a number of heritage conservation and management projects in the region (Guilfoyle et al. 2009a, b). In order to achieve Wudjari objectives, the Foundation integrates education and training programs with on-the-ground conservation works as part of two-way knowledge exchange and collaborative research partnerships. Field schools enable high school students, university students, and members of the broader community to undertake conservation projects, while engaging in meaningful interactions and cultural exchange with Wudjari people, and receiving instruction in archaeology, geography, restoration ecology, heritage conservation, and landscape
management. This is achieved through the direct engagement of Wudjari Elders, Indigenous work/training crews, and specialists and coordinators in the delivery of a range of projects identified by the community within an overall strategic plan. The field schools attract national and international students and heritage/cultural enthusiasts who pay to be a part of the field programs, gaining cultural and archaeological experience and investing their time and money into real projects. A component of this is to develop associated cultural tourism and economically sustainable opportunities that benefit the local Wudjari community.

The Foundation operates under the auspices of the National Trust of Australia (WA) who provide administrative and strategic support but do not engage directly in the day-to-day operations of the Foundation. This relieves the Foundation of the administrative burdens associated with operations, while providing autonomy to pursue the aspirations of the Traditional Owners and the Foundation. It also provides a level of financial accountability, which is invaluable to any project-based community organisation. Despite the mutual benefits of the auspice relationship between the National Trust and the Foundation, this is seen as a temporary measure to remain in place for as long as it is beneficial to the operations and aspirations of the Foundation. It is the vision of the GKF and the National Trust of Australia (WA) that the Foundation will eventually become completely independent of the Trust as a standalone organisation. While the structure and processes of the Foundation are of interest, the focus of this paper is the role of archaeology (theory and method) as a major component in the development and ongoing sustainability of the program.

5.4 AN INTEGRATED FRAMEWORK

The model and case studies presented in this paper operate within four related theoretical and methodological frameworks: (1) decolonized Indigenous archaeology (McNiven & Russell,
2005; Smith & Wobst, 2005); (2) applied archaeology (see Fairclough, 2006; Lozny, 2006); (3) community-based archaeology (Ross & Coghill, 2000; Clarke 2002; Greer et al. 2001; Greer, 2010); and (4) community based cultural heritage management (Mowaljarlai & Watchman 1989; McNiven 1994; Ferguson 1996; Anyon et al. 2000; Djerrkura 2000; Price & Nungarrayi-Price 2000; Aplin 2002; Sullivan et al. 2008; Perkin 2010; Pragnnell et al. 2010). While there are many crossovers in these four inter-related frameworks, they each contribute something distinctive toward an operational framework for the GKF, situating it within a broader Australian and international context (see Guilfoyle et al. 2010 for this model applied in a commercial archaeology context).

The concept of decolonizing Indigenous archaeology in Australia has been widely explored in literature of the past two decades (Allen 1988; Thomas 1994; Clarke 2002; Marshall 2002a, b; McNiven & Russell 2005; Smith & Wobst 2005; Hemming & Rigney 2010). Other scholars have explored the concept in other parts of the world, particularly Canada and the United States (Ferguson 1996; Nicholas & Andrews 1997; Nicholas 2000; Thomas 2000). We draw inspiration from McNiven and Russell (2005: 258) who explore models for community archaeology with the aim of constructing a decolonized archaeology:

For Australian archaeology, the goal is the creation of a community-based archaeology built around partnerships between Indigenous communities and archaeologists that employ mutually acceptable research agendas, work practices, and interpretive frameworks.

McNiven and Russell provide useful background to debates surrounding the decolonization of Australian archaeology. Their position fundamentally reflects that of Nicholas (2000) who, writing in the context of Canadian Indigenous archaeology, asserts:

We must accept [Indigenous peoples] as full partners in exploring the past and making it relevant to the present, not because it is the politically correct thing to do, but because it is the right thing to do (Nicholas, 2000: 132).
Further, McNiven and Russell (2005) explore the dichotomy between viewing Indigenous people as either “stakeholders” or “owners” in managing cultural heritage. They disagree with the stakeholder model, arguing that it has appeal among many archaeologists and people in the cultural heritage industry because it mitigates conflicts over how archaeological and cultural features/places are managed, but “under the guise of democratization of the management process” the issue of ownership is completely avoided, and “Indigenous peoples are reduced to mere participants in the management of Indigenous sites” (McNiven & Russell, 2005: 236). As an alternative they propose a “host-guest” or a partnership model; the key premise of these models being a fundamental restructuring of power within archaeology and heritage management. This restructure seeks to empower Indigenous communities as the leading partner in heritage management, “not as equal stakeholders, but as the owners and controllers of their heritage” (McNiven & Russell, 2005: 236). Collaborative arrangements should also be formalized through clear guidelines that protect and secure the expected relationships and control of information, such as a legal contract protecting Indigenous Intellectual Property via the Breach of Confidence clause (see Guilfoyle et al. 2009a, b).

Building on the theoretical underpinnings of decolonized archaeology, McNiven and Russell (2005) address some key issues of putting such a model into practice. One point that strikes us as particularly important and underpins the Gabbie Kylie approach, is the importance of adopting models that are flexible and locally specific. That is, successful models for implementing Indigenous archaeology need to be developed and adapted at the local community level: what works for one community may not work for another (McNiven & Russell, 2005: 242). While acknowledging the importance of the ‘local’ and ‘community specific’ models, we also agree with the suggestions of Hemming and Rigney (2010: 101) who emphasize the importance of both local and global understandings of the “new formations of
colonialism” and collaborative research practices in “local, regional, national and international contexts”. On this basis we strive to maintain both a local and global perspective for the GKF.

Building on the decolonized Indigenous archaeology model, we apply archaeological practices to projects and actions that seek to sustainably manage heritage and environment now and into the future, with direct and indirect benefits to Custodian communities. In so doing, we operate under the principles of applied archaeology (Lozny, 2006; Little 2007). Lozny (2006: 250) articulates the principles of applied archaeology as the fieldwork and interests of practicing archaeologists that “focus on preservation oriented investigations of cultural landscapes” and offer a “creative fusion of fieldwork, theory”, and, most importantly, a “genuine contribution to public welfare”. In a working model of applied archaeology, we see the projects as secondary to the process; the projects and the process must ultimately amount to some tangible outcomes greater than archaeological enquiry itself. In particular, there must be broader outcomes for Custodian communities and for the landscapes of their heritage.

In this context we draw on the Little and Shackel volume Archaeology as a Tool for Civic Engagement (2007) in which the authors are interested in creating “a useable, broadly conceived past that is civically engaging, that calls a citizenry to participate in debates and decisions about preservation and development”, and importantly “to appreciate the worthiness of all people’s histories and to become aware of historical roots and present-day manifestations of contemporary social justice issues” (Little, 2007: 2) As Little articulates “a socially useful heritage can stimulate and empower both local community members and visitors to make historically informed judgments about heritage and the ways that we use it in the present” (Little, 2007: 2).
The GKF field schools are themselves rooted in broader theoretical frameworks aimed at holistic approaches to teaching archaeology and heritage management, and teaching and promoting the tenets of community-based approaches (Rossen, 2008: 112; Baxter, 2009):

Within collaborative indigenous archaeology, this perspective requires that archaeologists consider Indigenous perspectives at many times other than during the final interpretation or at the moment of doing ‘public outreach’ to a descendant community. These perspectives should be acknowledged and often embedded at all stages of the archaeological process, from project formulation to field methods, from excavation recovery to laboratory analysis, from interpretation to writing. In particular, these incorporations should be fundamental elements of archaeological field schools that focus on Indigenous pasts, for in these complex intersections of teaching and research lies real potential to change the discipline (Silliman, 2008: 3–4).

Building on models of applied archaeology, we draw on the field of community-based archaeology as our third theoretical framework. While closely related to the fourth framework (community-based cultural heritage management), community-based archaeology makes some important contributions to our approach. In particular Greer et al. (2001) draw an important distinction between “consultative” archaeology and “community-based” archaeology. They characterize consultative archaeology as reactive because it only provides a community the chance to react to an already set research agenda; where community-based archaeology is interactive because the research is defined/instructed by “elements of contemporary community identity” (p. 267–8). This requires a level of genuine interaction between researchers and custodian communities before and during a research project so that researchers may develop a depth of knowledge and understanding about the community in order to undertake community-based research. The issue of contemporary identity is central to the approach defined by Greer et al. (2001: 268) where they suggest that not only should community-based research be informed by identity, but it may also inform identity: “Community-based research is aimed at empowering communities by contributing to the construction of local identity” (see also Greer, 1995: 231).
Our final theoretical framework is that of community-based cultural heritage management and, more specifically, Indigenous community-based cultural heritage management (Mowaljarlai & Watchman, 1989; McNiven, 1994; Ferguson, 1996; Anyon et al. 2000; Djerrkura, 2000; Price & Nungarrayi-Price, 2000; Aplin, 2002; Sullivan et al. 2008; Greer, 2010; Hemming & Rigney, 2010; Perkin, 2010; Prangnell et al. 2010). At the core of community cultural heritage management are the issues of ownership and control of cultural heritage, and the prerogative of Custodians to have meaningful engagement and, most importantly, real power in decisions and actions affecting their heritage. In a seminal paper published in Australian Archaeology in 1983, Rosalind Langford sets out the issues from the perspective of the Tasmanian Aboriginal Community:

The issue is control... we say that it is our past, our culture and heritage, and forms part of our present life. As such it is ours to control and it is ours to share on our own terms (Langford, 1983: 2).

This poignant statement was at the heart of Langford’s paper, which may be considered a pioneering work in the development of the modern fields of community-based archaeology and cultural heritage management in Australia. Indeed in the years following the publication of Langford’s paper, much scholarly work in archaeology aimed to address questions relating to this theme, particularly in Australia. McBryde (1985) explores concepts of ownership and control of heritage explicitly in the introductory text to her own edited volume Who Owns the Past? Papers from the Annual Symposium of the Australian Academy of the Humanities. In her introduction to the topic she cites Langford’s paper as a key work. Other contributors in the volume also make pertinent observations to this debate, particularly Trigger (1985) in The Past as Power: Anthropology and the North American Indian, and Sullivan (1985), addressing questions of ‘who owns the past?’ within the Australian context, in The Custodianship of Aboriginal Sites in Southeastern Australia. This volume provided a forum for a questioning of the politics of ownership and control in heritage and archaeology, and may be considered an
important contribution to the subsequent movement within Australia to decolonize Indigenous archaeology and heritage management.

Many other Aboriginal Australians have made contributions to debates and discussion of issues surrounding the effective management of Indigenous heritage in Australia. Two such papers are of particular pertinence to the GKF as they were presented at the “National Trust into the New Millennium” Conference in Alice Springs, August 2000. As the GKF works under the auspices of the National Trust of Australia (WA), these papers bear direct relevance:

One thing is certain. Involvement of local Aboriginal people in the preservation of heritage sites of traditional or recent historical significance is essential, especially where public access is planned. Sensitivity to Aboriginal relationships to such places and real respect for Aboriginal interpretations of their significance will result in a deeper appreciation from the wider community of the indigenous worldview and of the profoundly ancient presence of the indigenous culture as well as of our shared recent history (Price & Nungarrayi-Price, 2000: 92).

In the same volume, Gatjil Djerrkura makes a passionate case for the need to have mechanisms to protect the “uniqueness” of Aboriginal culture within the broader Australian culture, and that this must come from both legislative action, and maintaining the “integrity” of Indigenous cultural heritage in ensuring that it benefits Custodians:

Indigenous Cultural Heritage offers benefits to the entire nation but it needs nurturing and protection for it to flourish and maintain its integrity. We need to ensure that the social and economic benefits that flow from Indigenous knowledge and skills are returned to our people (Djerrkura, 2000: 84).

Much has been written about the theoretical frameworks that underpin Indigenous archaeology and cultural heritage management in Australia. However, the successful application of these theorems still presents us with many challenges, as well as opportunities, as summarized by Sullivan et al. (2008: 38):

Aboriginal communities still face significant difficulties in caring for their heritage or indeed asserting their custodianship of it. There has been a growth of heritage management assistance offered by cultural heritage managers and involvement with the community by archaeologists pursuing their research. However, increasing contact has
demonstrated clearly that partnerships between Aboriginal people and archaeologists or heritage managers has many practical issues and problems even with the best will on both sides.

The GKF acknowledges and embraces the challenges and issues outlined in this section. In the next section we present some examples of our projects and fieldwork before discussing the challenges faced in adopting our model of community-based, applied archaeology, and heritage management.

5.5 PROJECTS

The previous section offered a discussion of four interrelated theoretical frameworks that underpin our approach; this section is about what we do, in a brief discussion of four (of the many) Gabbie Kylie projects that demonstrate the practical application of the theoretical constructs discussed above.

*The Marbaleerup (Mount Ridley) Cultural Landscape* was identified by Traditional Owners as one of the most significant cultural places in the region requiring on-ground conservation and research actions (Figure 8). This area features a massive granite dome, a distinctive feature in the flat open expanse of the Esperance hinterland. This cultural area was used intensively by past groups, evident in the extensive distribution of stone artifacts, range of other archaeological features, oral histories, and the rich and varied collection of painted (ochre) rock art motifs. The GKF Mount Ridley Rock Art Restoration Project was aimed at community capacity building, heritage management, and sustainability practices based on the preservation of a highly significant natural and cultural landscape.
The main management requirements at Marbaleerup have been implemented at the rock art sites, aimed at assessing and addressing the impacts of water erosion (through the numerous cracks and fissures of the granite boulders), assessing the impacts of dust and other biological build-up, removing graffiti, and controlling visitor access through the construction of a walk trail. All of these actions were completed by specialists engaged by the Foundation, under the direction of the Traditional Owners. The area is now under a joint management arrangement between the Traditional Owner group and the local government shire.

Additionally, these initial management actions, completed in 2008, form part of a broader long-term research and conservation program that is ongoing. As part of this program Traditional Owners have subsequently identified a number of previously unknown rock art features. A research strategy into these new motifs and other features of this cultural landscape form part of a continuing project that seeks to understand more about the symbolic archaeological record of Wudjari cultural identity (Mitchell PhD Research–hosted by GKF and the Australian National University). In this way, a partnership that combines research and conservation practices under the guidance of Traditional Owners serves as a way for Gabbie Kylie to work towards sustainable management of this cultural landscape.

*The Recherche Archipelago*, located off the coast of Esperance, is comprised of more than 100 islands (Figure 8). These islands were inhabited during the last Ice Age, when they were still connected to the continental mainland. With rising sea levels, drifting sands swept across the hundreds of granite domes and outcrops that characterize the Archipelago today, preceding the slow inundation of the ancient coastal plain and creating the present day coastline and spectacular Archipelago. The Foundation received a grant, via the Australian Government’s Indigenous Heritage Program, to implement a community program of ecological and
archaeological assessment across the Archipelago. The project also involved specialists from the Western Australian Museum Department of Maritime History, Curtin University Geology Department, South Coast Natural Resource Management, and a number of national and international students.

The team discovered archaeological sites across several islands and the data is being used to document patterns of human movement and settlements across this ancient landscape, and inform on the human responses to dramatic climate and environmental change. The Traditional Owners present a unique perspective in understanding many aspects of the cultural systems of their ancestors’ past, as well as detailed knowledge about many different sites and features across the region, and see management as a custodial obligation:

It’s a huge responsibility to protect all this for our descendants (Traditional Owner Gail Yorkshire-Selby, speaking on Middle Island, Recherche Archipelago, February 2012).

The team is working with geologists to examine aspects of these dynamic human-environmental interactions. This includes modelling patterns of sea level rise and flooding of the coastal plain and formation of the present day coastline, to be used for public education and eco-tourism. Through this project, the GKF and Traditional Owners hosted a GIS modelling project (via University of Leicester Masters student) that developed a model of marine transgression that now serves the basis for an ongoing research program and funding a broader conservation and management initiative of GKF. This project has resulted in practical conservation projects coordinated by GKF and partners to control invasive weeds and feral animals from specific islands, further empowering the community to manage and deliver heritage conservation projects. This leadership has now resulted in several researchers partnering with the Foundation, in order to undertake wildlife and environmental management projects, being important community priorities.
For another project, the Foundation was contracted by the Department of Environment and Conservation to carry out a heritage assessment and reconstruction of a trail that was damaged by wildfires in Cape Arid National Park, east of Esperance (Figure 8). *The Belinup walk-trail and cultural assessment project* formed a component of ongoing research and management initiatives in and around Belinup in the Cape Arid National Park. The assessment work formed the basis of an integrated management plan providing information for (1) protection of the fragile coastal environment (both natural and cultural heritage), (2) generating greater awareness of Traditional culture through interpretive signage and displays within the general area, and (3) providing a resource for ongoing monitoring of the area and community driven management. An approach put forward by the Foundation was to undertake these works in the context of a landscape mapping project and archaeology field school to secure greater heritage protection and as a way to support the community in carrying out on-ground NRM works such as weed/erosion control.

Archaeological surface surveys and test excavations were carried out to examine the potential archaeological deposits and complement the surface assessment, and to understand the cultural and geo-morphological history of this area. The team documented a history of occupation in this area extending to at least 5500 years before present. With a team of Traditional Owners, archaeologists, and field school participants, a survey crew conducted a detailed heritage survey of the trail while cutting back the thick overgrown vegetation and marking the exact trail route. The original trail was re-routed in some parts to avoid significant or fragile cultural/archaeological features.

Mapping of cultural features included developing concepts and content for interpretive and educational displays based on the cultural and archaeological material that was identified along
the trail route, as well as general insights into the cultural heritage of this region. As part of the survey, stone artifacts, bush tucker (traditional food resources obtained from native flora and fauna), and other features such as lizard traps were recorded. Additionally, aspects of the associated cultural stories (spiritual and secular) that the Traditional Owners wished to share were recorded for interpretive and educational material.

This project was an important turning point for GKF because it meant the engagement of Traditional Owners and the team on a fee-for-service basis and commissioned by a State Government department responsible for managing large tracts of land in the region to undertake a land management project in a national park. We see this as a significant shift in the power structures that underpin land management in the region, which previously had not engaged Traditional Owners on a project delivery basis:

The Department of Environment and Conservation sees such a project undertaking not only valuable to the Aboriginal Custodians of this area in gaining knowledge about their past history but also in contributing to ensuring that the long term management issues and decisions undertaken by DEC are done so in a harmonious and culturally accepted manner (Klaus Tiedemann, 2009, personal communication)

This project has been the catalyst for GKF and DEC working together on managing and developing heritage trails across the wider region.

This section demonstrated the cumulative development of projects and integrated research agendas with community-based aspirations of land and heritage management. One measure of the success of this development of GKF is seen in a Federal Government Grant for three years to develop an Indigenous Museum Display in the Esperance Museum and corporate funding over three years to support the coordination and further development of the programs.
5.6 SUCCESS AND ONGOING CHALLENGES

The previous section looked at what we do; this section offers critical reflection of why we do it and how we could do it better, under several main themes that serve to identify further challenges ahead for embedding a truly integrated, sustainable model.

Governance

An ongoing challenge is to maintain appropriate representation and governance. This is critical to the effectiveness of Gabbie Kylie, and, as such, we need to continually reflect on our governance structure and ensure that it is functioning as effectively as possible. This is based on the need to balance the various objectives and requirements of the various components: administrative, partners, research, funding objectives, strategic plan, and community aspirations. Broadly, GKF operates as a committee under the auspices of the National Trust of Australia (WA) and as such is subject to the broader governance structure of the Trust.

At the Foundation level, Gabbie Kylie is governed by its own board comprising Indigenous community members. A separate cultural governance structure operates for the Traditional Owners (six-family governance structure, discussed above) based on cultural protocols and the native title system of representation. While there are Traditional Owners on the Gabbie Kylie Board, it does not function based on the six-family governance structure. The Gabbie Kylie Board is responsible for giving strategic direction to the Foundation. Cultural decisions come under a separate governance structure. To date the Gabbie Kylie board structure has been effective because it is limited in numbers (five people) and scope (operating with only two meetings per year). Thus, it has been simple to administer, and the board has given some strategic direction but largely let the coordinators offer most of the direction. As the program develops, there is some pressure to expand the structure of the board and seek broader
representation while expanding the board’s involvement in the general operations of the Foundation, without compromising the dual administrative and cultural governance structure.

Relationships and trust

While we have a model of governance and engagement under which we operate, it is the relationships that are the real basis of the GKF. Working relationships built on trust and mutual respect between Gabbie Kylie personnel and Esperance Traditional Owners form the basis of all our operations and of the success of the Foundation thus far. Doc Reynolds, who is a coordinator for all Gabbie Kylie operations, is a Traditional Owner himself. He assumes the role of cultural coordinator and he manages the integration of Gabbie Kylie operations with a broadly represented Traditional Owner community under the six-family governance system. While we see the relationships among personnel and the Traditional Owners as a great asset and as vitally important for the Foundation, we must also question the sustainability of a model and structure that relies so heavily on individual relationships. In developing our model further we need to work toward a situation in which these kinds of strong relationships are embedded within the Foundation structure, to allow for individuals who may come and go over time. This is part of succession planning for the Foundation. In particular we need to look toward mentoring individuals within the Wudjari community to assist with the important cultural coordination and liaison role, currently the sole responsibility of Doc Reynolds.

Commercial operations

We see commercial operations as a key to long-term success and sustainability. In situations where cultural heritage assessments are required in land management activities, the Gabbie Kylie model can provide a commercially viable solution. As service providers, operational community groups such as GKF can provide solutions for land managers aiming to better
integrate cultural heritage and Traditional Owner engagement into their operations. While the Foundation has been successful in delivering commercial heritage assessments, the full market potential of this component of the Foundation has not yet been adequately exploited and we have identified this as a key area of development in working toward decreased reliance on grant funding. The overall aim is secure long-term employment of Wudjari people within the GKF structure, as an alternative to mainstream employment and training avenues.

The Foundation has successfully implemented a number of large heritage management projects embedded within an effective community model, utilizing archaeology as a tool for this process. In this sense we believe we are working toward best practice delivery models for heritage management. However, if we are to better serve this goal and elevate Gabbie Kylie toward best practice models, we need to develop strategies to stop working project-to-project and move toward resourcing the Wudjari community to manage heritage and land on a regular and ongoing basis, under the direction of a holistic and practical strategic plan document and with an effective structure for delivery. We look toward the Ngarrindjeri Nation as a model to learn from in this regard: in particular, the Ngarrindjeri Ruwe Plan as a holistic and well-focused strategic document, and the Ngarrindjeri Regional Authority as an example of an effective structure for delivery (see Hemming et al. 2007; Hemming & Rigney, 2010).

Public outreach and education

On the one hand, we can be proud that through partnerships, project activities, press releases, conference presentations, field schools, and other means, we have increased public knowledge, awareness, and understanding of Wudjari heritage in tangible and intangible ways, and we have increased the commitment of some land managers to work toward better management of these values. However, there is still a huge lack of awareness and understanding about Indigenous
heritage in Esperance, ranging from well-intentioned ignorance to some very negative, misinformed, and genuinely malicious perspectives. While we are not so naïve as to think we will change everyone’s perspective, we feel the leadership of Gabbie Kylie to date has not been successful in reaching a broad enough audience of general public in Esperance to raise awareness and understanding of Wudjari culture and heritage. As an organisation we need to look at how we can reach a wider local and national audience in raising awareness. While we have made some progress in increasing the commitment of land managers and decision makers we still have much work to do in this area and face many hurdles. As an organisation we need to reflect on where our challenges lie in this area and what are our strategies to overcoming these challenges, particularly with some key decision-makers and land managers, including local government and state government agencies.

**Wellbeing**

A core aim of the GKF is actively improving Indigenous well-being within the Esperance community through our heritage and cultural programs. We argue that empowerment of Wudjari people in the active management of cultural heritage results in tangible and intangible benefits to Indigenous wellness. Anecdotally we have been assured by some Wudjari people that there are wellness benefits for the community beyond the immediate conservation and research outcomes. However, at present we have no method of measuring or assessing these benefits or understanding how and why engagement in land and heritage management is beneficial to Wudjari people. Therefore, we cannot address the question of how we can improve our model to foster greater well-being. This presents opportunities for important social research to be undertaken in Esperance into how we measure and assess the well-being outcomes associated with our program, in order to improve upon our approach. Currently the GKF is hosting another MA-level researcher (with the University of Western Australia) to explore such
questions as these: How can we expand our programs to engage more Wudjari people as well as other members of the Esperance Indigenous community in working towards improved Indigenous well-being in Esperance? How can we use social research and other fields of research to build upon the successful and ever evolving model of community-based archaeology that underpins the GKF?

**Sustainability**

Now that GKF is an established program with a solid organisational structure and successful project history, it is time for Gabbie Kylie to work toward sustainability. There is much work to be done to develop the economic viability of these programs as part of Gabbie Kylie’s drive for economic sustainability and decreased reliance on grant funding. We have developed self-generating income streams, but we are yet to realize the full economic potential of these income streams and we have not yet achieved a balance of revenue sources and are still far too reliant on grant funding and corporate sponsorship. While the field school model has proved successful in practice with the Wudjari community and field school participants offered positive responses, we have not been able to get consistent numbers of registering participants to achieve a balance of revenue through cultural and educational tourism. Likewise with fee-for-service heritage jobs, we have been successful in establishing this as an income stream but we have not realized its potential to date. We have now embarked on a process to develop a detailed business and marketing plan to work towards greater economic sustainability for the Foundation. It remains a work in progress.
5.7 DISCUSSION

We have done some really excellent jobs and we create training and employment opportunities and we are getting our people out here doing something that is going to be around for a long, long time and they will be able to say ‘I was a part of that’, to make them stand up and be proud, saying ‘I was there, I did that and I looked after my bit of Country’. At least being out here (on Country) and passing on that information is critical to the preservation of land management and Indigenous land management regimes in that evolving manner (Traditional Owner, Doc Reynolds 2009).

This paper explores the GKF as a case study in Indigenous community-based heritage management, emphasizing the model and structure employed by the Foundation in re-establishing ‘post colonial’ power relations in the management of Wudjari heritage in Western Australia. This discussion focuses on the role of archaeology and anthropology as a primary tool in the operations of the Foundation, beyond being the basis of most of the associated research agendas. Archaeology presents a versatile and engaging tool in the process of community-based heritage management, and through a common focus on tangible elements of cultural heritage, provides a medium for integrating with other research, management, and cultural perspectives/agendas.

A sense of exploring place is ultimately embedded within archaeological fieldwork and this becomes enriched in community-based archaeology because exploring place is integrated with cultural maintenance of place in the interaction of Custodians with cultural landscapes. In this way, archaeology is well suited to a community-based model as a prominent tool for heritage management. This integrated approach provides for an archaeological program that is well engaged in broader concepts of land, culture, and heritage, while empowering the Traditional Owner community in directing and controlling the pathway for heritage assessment and protection, and ultimately for preserving segments of the threatened cultural landscape, while developing the field of archaeology in more relevant ways for community. This process is
dynamic and ever evolving and remains an important work in progress within the Gabbie Kylie approach.

The strength of the Gabbie Kylie model is the ability to provide a conduit for the inter-linking or reciprocal agendas of Traditional Owners and land managers. The Gabbie Kylie model negotiates the dynamics of community with those of agencies and other stakeholders and land managers, providing a platform for effective project implementation. Community is inherently dynamic and is often somewhat at odds with the operations of agencies. The Traditional Owner community, while wanting to be involved in mainstream land management as well as managing cultural heritage, often feels alienated or disengaged by mainstream management regimes. Land managers in Australia now recognize the importance of Indigenous culture and heritage as an inherent part of successfully managing natural resources. However, agencies and land managers of all kinds consistently find it challenging to integrate the dynamics of Traditional Owner communities into their operations.

The Gabbie Kylie model provides a conduit to negotiate these dynamics through a flexible, action oriented approach that affords Traditional Owners a means for engagement based on flexibility and independence while working directly with agencies, stakeholders and partners. For agencies and stakeholders, the GKF provides a means to engage the Traditional Owner community directly as a partner in projects and general operations, without some of the challenges associated with integrating community dynamics with agency policies and procedures. That is, through a conduit of the GKF, agencies or land managers can outsource their community consultation and engagement practices directly to the community itself, investing in a community initiative working toward mutually beneficial goals of conservation, management and research.
5.8 CONCLUSION

The GKF provides a case study of a partnership model, developed and implemented locally in the Esperance region that seeks to embrace the critical reflections of decolonized Indigenous archaeology, ensuring control and ownership of heritage is the prerogative of Traditional Owners. The fundamental tenet of this model is that it places Custodians at the centre of heritage management in the region, with independence to work under traditional customs, practices and protocols, at the same time as being integrated and empowered in mainstream land management regimes. This is highly significant because it re-establishes power structures that have effectively kept Indigenous people at the fringes of heritage management in Australia. Where previously, heritage consultants or agencies have been central to heritage management regimes, this model ensures that heritage professionals, agencies and land managers operate around the Traditional Owners as the central link for heritage management.

If we are to uphold this vision, in which sustainability is fundamental, we need to continually improve and refine our model and structure toward economic and organisational sustainability. This requires forward thinking and future planning, as well as critical reflection. There is much work to do in upholding the GKF’s commitment “to an engagement with Indigenous social, political, economic and research programs aimed at improved Indigenous well-being, nation building and cultural sustainability” (Hemming & Rigney, 2010). If the Gabbie Kylie model of community-based heritage management is to be effective in utilizing archaeology as a prominent tool in working toward our stated vision of the “cultural and natural landscapes of Esperance region being sustainably managed by Traditional Owners”; then we need to be at once self-reflective, as well as outwardly engaged with other Indigenous communities and the

145
academic community, to continue learning and improving upon our model for Esperance. While our journey is locally focused it has broader relevance for the discipline of archaeology in its pursuit of greater relevance for Indigenous custodian communities, and for heritage managers and Custodian communities who are seeking more from archaeology as a genuine partner in community-based cultural heritage management.

5.9 CHAPTER SUMMARY

The above published manuscript articulates the structure and process for the research to take place as part of a working model of decolonized Indigenous archaeology. The next chapter moves into conducting the archaeological research component and presents lithic analysis at the study sites. The next chapter addresses research questions one, two and three.
6 LITHIC ANALYSIS

6.1 CHAPTER INTRODUCTION

This chapter presents the theory, methods, results and interpretation of lithic analysis at Belinup and Marbaleerup, addressing research questions one, two and three. The analysis investigates how the study sites operated within regional mobility strategies, and on a more local scale, how the organisation of technology and intra-site spatial organisation may or may not support the hypothesis that these places functioned as aggregation locales.

The following sections discuss the theory and methodology underpinning the analysis, before a specific discussion of methods and limitations both of the approach and the available data. Belinup and Marbaleerup are then each assessed separately as two distinct site-complexes, both comprising a series of activity areas. Finally, the conclusions section brings the results together to present a detailed response to the three research questions and contributes to an understanding of how residential and logistical mobility strategies were used in tandem within past Esperance Nyungar settlement, as part of a system of seasonal movement influenced by a combination of economic and social drivers.

6.2 LITHIC TECHNOLOGY AND MOBILITY

Mobility, the way people move within and utilise a landscape, usually in highly structured ways, is fundamental to hunter-gather societies and economies, and forms the basis of settlement patterns (Kelly 1983, 2013). Archaeologists recognize that settlement patterns and mobility are critical components in understanding variation in the archaeological record associated with
hunter-gatherer societies (Binford 1980; Kelly 1992). Here, a model for undertaking technological analysis of lithic assemblages is applied, based on the concept of technological provisioning (Kuhn 1995) as it relates to mobility (Clarkson 2006; Law 2005; Mackay 2005). The approach seeks to measure/understand *assemblage diversity*, as it relates to mobility (Andrefsky 2005; Price 1978; Shott 1986). Statistical analysis is applied to a series of flake and core measurements and attribute observations commonly used in field lithic analysis (Holdaway and Stern 2004:107-211), providing a quantitative basis for understanding more about how a range of discrete lithic assemblages demonstrate different technological signatures. This analysis is done by making a series of informed predictions about how specific places were used, and then testing those predictions against the organisation of lithic technology.

The predictions are based around the hypothesis that Belinup and Marbaleerup both functioned as important aggregation locales within local and regional mobility systems during the late-Holocene, but in different ways. The ethnographic interpretation for each place, combined with a picture drawn from the physical surrounds, available resources, and archaeological materials, forms a basis for predictions about how that place was used, including the delineation of different activity areas within the site, or site complex. The aim of the analysis is to test these predictions and use the results to understand more about how these places functioned within past mobility and land-use systems.

### 6.2.1 Mobility, Provisioning Strategies and Technological Organisation

The three theoretical concepts underpinning this methodology are *mobility, provisioning strategies* and *technological organisation*. Mobility is the human behaviour that the methodology is devised to identify; technological organisation is a framework for lithic analysis.
that can be used to help understand the behavioural correlates of mobility in the archaeological record; and provisioning is a concept that helps to connect the two. In order to utilize the conceptual framework of provisioning, a description is provided on how it relates to mobility (the question), and then how it links to the organisation of lithic technology (the data). The approach is heavily influenced by the work of Graf (2010), who succinctly summarizes the background to these concepts:

One way to tie lithic artifacts to human foraging and land-use strategies is to reconstruct how hunter–gatherers organized their lithic technologies (Kuhn, 1995; Nelson, 1991). The concept of technological organisation was developed to understand the wide array of potential behaviors represented in the lithic record (Binford 1979; Nelson 1991; Shott 1986; Torrence 1983), and technological organisation studies help to define forager provisioning strategies by reconstructing toolmaking trajectories from toolstone acquisition through final artefact discard (Nelson 1991) (Graf 2010: 213).

A simple visual representation of how these three concepts fit together is presented in Figure 9, highlighting the central role of provisioning as a linking concept between mobility and technological organisation. A more thorough consideration of how that may be practically applied is discussed below.

The next step is to consider how residential and logistical mobility strategies relate to the organisation of technology (for discussion on residential and logistical mobility see section 4.2). A commonly applied concept for understanding the organisation of lithic technology that can yield information about mobility patterns, is technological provisioning strategies, originally
developed by Kuhn (1995), who defines provisioning as the “depth of planning in artifact production, transport, maintenance, and the strategies by which potential needs are met” (1995:22). Kuhn conceptualizes hunter-gatherer provisioning as consisting of two fundamental strategies – *provisioning individuals* and *provisioning places*. The basic tenets of these strategies are:

- *provisioning individuals* with useful items (tools) that they require to undertake tasks as the need arises, or
- *provisioning places* with the necessary potential to produce tools, as they are required.

These strategies may be conceptualised as two ends of a spectrum with the “provisioning of potential utility at one end and the provisioning of immediate utility at the other” (Mackay 2005:97). Tool kits comprise various combinations of these two utilities, potential and immediate, and as such, they are not mutually exclusive (Mackay 2005: 97). The two different provisioning strategies proposed by Kuhn have value for the study of mobility in the archaeological record because they provide a conceptual tool to help identify and distinguish between technologies suitable for *individual* movement, and for *group* movement. This is challenging because lithic analysis is based on aggregates of behaviour so while it is not possible to say that a certain artefact was used by an individual for long range travel, it may be possible to say that the technological signature of a particular assemblage is suitable for provisioning individuals for long range travel. Likewise, provisioning places with suitable stone may be interpreted as reflecting regular or prolonged use of that place by a group/groups of people, and thus providing a basis to interpret group mobility. By extension, provisioning strategies can be associated with logistical and residential mobility. Following the same two examples, the provisioning of individuals for long range travel may be interpreted as reflecting
residential mobility, although the possibility of long range logistical forays must also be considered a possible reason for equipping individuals for long range travel, especially when availability of fresh water is scarce or patchy (Mackay 2009: 101-102). Provisioning of places may be interpreted in various ways depending upon the technological signature of the assemblage, on other archaeological features, and on the availability of key resources (especially water).

Provisioning of individuals may be considered an appropriate strategy for situations of high residential mobility, where contingencies need to be planned for some time in advance, as opportunities for re-provisioning of the tool-kit may be unpredictable or scarce, and individuals will require immediate utility to undertake tasks as the need arises (Clarkson 2006). Clarkson characterises tool-kits designed for individual provisioning as “portable, versatile, flexible, maintainable, and reliable”, citing examples of such tools from the Australian context as points, tulas, backed artefacts, burrens and other “heavily retouched standardised forms” (Clarkson 2006:178). Conversely, he suggests provisioning of places may represent a suitable strategy for situations where the resource structure is predictable, and mobility is low (Clarkson 2006:179). Place provisioning would likely produce assemblages that exhibit signs of raw material provisioning, such as large cores, large flakes and un-modified non-local material (Parry and Kelly 1987), greater diversity of tool forms, task-specific items, and less easily transported items (such as grindstones, or large nodules of raw material/cores). It should be noted thatlogistically-organised hunter-gatherer groups also provision individuals in the context of “gearing up” for specialized tasks (Binford 1979; Graf 2010:214). A range of contextual variables must also be considered, most notably raw material availability and distribution (Andrefsky 1994; Bamforth 1991), as well as the land-use context of the assemblages, which may incorporate both ecological and social considerations.
With the concept of provisioning and its relationship to mobility in mind, how to approach the question of technological organisation? Graf (2010) provides a concise synthesis. Table 2 (Graf 2010: 214) interprets the relationship between provisioning strategies, technological organisation and assemblage diversity. On the whole, this a useful way to conceptualize the relationship, except for the idea of “no toolstone selection” in the case of provisioning places which seems somewhat ill considered (Parry and Kelly 1987). A better way to think of it is that more careful toolstone selection is likely to be employed when provisioning individuals with reliable, reusable tools for travel. Graf’s explanation of the table is provided here, with the table below (Table 2):

…assemblages that resulted from provisioning individuals with planned technologies should amass at different rates and degrees than assemblages that resulted from provisioning place with expedient technologies. Because logistically organized systems have a wide range of site types (i.e., residential camps, logistical camps, and extraction sites), artifact diversity within each assemblage (i.e., intra-assemblage variability) should be low, reflecting redundancy of tasks performed at special sites. In contrast, because everyone moves in residentially organized systems, extraction, processing, and other day-to-day tasks are undertaken at residences, and therefore, intra-assemblage variability should be high, reflecting multiple tasks performed at each site. Because logistical systems have many more site types, between-site or inter-assemblage variability should be high. In contrast, due to the predominance of residential camps and few other site types in residential systems, inter-assemblage variability should be quite low (Binford, 1980; Kelly, 1995) (Graf 2010:214-215).

<table>
<thead>
<tr>
<th>TECHNOLOGICAL ACTIVITIES AND ORGANISATION</th>
<th>PROVISIONING PLACE</th>
<th>PROVISIONING INDIVIDUALS</th>
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</thead>
<tbody>
<tr>
<td>- Toolstone Procurement</td>
<td>Predominantly local</td>
<td>Local and non-local</td>
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<tr>
<td></td>
<td>Some non-local</td>
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<td></td>
<td>No long range transport</td>
<td>Some long range transport</td>
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<td>- Primary Reduction Activities</td>
<td>Expedient and Informal</td>
<td>Economized and formal</td>
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<td>Not Standardised</td>
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<td></td>
<td>Heavy technologies</td>
<td>Light-weight technologies</td>
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<td></td>
<td>No toolstone selection</td>
<td>Toolstone selection</td>
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<td>- Secondary Reduction Activities</td>
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<td>No Toolstone selection</td>
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<tr>
<td>LITHIC ASSEMBLAGE DIVERSITY</td>
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<tr>
<td>- Intra-assemblage variability</td>
<td>Low</td>
<td>High</td>
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<tr>
<td>- Inter-assemblage variability</td>
<td>High</td>
<td>Low</td>
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TABLE 2. EXPECTATIONS OF TECHNOLOGICAL PROVISIONING AND LAND-USE STRATEGIES (GRAF 2010: 214).
Graf’s table demonstrates a relationship between the three activity stages in technological organisation (toolstone procurement, primary reduction and secondary reduction), as they relate to provisioning place and provisioning individuals. This provides a series of predictions about how the technology would be organized at each of the three activity stages, in assemblages derived from *place provisioning* or *individual provisioning* respectively. As the table highlights, assemblage diversity is an important predictor of *place* versus *individual* provisioning. The applications of Graf’s predictions as they relate to this research context are discussed below in section 6.2.3.

### 6.2.2 Provisioning Strategies and Assemblage Diversity

The next step is linking provisioning strategies to technological organisation based on quantitative analysis of the lithic data. In order to do this, *assemblage diversity* is used as a measure for understanding technological organisation. Identifying variation in assemblage diversity is perhaps the most widely used means for the identification of mobility patterns in lithic assemblages. Andrefsky (2005) explores the literature on measures of diversity in lithic analysis and its implications for mobility studies, which he bases on the Binfordian model of residential and logistical mobility. Drawing on the work of previous studies (Kelly 1983; Price 1978; Shott 1986) he points out that research has demonstrated an inverse relationship between assemblage diversity and residential mobility; that is, as mobility increases, lithic assemblage diversity decreases (Andrefsky 2005:216). However, Andrefsky later goes on to caution against assuming any sort of “universal correlation” between lithic technological organisation and mobility (2009:88), which somewhat tempers his earlier assertions. Perhaps the bridge between these two competing positions is the vital cautionary point that emphasizes the importance of
organizing the analysis “around the contexts of the data”, which means establishing a broad understanding of the archaeological, geographical and geological context surrounding the data, and then selecting artefact classes or measures that are relevant to that particular context and research questions (Andrefsky 2005:223). This is really the critical point about lithic analyses and why it is so difficult to develop broadly applicable analytical frameworks, and why the literature is so dense and varied with many competing frameworks (Andrefsky 2009; Hiscock and Clarkson 2000).

An important feature of Andrefsky’s (2005) framework is that it allows for the dynamic nature of hunter-gatherer mobility patterns and steers away from the duality of a residential vs logistical model:

The forager-collector mobility model predicts different kinds of residences in various combinations. Both foragers and collectors use mobility in differing degrees. The artifact diversity values should vary with assemblages that are recovered from different site types situated in the different mobility strategies (Andrefsky 2005: 218).

Andrefsky goes on to conduct analysis of assemblage diversity based on a range of formal implements and tool types, a method highly applicable in the North American context, which has many formal tools. However, in the Australian research context, tool types are rarely an effective unit of analysis so other measures of diversity that address the amorphous and informal nature of the assemblage are required (Hiscock and Clarkson 2000). In fact, studies that take ethnographic accounts among Australian Aboriginal people into consideration, have demonstrated that people did not necessarily place more value on formal implements than on simple flakes and often favoured simple flake morphologies for various applications (Holdaway and Douglass 2011). Debitage analysis is important because studies that focus only on formal tools or retouched implements neglect the bulk of lithic debris and thus limit the potential for meaningful results (Riel-Salvatore and Barton 2004). Debitage analysis has been applied to a
range of studies focused on amorphous or informal assemblages, particularly in Australia where identifiable tool types are often scarce or absent.

In the Pilbara region of north-west Western Australia, Ryan and Morse (2009) addressed the issue of diversity in surface assemblages through the application of the “Shannon-Weaver information statistic $H$” which they used to measure the diversity between retouched flakes, unmodified flakes, cores and grind stones (Ryan and Morse 2009: 9). This diversity measure was used in tandem with an analysis of the variation in technological approaches to artefact production based on a series of standard “metrical and technological attributes” (Ryan and Morse 2009: 9) following Holdaway and Stern (2004). The results are combined with a range of other site observations pertaining to geography, resource availability and social factors to understand more about how each of the sites may be understood within the regional settlement pattern, incorporating different strategies of logistical and residential mobility across the landscape. While the particular statistical approach used by Ryan and Morse is not applied in this thesis, technological analysis of surface assemblages that are then interpreted alongside the results of a range of other archaeological observations, makes it a relevant approach for this study.

6.2.3 Linking Theory and Method (Mobility – Provisioning – Technology)

In order to understand more about past mobility (the behaviour), based on archaeological remains, it is necessary to understand more about how different sites were used within those mobility systems. This is done by trying to understand more about the provisioning strategy for that site/assemblage (individual vs place provisioning), which needs to be based on some understanding of how the lithic technology was organized (data analysis). The methodology employed to identify different or opposing technological provisioning strategies is based on the
concepts of assemblage standardisation, formality, and economisation/conservation – and the way researchers have linked these characterizations to specific lithic assemblage measures.

Taking Graf’s table (Table 2) as a starting point, it is necessary to link the technological predictions she makes, with actual points of analysis in the Belinup and Marbaleerup data sets, beginning with toolstone procurement. As discussed in the geology sections of this chapter (sections 6.3.2 and 6.4.2) and in Chapter 2 (section 3.3.2), coastal chert and inland silcrete present an interesting picture for interpretation because there is a clear dichotomy in their availability. Chert is almost continuously available along the Esperance coastline, including around the Belinup precinct, but there are no known sources of it in the Esperance hinterland and this includes in the vicinity of Marbaleerup. No sources of silcrete suitable for knapping are known in Esperance Nyungar country, with the possible exception of the extreme northern periphery adjacent to Ngadju country, with the nearest possible source to Marbaleerup being at least 40km north. Large outcrops of silcrete are available across Ngadju country, the bulk of which are >100km from Marbaleerup. Quartz is available at Belinup and Marbaleerup but appears to be a less favourable choice for tool production, despite its easy availability. This means that all chert and silcrete artefacts at Marbaleerup are likely to be evidence of non-local toolstone procurement, with their sources in opposite directions. Any silcrete found at Belinup is likely to be evidence of non-local toolstone procurement, while all chert artefacts at Belinup are presumed to be local. Thus, the occurrence of chert, silcrete and other raw materials in these assemblages provides a basis for interpretations about toolstone procurement and transportation.

Turning to primary reduction activities, which are the initial or early stages of core reduction, there are a few measures of relevance used in this analysis. Percentage of cortex material on
artefacts, and the proportion of artefacts with cortex provides a means to interrogate how much
primary reduction was taking place in a given assemblage, with high rates of cortex suggestive
of an assemblage focussed on primary production, and low rates suggesting the opposite
(Dibble et al. 2005). Further information may be gleaned from learning what kinds of artefacts
have cortex. For example, cores with a lot of cortex left on them suggest raw material
conservation may not have been a big concern for the toolmakers and implies heavy, expedient
technologies may have been the intended results. Where raw material conservation is important,
or if the material is to be transported, more care is likely to be taken in removing the cortex to
expose the useable stone, resulting in less cortex occurring in the assemblage (Roth and Dibble
1998:49). However, caution needs to be applied to such assertions through consideration of the
geology and toolmaking context. In particular, the relative abundance or scarcity of raw
material, and the distance to raw material sources will affect these kinds of interpretations.

In the case of Belinup for example where chert is readily available we would expect to see
larger amounts of cortex in the assemblage, because it is likely to have been quarried on-site.
On the other hand, at Marbaleerup where chert and silcrete need to be imported, we should
expect less cortex because greater amounts of cortex would make it heavier to transport from
the source. A further consideration is the properties of particular types of stone and the kind of
cortex they form. For example, quartz is an inert rock that forms a thin, brittle cortex little
different and sometimes indistinguishable from the interior rock; chert forming in limestone,
on the other hand, may retain a soft, chalky exterior reflecting the host rock from which it
derives. Quartz artefacts may thus have no apparent cortex as a result of their geological
properties, rather than a technological explanation.
Flake and core size is also an important source of information about primary reduction activities. Larger cores have the capacity to produce larger flakes, although flaking technique also has an impact on flake size (Ambrose 2001). Cores are more likely to be larger during primary reduction, close to the stone source. If cores are to be carried any great distance they may be trimmed first to make them smaller, with more immediate tool making utility and greater portability (Nelson 1991:75). Kuhn (1994) argued for an optimal foraging equation that may be applied to stone tools which basically argued that small, well crafted tools provide an optimal ratio of weight to utility. However, Morrow (1996) argued against Kuhn’s assertions on the basis that larger flakes have a greater capacity for resharpening and reuse and therefore have greater use lives. Kuhn (1996) countered that Morrow had confounded the issue of utility per se with the ratio of utility to weight and maintained that his original assertion had been correct and that at some point increasing weight would outweigh the benefits of greater reuse or resharpening. Nonetheless, Morrow’s argument reminds us of the complex and multifaceted nature of human behaviour and decision-making and the challenges this can create when interpreting human behaviour from lithic artefacts. Others have also warned against assuming a simple correlation between tool size and portability (Nelson 1991:76). While Kuhn’s study applied more specifically to tools, a similar rationale may be broadly applied to portable cores. So large cores with cortex are less likely to be moved long distances, but small pre-prepared cores with cortex removed are more likely to be carried, either as part of a mobile tool kit, or to provision places some distance from the source.

Where nodule size is held constant, flakes produced during early reduction are generally bigger than those produced in secondary reduction so flake size may be used to interpret whether an assemblage favours early or late-stage reduction (Speal 2009). Larger flakes suggest more expedient and heavy technologies. However, the notion that nodule size is a constant is an
assumption that may not be true in this research context. In the case of Marbaleerup for example, it is likely that both chert and silcrete have been imported to the site from multiple different stone sources and these are likely to produce different nodule sizes, which will in turn affect the size of cores and flakes.

The types and abundance of cores within an assemblage are another important source of information (Nelson 1991; Roth and Dibble 1998; Shiner et al. 2005). High proportions of cores within an assemblage suggests greater focus on early reduction (Sullivan and Rozen 1985). Low proportions of cores suggest late stage reduction and may represent a more curated assemblage, focused on lightweight technologies and raw material conservation, although pre-prepared cores can also be part of a curated toolkit (Riel-Salvadore and Barton 2004). Standardisation of reduction techniques is another technological measure that may be analysed. Standardised early-stage reduction should be evident if techniques or forms are repeated a lot throughout the assemblage with measurable similarities (Speal 2009). For example, if there are a number of cores of similar shapes and sizes, made from the same material and particularly if they follow a particular technique, such as bi-polar flaking. An example of standardised early reduction may be observed in assemblages with a prevalence of long, narrow, parallel-sided flakes, suitable for blade production, particularly if there are also cores of corresponding attributes (Clark 1987). Other signs of early stage standardisation are platform preparation techniques such as faceting or overhang removal (Parry and Kelly 1987).

Secondary, or late-stage reduction refers to the steps associated with transitioning flakes to specific forms (tools), or with tool maintenance. Technological indicators of late-stage reduction are generally inverse of those traits discussed above in relation to early stage reduction. Assemblages focussed on late-stage reduction may be expected to have higher ratios
of flakes over cores (Sullivan and Rozen 1985), although other factors such as raw material flaking qualities may also be a factor. Assemblages with little to no cortex, will generally be dominated with smaller sized flakes (Speal 2009), and exhibit evidence of retouch (Sullivan and Rozen 1985). Higher levels of retouch, especially in relatively standardised ways, will suggest more economized and formal secondary reduction (Andrefsky 2005; Law 2005). High ratios of finished or discarded tools in an assemblage may reflect more economized and formal secondary reduction (Shiner et al. 2005).

Returning to Graf’s table, the question of assemblage diversity relates to all the above categories. That is, high assemblage diversity may mean that all stages of reduction (primary and secondary) are present in the assemblage, with a mixture of local and non-local stone, a mixture of expedient and formal characteristics, heavy and light technologies, cores and (retouched) flakes, some with cortex. Low assemblage diversity is more likely to show a clear prevalence toward either primary or secondary reduction, may be only one or two types of stone, either local or imported, with a focus on either heavy or light technologies. Low assemblage diversity may be associated with standardisation and with more formal technologies.

When interpreting lithics, it is critical to remember that analysis is made on aggregate assemblages so it is highly unusual and perhaps impossible, to get pure versions of the categories discussed above. This means that caution must be exercised when assuming any sort of simple \( A = B \) relationship where \( A \) is lithic data and \( B \) is human behaviour. The interplay between different behavioural factors (including mobility) and the associated impacts on lithics assemblages has been demonstrated to be complex and multi-dimensional (Barton and Riel-Salvadore 2014), so caution must be exercised when interpreting mobility through lithic
assemblages. Most of the interpretive assertions made in the text above could be interpreted differently in certain circumstances, so it is critical to organise the interpretation around the context of the data and to recognize that all of the observations and subsequent interpretations are relative, and are embedded in a complex interplay of human action and inter-action with environmental factors. For example, to say an assemblage is comprised of a high ratio of retouched artefacts is not meaningful unless it is compared with other assemblages to provide some sort of index. In the context of this analysis, all of the assemblages are interpreted in relation to one-another as part of a comparative analysis. The interpretations of lithic analyses are also combined with other archaeological, ethnographic and geographical information to support robust and considered interpretations.

6.3 METHODS

6.3.1 Data Collection

All data collection took place in the field as artefacts were analysed and left on site. Field data was obtained in a standardised manner, based on recording forms (see Appendix 1) that set out a range of measurements and attribute observations, commonly used in recording open scatters around Australia (Holdaway and Stern 2004:107-211). Field recording was undertaken over successive field seasons as part of Gabbie Kylie field programs and field schools. A range of different personnel were engaged in the field crews, based around a core crew of David Guilfoyle (Gabbie Kylie field coordinator), Cat Morgan (Gabbie Kylie archaeologist) and Myles Mitchell. Other people, usually archaeology students, would assist with data collection, following training in the appropriate methods. All participants were formally trained in artefact identification and field recording methods by David Guilfoyle prior to recording any artefacts for these data sets. During training sessions all participants had to demonstrate an understanding
of the required methods before starting recording to ensure that minimum standards were observed. Newer team members always worked in pairs so that a second opinion was always present when decisions about artefact identification and classification were made. This ensures a better standard of recording. Team leaders (Guilfoyle, Mitchell and Morgan) were always on-site during recording sessions to assist with difficult classifications and to generally ensure quality control during data collection. The data were all saved in excel spreadsheets, ready for analysis. No size cut-offs were used so all visible artefacts big and small were recorded. Artefact recording targeted areas of visibility such as granite surfaces, fire breaks, tracks and clearings. Artefact density was recorded through the use of sample squares, but our sampling regime was too strongly influenced by variable visibility for the density data to be very useful. This was particularly true at Marbaleerup where artefacts were recorded in a narrow transect of visibility following a track around the base of the mount. Each artefact was recorded as an individual GPS waypoint so spatial and density analysis may be conducted at a later stage if required.

6.3.2 Effects of Previous Artefact Collections

Stone artefacts have been collected from the Marbaleerup and Belinup precincts during past archaeological research. The artefacts are held at the Western Australian Museum collections facility in Welshpool, Western Australia. I have viewed the collections to ensure that the study sample is not unduly compromised by the missing objects. For the most part, the collected samples comprise small numbers of artefacts consistent in character with those still visible on-site, except for the presence of some flaked glass artefacts collected from Thomas River Station just north of Belinup. The identification of flaked glass in the collected samples is useful information because no flaked glass artefacts were found in the in-situ assemblages, and this
connects the lithic record in the Belinup area with the period after European settlement. Flaked glass artefacts have been recorded in-situ at Marbaleerup.

6.3.3 Sample Size

The issue of sample size is a limitation to the results that requires acknowledgment. The small sample size of some of the assemblages, and the variation in sample size between assemblages may affect some of the interpretations. Hiscock (2001) has demonstrated the effects of sample size on assemblage variability, particularly with regard to rarer classes of objects such as backed artefacts. The difference between the size of larger assemblages Marbaleerup (N= 308) and Belinup Ceremonial hub (N=235) is considerable when compared with smaller assemblages such as Belinup campsite (N=42) or the especially small MO1 (N=18), and this can create challenges when making comparisons between these assemblages. However, these are the data-sets available for analysis, so limitations can only be acknowledged and analysis and interpretation proceed with these born in mind. Most of the small data-sets reflect small artefact numbers on the ground and/or reduced visibility. An exception to this is Belinup ‘upper creek area’ (N=76), which is a recorded sample of a larger assemblage. Recording greater numbers of artefacts at this location in the future may provide a reinterpretation of the data.

6.3.4 Temporal Control in Recording Surface Artefact Scatters

Analysing surface lithic assemblages presents many challenges for temporal control, as artefacts may be relocated from their primary context through erosion or other post-depositional processes, which means an assemblage may have artefacts of mixed date ranges. To control for
this, sampling areas were carefully selected to minimise the potential impact of post-depositional processes affecting the assemblage. Thus deflated dune systems, alluvial wash zones, erosion areas, and water catchment locations (ie. where artefacts may wash up) were avoided. In this way the potential for older artefacts, especially those that may have previously been in sub-surface contexts, to affect the study sample was minimised. However, the temporal association of surface assemblages cannot be controlled with great accuracy, and so all of these assemblages are likely to be palimpsests of activity and occupation over unspecified amounts of time. Further, it is difficult to prove that all of these sampling locations were contemporary with one another, although ethno-historic accounts of these landscapes and places during the 19th century indicates their broadly contemporaneous use (see section 1.5). Temporal control among surface assemblages is not a new problem for archaeology, and these issues have been addressed by many scholars in the past, as Holdaway et al. (2004: 34) explain:

As the contributors to the Rossignol and Wandsnider (1992) volume note, simple functional ascriptions applied to surface artifacts scatters gloss over a range of mechanisms by which artifacts are clustered in the landscape. Over a number of years, ethnoarchaeological studies of mobile peoples (e.g., Binford 1978, 1980; O'Connell 1987; Yellen 1977) have demonstrated that place use is not constant and redundant. Instead, locations in the landscape may be used by a variety of people, in a variety of ways, and at a variety of times. Thus, archaeological sites are not the same as ‘residential camps’ or ‘extraction sites’; instead, they are palimpsests-or more correctly ‘aggregates’ (Dewar and McBride 1992), since a palimpsest implies the removal of a previous record (Wandsnider and Camilli 1996)-at best representing remnant settlement patterns that reflect multiple uses over time.

Archaeologists have been working around these issues for a long time and there are established theoretical and methodological approaches to working with surface artefact assemblages. Holdaway et al. (2004: 35) describe the two main approaches applied in Australia, both of which are incorporated in the approach adopted in this study:

In Australia, there are two main approaches to interpreting the surface artifact scatters that parallel approaches elsewhere in the world (Holdaway and Wandsnider 2004). One is to use ethnographic observations to develop a settlement system approach, obtaining small samples of artifacts from a large number of locations in the landscape and relating these to the natural environment (e.g., in the arid zone, the permanency of water) or the
cultural environment (e.g., Ross 1981; Smith 1989; Thorley 1998, 2001; Veth 1989, 1993). A second approach is to emphasize technology rather than assemblage location, adopting a behavioral ecological approach to artifact form and incorporating a consideration of access to raw material (e.g., Hiscock 1994). A few studies have attempted to combine both approaches (e.g., Barton 2001).

The aim is not to record a moment in time, but a period of time. Given the aggregate basis of lithic data, palimpsests of multiple time periods may in some senses provide better information about human ecology and land-use patterns than individual snapshots of artefact production (Barton and Riel-Salvadore 2014). If coherent patterns are shown to be present in the lithic record, then an assemblage is likely to be a palimpsest of reasonably consistent patterns of behaviour. Where the lithic record appears incoherent, time averaging of significantly different periods of occupation is likely to be confusing the picture. Given that the Belinup and Marbaleerup areas are known through ethnographic, ethno-historic and historical sources to have been important centres of Aboriginal occupation at least leading into the historical period, it may be predicted that coherent lithic patterns are a reasonable reflection of behaviours during recent periods of recent occupation. Incoherent patterns may reflect the effects of earlier material confusing the assemblage composition.

The fact that these locations were doubtless used for many different purposes at different times is acknowledged and embraced as one of the many challenges that archaeologists face in trying to interpret human dynamics from static archaeological remnants. The rationale underpinning the approach adopted here is based on the theory of time perspectivism in archaeology (Holdaway and Wandsnider 2008), as espoused in this excerpt from Bailey (2007: 206-7):

But it seems likely that the holy grail of a high-resolution dating framework that can be extended to every corner of the archaeological record is an unattainable goal that defies the physical laws on which our universe is based. In archaeological interpretation, the reality is that that in order to combine sufficient data together to make a large enough sample for analysis, we inevitably end up aggregating data from temporally distinct episodes of activity. Thus, in comparing different episodes of activity, we have to make
certain assumptions about the time depth within which we are willing to accept as ‘contemporaneous’ the various events or materials to be compared and this is as true of intra-site spatial analysis (Galanidou, 1997) as it is of inter-site analysis (Bailey et al. 1997). ‘Contemporaneity’ is thus an arbitrary concept with no absolute measure, and the resolution that we can achieve in making chronological correlations depends both on the dating methods at our disposal and the questions we are trying to investigate (Papacostantinou, 1986). This is not a peculiarity or limitation of dealing with archaeological data, but a natural consequence of working with palimpsests and the physical laws of our universe.

With the limitations of temporal control acknowledged, the results are presented as a reasonable interpretation of Aboriginal settlement during the study period.

### 6.4 MARBALEERUP: SITE-STRUCTURING PREDICTIONS, RESULTS AND DISCUSSION

#### 6.4.1 Description and Activity Areas

The Marbaleerup complex – which incorporates Marbaleerup proper (Mt Ridley), nearby artefact scatters MO1 and MO2, and the stone arrangement site Budjari Yorg – is understood through Nyungar knowledge and oral history as an aggregation locale for multiple groups and is known by Esperance Nyungar people as an important male ceremonial centre. The name Marbaleerup actually refers to Mt Ridley which is referred to in this thesis as Marbaleerup proper to differentiate it from the broader Marbaleerup complex. While Marbaleerup proper is not restricted to men only, some specific parts are restricted to men and there is a male dominated association with the place. It would have played host to men of high status, especially senior lawmen. It is known by Esperance Nyungars as a meeting place of three distinct culture groups – Esperance Nyungar, Ngadju and Mirning – which would have entailed people travelling long distances to meet at Marbaleerup.
The main activity area within the complex is Marbaleerup proper (Mt Ridley), which is a large granite inselberg with distinctive geological formations including hollowed out boulders, some of which are painted with rock art. The site also contains many lizard traps, gnamma holes and stone artefacts. Artefacts are scattered around the base of the mount in exposed areas such as tracks, camping areas and vehicle turnarounds. Vegetation prevents ground visibility across most of the area. Smaller sites can be found around the Marbaleerup complex such as MO1 and MO2, which are small granite outcrops containing stone artefact assemblages presumed to be satellite sites to the larger Marbaleerup proper. Budjari Yorg (Wittenoom Hills) also contains a small flaked stone artefact assemblage associated with the stone arrangements. Marbaleerup proper, Budjari Yorg, MO1, and MO2 are the different activity areas considered for lithic analysis in this study.

Each of the activity areas are analysed as separate assemblages with the aim of understanding more about site-structuring within the Marbaleerup complex. The reasons for this approach are firstly, because the aggregation hypothesis predicts that a range of distinct activity areas would be part of such gatherings and should therefore be identifiable in the archaeological record, and secondly, if there was aggregation taking place it would be predicted that logistical mobility strategies would be employed to provision for the gatherings and these may be archaeologically identifiable within different activity areas.

Table 3 presents the site-structuring predictions for each of the activity areas at Marbaleerup, beginning with the predicted activity and then the lithic technology associated with that activity. These predictions and their implications for aggregation and mobility are discussed in more detail in the Activity Area sections below.
<table>
<thead>
<tr>
<th>Site/Area</th>
<th>Prediction of Associated Activities</th>
<th>Predicted Technological Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marbaleerup proper (Mt Ridley)</td>
<td>Ceremonial centre and aggregation hub; mixed personnel; men’s ceremonial activities; rock art production; camping; subsistence activities</td>
<td>Local and non-local stone; wide range of technologies; all stages of reduction; formal tool production, maintenance, use and re-use; re-sharpening, multi-purpose and maintainable tools, exhausted tools, exhausted cores, pre-prepared cores and blanks.</td>
</tr>
<tr>
<td>MO1</td>
<td>Satellite site related to Marbaleerup proper. Non local people; residential campsite OR special purpose logistical site</td>
<td>Non-local material; if residential campsite – formal technologies, late stage reduction, tool use/re-use, maintenance, retouch, conservation of raw material, high assemblage diversity. If logistical special purpose site – specific technology, low intra-assemblage diversity.</td>
</tr>
<tr>
<td>MO2</td>
<td>Satellite site related to Marbaleerup proper. Non local people; residential campsite OR special purpose logistical site</td>
<td>Non-local material; if residential campsite – formal technologies, late stage reduction, tool use/re-use, maintenance, retouch, conservation of raw material, high assemblage diversity. If logistical special purpose site – specific technology, low intra-assemblage diversity.</td>
</tr>
<tr>
<td>Budjari Yorg (stone arrangements)</td>
<td>Ceremonial hub; local and non-local personnel; centre of social and spiritual activities; non-economic, non-domestic;</td>
<td>Local and non-local stone; generalized technology; late stage reduction; tool maintenance; use; re-sharpening; preparing implements for immediate utility.</td>
</tr>
</tbody>
</table>

TABLE 3. THE MARBALEERUP COMPLEX SITE PREDICTIONS

6.4.2 Raw Material Availability

Raw material suitable for stone knapping is limited at the Marbaleerup complex and surrounds. Quartz is available, occurring in veins in the granite itself, but there is no other locally available stone suitable for knapping at Marbaleerup proper or Budjari Yorg. Silcrete is readily available north of Marbaleerup, mostly in Ngadju lands. The nearest possible source of silcrete is approximately 40km north. Chert is available in the coastal zone to the south, with the nearest source approximately 60km south of Marbaleerup. Chert is also available north in Ngadju lands but with limited distribution, the nearest source being approximately 150km north-west, near the town of Norseman.

6.4.3 Activity Area – Marbaleerup Proper (Mount Ridley)

Site-Structuring Predictions
This is the main rock art complex and posited aggregation hub situated on and around the large granite inselberg of Mt Ridley. The artefacts have been recorded from around the base of the granite dome, where they were exposed in tracks and clearings. Based on Nyungar knowledge and observable site characteristics it is predicted that this was a ceremonial centre predominantly associated with men’s activities and facilitated the meeting of three distinct groups (Esperance Nyungars, Ngadju and Mirning). It is likely that this area was mainly a special purpose ceremonial place and people only visited and camped here for special events. According to what is known of the site through Esperance Nyungar knowledge, much of the activity was restricted to men, many of whom would have been of high standing within society and law. This type of site use predicts a wide range of technologies and raw materials (of desert and Southwest origin), associated with residential mobility and long-range travel, such as formal, multi-purpose and maintainable tools, exhausted tools, exhausted cores, pre-prepared cores and blanks.

Results
A total of 309 artefacts were recorded around Marbaleerup proper, of which 25.2% were made from chert, 40.8% silcrete, 20.1% quartz, and 13.9% other (Table 4). Among the ‘other’ category there are 25 pieces of flaked glass (8.1%), 14 crystal quartz (4.5%), one chalcedony, one quartzite, one grey wacke and one mudstone. This is the most diverse spread of raw materials among any assemblage from either the Marbaleerup or Belinup complex. Chi-square tests suggests significant variation in raw material abundance between all the sites in the Marbaleerup complex ($\chi^2=55.469$, df=9, p<0.001), highlighting the statistical significance of the raw material variation at Marbaleerup proper, with chert and quartz over-represented compared to the other sites.
There are thirteen cores (4.2%), compared with 5.7% across the Marbaeerup complex as a whole. There are 77 complete flakes, 174 broken flakes and 11 fragments (Table 5). There are 34 retouched flakes (11%) which is slightly higher than the overall Marbaleerup complex, among which 9.9% are retouched. A chi-square test comparing the abundance of artefact classes between Marbaleerup proper and all other sites in the complex combined suggests statistically significant variation ($\chi^2=24.067$, df=4, p<0.001), with notably higher rates of retouch at Marbaleerup proper. Core proportions do not differ dramatically, but interestingly the Marbaleerup proper assemblage appears more intact, with higher proportions of complete flakes and lower proportions of fragments.

The tools comprise eight backed artefacts and three scrapers (Table 6). Backed artefacts are found at all of the sites in the Marbaleerup complex, while scrapers are only found at Marbaleerup proper. Among the 20 chert complete flakes four have cortex (20%), while one of three chert cores has cortex (33%). In the 42 silcrete complete flakes 14 have cortex 33%, as do five of the nine silcrete cores (56%) (Table 7).

<table>
<thead>
<tr>
<th>Complex</th>
<th>Site</th>
<th>% Chert</th>
<th>% Silcrete</th>
<th>% Quartz</th>
<th>% Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marbaleerup</td>
<td>Budj Yorg N=93</td>
<td>24.7</td>
<td>37.6</td>
<td>24.7</td>
<td>12.9</td>
</tr>
<tr>
<td>Marbaleerup</td>
<td>Marb proper N=309</td>
<td>25.2</td>
<td>40.8</td>
<td>20.1</td>
<td>13.9</td>
</tr>
<tr>
<td>Marbaleerup</td>
<td>MO1 N=18</td>
<td>16.7</td>
<td>72.2</td>
<td>5.6</td>
<td>5.6</td>
</tr>
<tr>
<td>Marbaleerup</td>
<td>MO2 N=54</td>
<td>5.6</td>
<td>90.7</td>
<td>1.9</td>
<td>1.9</td>
</tr>
<tr>
<td>Marbaleerup</td>
<td>MRB-ALL N=474</td>
<td>22.6</td>
<td>47.0</td>
<td>18.4</td>
<td>12.0</td>
</tr>
<tr>
<td>ALL (Belinup and Marbaleerup)</td>
<td>ALL N=1079</td>
<td>61.6</td>
<td>22.2</td>
<td>10.6</td>
<td>5.7</td>
</tr>
</tbody>
</table>

TABLE 4: PERCENTAGE RAW MATERIAL BY AREA (MARBALEERUP)
<table>
<thead>
<tr>
<th>Complex</th>
<th>Site</th>
<th>Core</th>
<th>Complete flakes</th>
<th>Broken flakes</th>
<th>Retouch</th>
<th>Fragment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marb</td>
<td>Budj Yorg N=93</td>
<td>1%</td>
<td>15% (N=14)</td>
<td>68% (N=63)</td>
<td>8% (N=7)</td>
<td>9% (N=8)</td>
</tr>
<tr>
<td>Marb</td>
<td>Marb proper N=309</td>
<td>4% (N=13)</td>
<td>25% (N=77)</td>
<td>56% (N=174)</td>
<td>11% (N=34)</td>
<td>4% (N=11)</td>
</tr>
<tr>
<td>Marb</td>
<td>MO1 N=18</td>
<td>17% (N=3)</td>
<td>6% (N=1)</td>
<td>39% (N=7)</td>
<td>11% (N=2)</td>
<td>28% (N=5)</td>
</tr>
<tr>
<td>Marb</td>
<td>MO2 N=54</td>
<td>19% (N=10)</td>
<td>19% (N=10)</td>
<td>39% (N=21)</td>
<td>7% (N=4)</td>
<td>17% (N=9)</td>
</tr>
<tr>
<td>Marb</td>
<td><strong>MRB-ALL N=474</strong></td>
<td>6% (N=27)</td>
<td>22% (N=102)</td>
<td>56% (N=265)</td>
<td>10% (N=47)</td>
<td>7% (N=33)</td>
</tr>
<tr>
<td>BOTH (Marb + Bel)</td>
<td><strong>ALL N=1079</strong></td>
<td>5% (N=56)</td>
<td>18% (N=193)</td>
<td>50% (N=543)</td>
<td>8% (N=81)</td>
<td>20% (N=206)</td>
</tr>
</tbody>
</table>

TABLE 5. PERCENTAGE OF ARTEFACT CLASSES, BY AREA (MARBALEERUP)

<table>
<thead>
<tr>
<th>Complex</th>
<th>Site</th>
<th>Backed</th>
<th>Grindstone</th>
<th>Tula Slug</th>
<th>Scraper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marbaleerup</td>
<td>Budj Yorg N=93</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marbaleerup</td>
<td>Marb proper N=309</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marbaleerup</td>
<td>MO1 N=18</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marbaleerup</td>
<td>MO2 N=54</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marbaleerup</td>
<td><strong>MRB-ALL N=474</strong></td>
<td>14</td>
<td>0</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>BOTH (Bel + Marb)</td>
<td><strong>ALL N=1079</strong></td>
<td>26</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

TABLE 6. NUMBER OF FORMAL IMPLEMENTS, BY AREA (MARBALEERUP)

<table>
<thead>
<tr>
<th>Complex</th>
<th>Site</th>
<th>% of Chert Complete flakes with Cortex</th>
<th>% of Chert Cores with Cortex</th>
<th>% of Silcrete Complete flakes with Cortex</th>
<th>% of Silcrete Cores with Cortex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marbaleerup</td>
<td>Budj Yorg</td>
<td>0% (N=2)</td>
<td>-</td>
<td>0% (N=9)</td>
<td>0% (N=1)</td>
</tr>
<tr>
<td>Marbaleerup</td>
<td>Marb proper</td>
<td>20% (N=20)</td>
<td>33% (N=3)</td>
<td>33% (N=42)</td>
<td>56% (N=9)</td>
</tr>
<tr>
<td>Marbaleerup</td>
<td>MO1</td>
<td>-</td>
<td>-</td>
<td>100% (N=1)</td>
<td>100% (N=2)</td>
</tr>
<tr>
<td>Marbaleerup</td>
<td>MO2</td>
<td>-</td>
<td>-</td>
<td>22% (N=9)</td>
<td>33% (N=9)</td>
</tr>
<tr>
<td>Marbaleerup</td>
<td><strong>MRB-ALL</strong></td>
<td>18% (N=22)</td>
<td>33% (N=3)</td>
<td>28% (N=61)</td>
<td>38% (N=21)</td>
</tr>
<tr>
<td>BOTH (Bel + Marb)</td>
<td><strong>ALL</strong></td>
<td>23% (N=102)</td>
<td>48% (N=61)</td>
<td>28% (N=64)</td>
<td>(38%) (N=24)</td>
</tr>
</tbody>
</table>

TABLE 7. PERCENTAGE OF ARTEFACTS WITH CORTEX, BY AREA, ARTEFACT CLASS AND RAW MATERIAL TYPE (MARBALEERUP)
Discussion

Marbaleerup proper looms as a quintessential aggregation assemblage and in this sense upholds the predictions very well. The apparent diversity in raw material, diversity of technological attributes and characteristics that reflect mobile toolkits, support an interpretation of Marbaleerup as a place where people travelled from afar, from different directions to meet and take part in a range of activities. There is also evidence of place provisioning with both silcrete and chert material, with relatively high levels of cortex (Table 7), especially considering distance from the most probable raw material sources. The high proportions of silcrete artefacts are suspected to come from stone sources in Ngadju country or at least the fringing north of Esperance Nyungar country. This is the nearest and most prolific source of silcrete and no sources are currently known closer to Marbaleerup. The most likely interpretation is that Ngadju or other desert affiliated people brought the silcrete to Marbaleerup, however trade or exchange are also possible. Likewise, the nearest and most abundant source of chert is down at the coast deep into Esperance Nyungar country, suggesting most of the chert was brought from the coast, probably by Esperance Nyungar people, though again trade and exchange may have been a part of how this material came to be at Marbaleerup. Quartz is probably a locally available option, which may have been obtained on or near Marbaleerup. Flaked glass demonstrates that Marbaleerup continued to be used after European arrival. The flaked glass may have been left by Aboriginal stockmen who are known to have camped at Marbaleerup while mustering for the Dempster family and other early European settlers. Marbaleerup was likely to have been visited by Aboriginal people regularly after settlement so the flaked glass could have been left by any number of different people at different times. High proportions of retouch and discarded, often broken, tools suggest people travelled from afar bringing light-weight, mobile tools, which all adds to the picture of aggregation at this site.

6.4.4 Activity Area – MO1
Site-Structuring Predictions

MO1 is a small (<40x40m) granite outcrop with no permanent or reliable fresh water source, situated in mallee scrub approximately 500m south-west and in view of Marbaleerup proper. Due to its proximity to Marbaleerup proper it is considered part of the overall Marbaleerup complex. MO1 has no standout characteristics or ethnographic information to inform the site prediction other than that it has a small assemblage overall and is a small outcrop so it probably represents a satellite site of some sort relating to Marbaleerup proper. It would be interesting to know if MO1 was used as a residential site or a logistical special purpose site, but there are no obvious grounds to generate expectations prior to data collection. No Nyungar knowledge specific to this site was put forward by the research participants.

Results

MO1 has a very small assemblage with a total of just 18 recorded artefacts, of which 13 are silcrete (72.2%), three are chert (16.7%), one is crystal quartz and one is quartz (Table 4). Among the silcrete artefacts are three cores (16.7%), one complete flake, seven broken flakes and five fragments (Table 5). There is only one silcrete complete flake at this site and two cores, all of which have cortex (100%) (Table 5 and 7).

Discussion

MO1 has too small an assemblage for much meaningful interpretation. The presence of silcrete indicated material was brought from the north, suggesting a similar usage to MO2 (see below). MO1 may have been a satellite site in the Marbaleerup complex used for ‘gearing up’, perhaps with Ngadju involvement (direct or indirect), because silcrete is found on or close to Ngadju lands. The presence of silcrete cores suggests place provisioning, albeit infrequently, or perhaps
small portable cores. However, because of the small assemblage size, overall, the analysis is inconclusive for this site.

6.4.5 Activity Area – MO2

Site-Structuring Predictions

MO2 is a small (<40x40m) granite outcrop with no permanent or reliable fresh water source, situated in mallee scrub approximately 1000m south-west and in view of Marbaleerup proper. Due to its proximity to Marbaleerup proper it is considered part of the overall Marbaleerup complex. MO2 has no standout characteristics or ethnographic information to inform the site prediction other than that it has a small assemblage overall and is a small outcrop so it probably represents a satellite site of some sort relating to Marbaleerup proper. It would be interesting to know if MO2 was used as a residential site or a logistical special purpose site, but there are no obvious grounds to generate expectations prior to data collection. No Nyungar knowledge specific to this site was put forward by the research participants.

Results

The recorded assemblage consists of 54 artefacts, of which 49 are silcrete (90.7%), three are chert (5.6%), one is quartz and one is quartzite (Table 4). There are ten cores (18.5%), ten complete flakes, 21 broken flakes and nine fragments (Table 5). Four flakes are retouched (7.4%). The core abundance here seems unusually high, and a chi-square test confirms a significant difference from expected values when MO2 is compared with all other Marbaleerup samples combined ($\chi^2=18.653$, df=1, p<0.001). Also notable is that five of the cores are distinctive horsehoof cores, all made from silcrete (Table 6). There are two silcrete backed
artefacts in the MO2 sample, and two tula slugs (one silcrete and one quartzite). Among the nine silcrete complete flakes, two have cortex (22%), as do three of nine silcrete cores (33%) (Table 7).

Discussion

The prevalence of silcrete in this assemblage indicates material was imported from the north, while the relative paucity of chert suggests limited contact or discernible signal from Nyungar country to the south. The abnormally high ratio of cores in the assemblage is consistent with place provisioning, while retouched flakes are poorly represented. There are backed artefacts at the site, which are commonly associated with individual provisioning, as well as tula slugs. The tula slugs are the discarded, exhausted remains of tula adzes – a multi-purpose, re-useable tool that lends itself to resharpening, and which has been linked to long range travel among Western Desert people (Hiscock and Veth 1991:335). When tula adzes are no longer able to be sharpened and therefore no longer useful they become tula ‘slugs’. Tula adzes are a distinctive tool type from the Western Desert (Veth et al. 2011) and have been linked with individual provisioning (Clarkson 2006). The presence of tula slugs here was a surprise as they have not been previously identified anywhere else in the Esperance region during previous lithic analysis by Smith who specifically cited the lack of tulas and other characteristic ‘desert’ artefact types as a lack of archaeological evidence to support the social frontier that was highlighted in the ethno-history (Smith 2011: 23). The presence of tula slugs but not adzes, suggests that any working implements were carried away from the site, and only the exhausted remains were discarded.

The horsehoof cores demonstrate some level of standardisation in the production process (repeating the same form). Though there are some conflicting views as to whether horsehoof
cores were used just as cores for the production of flakes, or as core tools (Akerman 1993), they appear to be multi-purpose, re-useable artefacts which can also be used for production of more artefacts (flakes). They are not commonly found in Esperance Nyungar country or Noongar country more broadly.

The technological signature at MO2 is consistent with a lithic production site, provisioned with exotic raw material (silcrete). There is evidence of individual provisioning in the form of discarded, exhausted tools, which are lightweight and multi-purpose. Overall, this is a small assemblage with a signal that supports an interpretation of a tool production site and gearing up site with some evidence of standardisation in the production process (horsehoof cores). There is also evidence of long range travel (residential mobility) of people carrying Western Desert tool types made from silcrete and quartzite and bringing pre-prepared cores of silcrete to provision the site. All of this data supports an interpretation of MO2 as having been used by non-Nyungar people from further north, most likely Ngadju people as a residential camping and gearing up location, possibly related to aggregation activities at Marbaleerup proper. The prediction of MO2 as a satellite site associated with Marbaleerup is upheld. The results at MO2 exceed the prediction, given the lack of information on which to base any clear expectations of site-use, before the lithic analysis took place.

6.4.6 Activity Area – Budjari Yorg Stone Arrangements Site

Site-Structuring Predictions

This site comprises stone arrangements on an elongated granite outcrop (approximately 300x 40m), situated thirteen kilometres south-east of Marbaleerup proper. There is no permanent or reliable fresh water source. Therefore, the site is predicted to have only hosted short-term visitation, specifically for ceremonial activities associated with the arrangements (see Chapter
Camping at this location would have been short-term if at all. This predicts some discarded tools, evidence of tool maintenance, sharpening, and pre-prepared blanks or cores. Nyungar knowledge suggests that use of this place was for ceremonial purposes (although the details are unknown) and that it was related to Marbaleerup proper.

Results

A total of 93 artefacts was recorded at Budjari Yorg on the same granite exposure as the stone arrangements. Approximately 25% were made from chert, 37.6% silcrete, 24.7% quartz, and 12.9% from other materials (Table 4). These raw material percentages are broadly similar to those at Marbaleerup proper. The ‘other’ category is comprised entirely of quartzite. There is just one core (1.1%) in the sample – much lower than at all other sites. There are 14 complete flakes, 63 broken flakes and 8 fragments (Table 5). There are 7 retouched flakes (7.5%) which is slightly lower than the overall Marbaleerup complex, among which 9.9% are retouched. The tools comprise three backed artefacts (Table 6). There is no cortex on any of the complete flakes or cores at this site (Table 7).

Discussion

The diversity of raw material, and relatively even spread between silcrete, chert and quartz, suggests that stone was being brought from a range of different sources, including chert from the coast and silcrete from the north. Quartz may have been obtained more locally, but probably not on-site given the low overall numbers. The notable similarities in raw material percentages between this assemblage and Marbaleerup proper are interesting and may be interpreted as similar demographics in personnel visiting these two sites.
The relatively low proportions of complete flakes invite consideration. Given the remote location and being outside of farming areas, there is no reason to expect the high levels of breakage to be the result of trampling or other post-depositional processes, so a technological explanation is more likely. There is no cortex on any of the artefacts and there is an almost complete absence of cores but for one very small ‘exhausted’ core. These combined observations suggest this assemblage is predominantly the result of maintenance activities, with a couple of discarded tools. Complete flakes and useable items were likely to have been taken away from site and all of the material appears to have been imported initially either as existing tools, pre-prepared cores and perhaps pre-prepared flaked ‘blanks’. The technological attributes of the assemblage suggest some tool maintenance and minor tool production activities for immediate utility, with useable tools then taken away from site.

This assemblage conforms to predictions very well. The analysis supports the interpretation of the place being visited for short periods of time and tools being brought to site for immediate utility during on-site activities. Some re-sharpening and reprovisioning of the tool-kit took place on site and usable tools were taken away again. There is no evidence to suggest people camped here or used this site for any extensive tool production. This appears as a special purpose activity site, most likely associated with the stone arrangements.

6.4.7 Summary

The results of lithic analysis at Marbaleerup proper conformed to the prediction of this activity area having been a centre of aggregation activities. Results at MO1 were inconclusive due to the small assemblage size. The MO2 results upheld the prediction of a satellite site related to Marbaleerup proper, associated with ‘gearing up’ and perhaps long range travel. The results of
the Budjari Yorg lithic analysis upheld the prediction of a special purpose site associated with social/ceremonial activities directly related to the stone arrangements. Overall, the Marbaleerup complex upholds the prediction of an aggregation locale in which people employed localised logistical mobility strategies to provision for aggregation events and activities. These results are briefly summarized in Table 8 below.

<table>
<thead>
<tr>
<th>Site/ Activity Area</th>
<th>Predictions of Associated Activities and Technological Signature (from Table 3)</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marbaleerup proper (Mt Ridley)</td>
<td>Local and non-local stone; wide range of technologies; all stages of reduction; formal tool production, maintenance, use and re-use; re-sharpening multi-purpose and maintainable tools, exhausted tools, exhausted cores, pre-prepared cores and blanks. Ceremonial centre and aggregation locale; mixed personnel; men’s ceremonial activities; rock art production; camping; subsistence activities</td>
<td>Diversity in raw material (local and non-local); diversity in technology; all stages of reduction; formal tools; exhausted tools; high proportions retouch; mobile toolkits; residential mobility; range of activities; place provisioning (silcrete and chert); cortex; flaked glass. Overall, does uphold predictions of aggregation locale, mixed personnel, wide range activities, logistical and residential mobility. No evidence of gender specific behaviour in the lithics</td>
</tr>
<tr>
<td>MO1</td>
<td>Non-local material; if residential campsite – formal technologies, late stage reduction, tool use/re-use, maintenance, retouch, conservation of raw material, high assemblage diversity. If logistical special purpose site – specific technology, low intra-assemblage diversity Satellite site related to Marbaleerup proper. Non local people; residential campsite OR special purpose logistical site</td>
<td>Imported silcrete; low diversity. Overall, small assemblage size restricts interpretive potential – no clear result. Non local material (silcrete); high ratio of cores; place provisioning; tool production; backed artefacts; individual provisioning; tula slugs (discarded, exhausted remains multi-purpose, re-useable Western Desert tools); horse hoof cores; standardisation in the production process (repeating the same form); multi-purpose, re-useable artefacts. Overall, upholds prediction of logistical satellite site associated with gearing up and perhaps long range travel. Imported material suggests association with non-local people</td>
</tr>
<tr>
<td>MO2</td>
<td>Non-local material; if residential campsite – formal technologies, late stage reduction, tool use/re-use, maintenance, retouch, conservation of raw material, high assemblage diversity. If logistical special purpose site – specific technology, low intra-assemblage diversity Satellite site related to Marbaleerup proper. Non local people; residential campsite OR special purpose logistical site</td>
<td></td>
</tr>
<tr>
<td>Budjari Yorg (stone arrangements)</td>
<td>Local and non-local stone; generalized technology; late stage reduction; tool maintenance; use; sharpening; preparing implements for immediate utility Ceremonial hub; local and non-local personnel; centre of social and spiritual activities.</td>
<td>Diversity of local and non-local raw material (silcrete, chert and quartz); low proportions of complete flakes which are of overall small size; no cortex; very low proportion cores; maintenance activities; some discarded tools; immediate utility. Overall, upholds the prediction of special purpose site associated with social/spiritual activities</td>
</tr>
</tbody>
</table>
6.5 BELINUP: SITE-STRUCTURING PREDICTIONS, RESULTS AND DISCUSSION

6.5.1 Description and Activity Areas

Based on geographical location and preliminary observation of archaeological materials, Belinup is proposed to have functioned in the past as an aggregation locale (following Conkey 1980) where otherwise-dispersed people came together to take part in a range of social, economic and ceremonial exchanges. This proposition is supported by Esperance Nyungar knowledge. However, unlike at Marbaleerup where there is a clearly-defined and well-provenanced oral history about it having functioned as an aggregation locale, Nyungar knowledge about aggregation at Belinup is patchy and relies partly on the interpretation of geography and the archaeological features associated with the place. Nonetheless, there is sufficient information from a range of sources to warrant proposing, and testing an aggregation hypothesis at Belinup.

In trying to understand how this proposition might be tested archaeologically, a series of predictions about the spatial organisation of activities and associated technological signatures of lithic artefacts have been proposed, again based on a combination of archaeological and geographical observations and Nyungar interpretations based on cultural knowledge. A range of different activity areas around the Belinup precinct have been identified, including the Stone Arrangements, BEL1, Coastal Ridgetop, Upper Creek, Belinup Quarry and Boyatup. Analysis of the lithics artefacts has been conducted at each of these locations. The rich archaeology of surface assemblages suggests the area was intensively used, either by large groups for aggregation, or repeatedly by smaller groups over long periods of time, or both. If there were large numbers of people gathered, some of whom may have travelled from afar, it is expected
that some spatial delineation of different camping and activity areas would be apparent, as part of the employment of logistical mobility strategies to provision for such events. Table 9 presents the site-structuring predictions for each of the activity areas at Belinup, beginning with the predicted activity and then the lithic technology associated with that activity. These predictions and their implications for aggregation and mobility are discussed in more detail in the Activity Area sections below.

<table>
<thead>
<tr>
<th>Site/ Activity Area</th>
<th>Prediction of Associated Activities</th>
<th>Predicted Technological Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belinup Stone Arrangements</td>
<td>Ceremonial hub; local and non-local personnel; centre of social and spiritual activities; non-economic, non-domestic activities;</td>
<td>Local and non-local stone; late stage reduction; tool maintenance; use; re-sharpening; preparing implements for immediate utility</td>
</tr>
<tr>
<td>BEL1</td>
<td>Camping Place; local personnel; mixed activities</td>
<td>Local stone; cortical material; diversity of technology; all stages of reduction; tool production; tool use/re-use; re-sharpening.</td>
</tr>
<tr>
<td>Belinup Coastal Ridgetop</td>
<td>No clear/specific prediction; local personnel; gearing up; woodworking or food processing (such as butchering).</td>
<td>Local stone; generalized technology; mid-late stage reduction; tool production. maintenance, use and discard.</td>
</tr>
<tr>
<td>Belinup Upper Creek Area</td>
<td>'Assembly area'; non-local personnel; gathering/waiting before aggregation.</td>
<td>Non-local stone; formal technologies; late stage reduction; tool maintenance, re-use, discard; high intra-assemblage variability.</td>
</tr>
<tr>
<td>Belinup Chert Quarry</td>
<td>Chert quarry; local personnel; specific activities; raw material extraction</td>
<td>Chert; cortical material; large flakes and cores; early reduction.</td>
</tr>
<tr>
<td>Boyatup</td>
<td>Camping Place; local personnel; mixed activities</td>
<td>Local stone; diversity of technology; all stages of reduction; tool production; tool use/re-use; re-sharpening; discard.</td>
</tr>
</tbody>
</table>

**TABLE 9. BELINUP SITE PREDICTIONS**

### 6.5.2 Raw Material Availability

High quality raw material suitable for stone knapping is readily available and abundant at Belinup. Chert is ubiquitous throughout the coastal dune systems in this area, outcropping in limestone formations of Pallinup Siltstone (Lowery et al. 1972; Morgan 1972). Quartz suitable for knapping is also readily available as veins in the granite outcrops scattered throughout the Esperance coastal zone. Belinup and Boyatup are both granite outcrops containing quartz veins.
6.5.3 **Activity Area – Belinup Stone Arrangements**

**Site-Structuring Predictions**

Central to the Belinup complex is a large stone arrangement site. Based on its prominent location above the rivermouth and the presence of stone arrangements (see Chapter 7), this activity area is interpreted as a ceremonial hub within the Belinup complex. Stone artefacts are littered across the area. The precise nature of the ceremonies remains unknown, which makes it difficult to generate a prediction about exactly what activities may have taken place here. However, it is likely to have been a centre of social and perhaps spiritual activities, and therefore is less likely to be associated with domestic/practical activities such as early stone reduction, specialized tool production or gearing up. It is predicted that tools were used here for immediate utility to undertake tasks and activities as required. It is also likely that some tool maintenance and sharpening took place, as well as ‘late stage’ reduction associated with preparing implements for immediate utility. It is predicted that both local and non-local stone will be present as a result of visiting personnel coming to take part in ceremonies.

**Results**

A total of 237 artefacts were recorded in the stone arrangement artefact scatter, of which 84.4% were made from chert, 6.8% silcrete, 8% quartz, and 0.8% other (one chalcedony and one basalt). The Stone Arrangements site is the only one in the Belinup complex at which silcrete is represented, something not explained by sample size given that the sample from the Stone Arrangements (n=237) is smaller than the other sites combined. Quartz is also notably more common at the Stone Arrangements site than elsewhere in the Belinup complex (Table 10). Unfortunately, a Chi Square Test cannot be run on the data in Table 10 due to the large number
of cells with expected values less than 5. It is possible, however, to compare the abundance of (presumed local) chert and non-chert artefacts in this site (chert = 200, non-chert = 37) with that from the other Belinup sites combined (chert = 358, non-chert = 10). The results suggest statistically significant differences ($\chi^2=33.452$, df=1, p<0.001), reflecting significant over-representation of non-chert artefacts in the assemblage at the Stone Arrangements site, 43% of which are silcrete.

There are nine cores at this site (3.8%), compared with 4.8% across the Belinup complex as a whole, and 23 retouched flakes (9.7% vs 5.6% in the Belinup complex overall). There are also 44 complete flakes in the sample, 116 broken flakes and 45 fragments (Table 11). As with raw material abundance, variation in artefact classes between all Belinup sites cannot be studied individually with chi-square due to violation of minimum value requirements (not more than 20% of cells to have values less than 5). Again, however, we can compare the Stone Arrangements site to the aggregate data from all other Belinup sites combined. And, again, this suggests statistically significant variation ($\chi^2=28.93$, df=4, p<0.001). The observed variation is thus highly unlikely to have arisen by chance.

Backed artefacts are the only tool type represented at the Stone Arrangements scatter, of which 10 were identified (Table 12). This stands out among a total of twelve in the Belinup complex overall. Again, sample size alone cannot account for this number. If the remaining Belinup assemblages are considered in aggregate, the difference is statistically significant ($\chi^2=12.646$, df=1, p=0.001). Among the 39 chert complete flakes at the Stone Arrangements site, seven have cortex (18%), while seven of the 21 chert cores have cortex (33%). In the three silcrete complete flakes, one has cortex 33%, as does one of the three silcrete cores (Table 13).
<table>
<thead>
<tr>
<th>Complex</th>
<th>Site</th>
<th>% Chert</th>
<th>% Silcrete</th>
<th>% Quartz</th>
<th>% Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belinup</td>
<td>Arrangements N=237</td>
<td>84.4</td>
<td>6.8</td>
<td>8.0</td>
<td>0.8</td>
</tr>
<tr>
<td>Belinup</td>
<td>Bel Quarry N=113</td>
<td>100.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Belinup</td>
<td>Bel Ridge N=76</td>
<td>88.2</td>
<td>0.0</td>
<td>9.2</td>
<td>2.6</td>
</tr>
<tr>
<td>Belinup</td>
<td>Bel Upper Cr. N=79</td>
<td>100.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Belinup</td>
<td>BEL1 N=41</td>
<td>100.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Belinup</td>
<td>Boyatup N=59</td>
<td>98.3</td>
<td>0.0</td>
<td>1.7</td>
<td>0.0</td>
</tr>
<tr>
<td>Belinup</td>
<td>BEL-ALL N=605</td>
<td>92.2</td>
<td>2.6</td>
<td>4.5</td>
<td>0.7</td>
</tr>
<tr>
<td>ALL (Belinup and Marbaleerup)</td>
<td>ALL N=1079</td>
<td>61.6</td>
<td>22.2</td>
<td>10.6</td>
<td>5.7</td>
</tr>
</tbody>
</table>

**TABLE 10. PERCENTAGE RAW MATERIAL BY AREA (BELINUP)**

<table>
<thead>
<tr>
<th>Complex</th>
<th>Site</th>
<th>Core</th>
<th>Complete flakes</th>
<th>Broken flakes</th>
<th>Retouch</th>
<th>Fragment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bel</td>
<td>Stone Arr. N=237</td>
<td>4%</td>
<td>19% (N=44)</td>
<td>49% (116)</td>
<td>10% (N=23)</td>
<td>19% (N=45)</td>
</tr>
<tr>
<td>Bel</td>
<td>Quarry N=113</td>
<td>6%</td>
<td>13% (N=15)</td>
<td>39% (N=43)</td>
<td>2% (N=2)</td>
<td>41% (N=46)</td>
</tr>
<tr>
<td>Bel</td>
<td>Bel Ridge N=76</td>
<td>3%</td>
<td>7% (N=5)</td>
<td>53% (N=40)</td>
<td>12% (N=9)</td>
<td>26% (N=20)</td>
</tr>
<tr>
<td>Bel</td>
<td>Bel Upper Cr. N=79</td>
<td>11%</td>
<td>18% (N=14)</td>
<td>41% (N=32)</td>
<td>0% (N=0)</td>
<td>30% (N=24)</td>
</tr>
<tr>
<td>Bel</td>
<td>BEL1 N=41</td>
<td>2%</td>
<td>17% (N=14)</td>
<td>63% (N=26)</td>
<td>0% (N=0)</td>
<td>17% (N=7)</td>
</tr>
<tr>
<td>Bel</td>
<td>Boyatup N=59</td>
<td>2%</td>
<td>10% (N=6)</td>
<td>36% (N=21)</td>
<td>0% (N=0)</td>
<td>53% (N=31)</td>
</tr>
<tr>
<td>Bel</td>
<td>BEL-ALL N=605</td>
<td>5%</td>
<td>15% (N=91)</td>
<td>46% (N=278)</td>
<td>6% (N=34)</td>
<td>29% (N=173)</td>
</tr>
<tr>
<td>BOTH (Marb + Bel)</td>
<td>ALL N=1079</td>
<td>5% (N=56)</td>
<td>18% (N=193)</td>
<td>50% (N=543)</td>
<td>8% (N=81)</td>
<td>20% (N=206)</td>
</tr>
</tbody>
</table>

**TABLE 11. PERCENTAGE OF ARTEFACT CLASSES BY AREA (BELINUP)**
Complex | Site          | Backed | Grindstone | tula slug | Scraper |
----------|--------------|--------|------------|-----------|---------|
Belinup   | Arrangements | 10     |            |           |         |
Belinup   | Bel Quarry   |        |            |           |         |
Belinup   | Bel Ridge    | 2      | 1          |           |         |
Belinup   | Bel Upper Cr.|        |            |           |         |
Belinup   | BEL1         |        |            |           |         |
Belinup   | Boyatup      |        |            |           |         |
Belinup   | BEL-ALL      | 12     | 1          | 0         | 0       |
Belinup   | BOTH (Bel +  | 26     | 1          | 2         | 3       |
| Marb)    |          |        |            |           |         |
| ALL      |          |        |            |           |         |

**TABLE 12. NUMBER OF FORMAL IMPLEMENTS BY AREA (BELINUP)**

<table>
<thead>
<tr>
<th>Complex</th>
<th>Site</th>
<th>% of Chert Complete Flakes with Cortex</th>
<th>% of Chert Complete Flakes with Cortex</th>
<th>% of Silcrete Complete Flakes with Cortex</th>
<th>% of Silcrete Complete Flakes with Cortex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belinup</td>
<td>Arrangements</td>
<td>18% (N=39)</td>
<td>33% (N=21)</td>
<td>33% (N=3)</td>
<td>33% (N=3)</td>
</tr>
<tr>
<td>Belinup</td>
<td>Bel Quarry</td>
<td>50% (N=16)</td>
<td>54% (N=13)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Belinup</td>
<td>Bel Ridge</td>
<td>25% (N=4)</td>
<td>77% (N=9)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Belinup</td>
<td>Bel Upper Cr.</td>
<td>7% (N=14)</td>
<td>66% (N=9)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Belinup</td>
<td>BEL1</td>
<td>100% (N=1)</td>
<td>0% (N=1)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Belinup</td>
<td>Boyatup</td>
<td>17% (N=6)</td>
<td>20% (N=5)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Belinup</td>
<td>BEL-ALL</td>
<td>24% (N=86)</td>
<td>48% (N=84)</td>
<td>33% (N=3)</td>
<td>33% (N=3)</td>
</tr>
<tr>
<td>BOTH (Bel +</td>
<td>23% (N=102)</td>
<td>48% (N=61)</td>
<td>28% (N=64)</td>
<td>(38%) (N=24)</td>
<td></td>
</tr>
<tr>
<td>Marb)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 13. PERCENTAGE OF ARTEFACTS WITH CORTEX, BY AREA, ARTEFACT CLASS AND RAW MATERIAL TYPE (BELINUP).**

Discussion

Raw material composition at the Stone Arrangements site is significantly different to the other sites in the Belinup area, and is the only Belinup assemblage containing silcrete. The presence of silcrete here is interpreted as evidence of stone being brought from the north. This may be the result of visiting personnel or the result of contact/trade with non-local personnel. Alternatively, the presence of silcrete may be the result of Nyungar people accessing this type of stone in the fringing north of their territory, or in neighbouring Ngadju lands. Some of the silcrete sources may have been in shared areas or interactions zones between the neighbouring...
groups. The low proportion of cores is also consistent with predictions of technologies focusing on late stage reduction, as are the relatively late stage cortical chert cores and flakes. The high proportion of retouched implements conforms to expectations of provisioning individuals and residential mobility, while the relative abundance of backed artefacts – a lightweight portable tool with immediate utility – appears to suit a mobile tool-kit.

Overall, this assemblage stands out among the Belinup sites and is the only one with technological traits consistent with an interpretation of aggregation, which is largely based on the presence of local and non-local stone. In particular, evidence that may indicate mixed personnel and residential mobility, found in direct association with the stone arrangements, may reflect aggregation activities. It also seems highly likely that other non-aggregation activities took place here too, and these may or may not have been contemporaneous with the stone arrangements presence or use. Overall, the analysis reflects a diverse lithic technology with a range of technological behaviours, which may not necessarily all relate to ceremonial purposes. In this instance, time-averaging associated with palimpsests of different activities at different times would likely be the reason, at least in part, for the pattern appearing more complex than predicted.

6.5.4 Activity Area – BEL1

Site-Structuring Predictions
Situated along the flats of the river, near a waterhole, sheltered from prevailing south-westerly winds is a small scatter that Traditional Owners interpret as a regular camping place, which is consistent with site predictions made by Smith (1993), whose research demonstrated a clear association between the frequency of sites with proximity to resources (granite, freshwater etc.)
as well as shelter from prevailing south-westerly winds. As a camping place it is expected to see a diverse range of activities taking place, and therefore predicts a diversity of technological attributes ranging from early to late stage reduction. Being situated within 100m of a chert quarry, a heavy or total prevalence of that material is expected, with evidence of early stage reduction, and cortical material, as well as a full range of reduction as implements are made, utilized, perhaps re-used and discarded.

Results
A total of 41 artefacts were recorded in the BEL1 artefact scatter, of which 100% were made from chert (Table 10). There is just one core (2.4%), compared with 4.8% across the complex as a whole. There are seven complete flakes, 26 broken flakes and seven fragments, with no retouched flakes and no tools (Table 11 and 12).

Discussion
Overall the assemblage does not appear to have the technological diversity and wide range of reduction stages that would be expected of a campsite. However, this is a very small assemblage, which may account for the lack of artefact diversity. Currently much of the ground visibility is obscured by vegetation prohibiting a more exhaustive survey. The sample was obtained through artefacts exposed in a cleared track, so are likely just a small sample of a broader assemblage. Nonetheless, based on the current sample of recorded artefacts, the predictions for BEL1 as a camping place are not upheld.

6.5.5 Activity Area – Coastal Ridgetop

Site-Use Predictions
This site is on a ridgeline that overlooks the river mouth, the stone arrangements and the ocean. No clear prediction is made for how this location was used. The outlook, which is quite extensive, may have been a factor in why and how this location was used as well as its proximity to the stone arrangements and the river mouth. It seems unlikely that it was used for camping as it is exposed to the elements and prevailing winds. Although it provides a view of the ceremonial area there is no clear reason to expect it was directly associated with ceremonial activity. It does not appear a good hunting place as it is open, exposed and on a high point in the landscape. It may have been used for a lookout and activities associated with gearing up for logistical forays, or perhaps some woodworking or food processing (such as butchering). If it was used for gearing up, all stages of reduction might be expected, but primarily mid-late stage reduction, preparing tools for hunting or for extended travels. In the case of woodworking or food processing, more late-stage reduction is expected, associated with the final aspects of tool production and maintenance, and used and exhausted tools. No specific prediction was put forward by the Nyungar research participants about how this site was used in the past.

Results

A total of 76 artefacts were recorded at Belinup Ridge, of which 88.2% were made from chert, 9.2% quartz, and 2.6% other (one granite grindstone) (Table 10). There are two cores (2.6%), compared with 4.8% across the Belinup complex as a whole. There are five complete flakes, 40 broken flakes and 20 fragments (Table 11). There are nine retouched flakes (11.8%), which is high compared with the overall Belinup complex, among which 5.6% are retouched. The tools consist of two backed blades and the only grindstone among any of the assemblages at Belinup or Marbaleerup (Table 12). Among the four chert complete flakes, one has cortex (25%), while seven of the nine chert cores have cortex (77%) (Table 13).
Discussion

This is an interesting and somewhat enigmatic assemblage. The prediction was rather vague from the outset as the location did not really lend itself to any clear expectations of site-use other than perhaps ‘gearing up’, woodworking, butchering or a combination. The lithic assemblage is relatively small but diverse, showing all stages of the reduction (except quarrying), with a high percentage of retouched implements. There is a high percentage of cortex (77%) on cores which is not altogether surprising given the close proximity to a quarry source, however it is likely to be an effect of small sample size with just nine cores in the assemblage. A grindstone and backed artefacts suggest a range of activities were taking place. This combination of attributes reflects camping (wide range of technologies and less-portable items – grindstone), individual provisioning (heavily retouched implements and tools) and residential mobility. This among all the assemblages appears most like a palimpsest of different activities taking place over time and presenting a diverse material trace. It seems probable that people camped here at times, but is not likely a major camping place due to its exposure to prevailing weather. On the other hand, it is a beautiful spot in good weather, with a view over the ocean, the mouth of the River and the stone arrangements area, so it may have been a good camping spot for short periods of time, and at certain times of the year. Perhaps people did not camp here often or for long, but simply spent time up on the ridge while camping close by. During such times, they may have undertaken a range of tasks and activities.

6.5.6 Activity Area – Upper Creek

Site-Use Predictions

Located in the upper reaches of the Thomas River where a series of ephemeral creek lines conjoin to form the river (5km north of the river mouth) is a large, diffuse scatter. A small
sample of the total number of artefacts has been recorded. This location has a direct ethnographic interpretation which posits it as an ‘assembly area’ where people who had travelled in from other areas to take part in aggregation activities, would wait until receiving word that it was time to come down into the ceremonial hub around the rivermouth (Gail Yorkshire-Selby, pers. comm., 20 February 2012). It was expected that the lithic signature would reflect high residential mobility, with some exotic materials, late stage reduction, perhaps some discarded tools and relatively high intra-assemblage variability.

Results

A total of 79 artefacts were recorded in the Upper Creek scatter, 100% of which were made from chert (Table 10). There are nine cores (11.4%), compared with 4.8% across the complex as a whole. There are 14 complete flakes, 32 broken flakes and 24 fragments, with no retouched flakes and no tools (Table 11 and 12). Among the 14 chert complete flakes one has cortex (7%), while six of nine chert cores have cortex (66%) (Table 13).

Discussion

This assemblage does not conform to the prediction of an ‘assembly area’ for visiting personnel at all. This may be a result of small sample size within a numerically large and spatially diffuse artefact scatter, but the expectations of people travelling in from afar and camping/waiting here are not reflected in the assemblage, which consists entirely of local chert, contains no formal tools or retouched artefacts, and has a high percentage of cores with a high percentage of cortex. The current data supports an interpretation of this place as a logistical site focussed on raw material extraction and early stage reduction of locally obtained stone.
6.5.7 Activity Area – Quarry

Site-Use Predictions

This site is an artefact scatter situated approximately 200m from the stone arrangements and immediately adjacent to a limestone quarry, actively used by the Department of Parks and Wildlife as a source of material for road base. The limestone contains chert. This location is interpreted as a quarry/early reduction site because of its obvious association with a large outcrop of chert-bearing limestone (Plantagenet chert from the Pallinup siltstone formation), and high density of flaked stone material (115 artefacts in a 5x5m sample square). The expectations predict early reduction with lots of cortical material, large flakes and cores.

Results

The assemblage (N=114) consists entirely of chert, with most artefacts having some cortex (73 of 113 artefacts have some cortex) (Table 10 and 13). There are seven cores (6.2%). There are 15 complete flakes, 43 broken flakes and 46 fragments, with two retouched flakes and no tools (Table 11 and 12). Among the 16 chert complete flakes eight have cortex (50%), while seven of 13 chert cores have cortex (54%) (Table 13).

Discussion

This assemblage largely conforms to expectations of use as a quarry and is interpreted as a logistical site focussed on raw material extraction, early stage reduction and tool production.
6.5.8 **Activity Area – Boyatup Rock Art Site**

**Site-Use Predictions**

This site is an artefact scatter on flat granite expanse adjacent to the rock art site at Boyatup Hill. It is situated 13km north of Belinup stone arrangements. The granite outcrop provides good freshwater collection properties and biodiversity making it a resource rich node for Aboriginal subsistence. The presence of a small rock art assemblage suggests the place had importance to Aboriginal people but it is not known exactly how this might affect the site-use predictions. This is predicted as a camping place, being in a sheltered location close to granite. On this basis it is predicted to have a range of generalized activities taking place, and therefore predict a diversity of technological attributes. Nyungar knowledge attributes significance to this place because of the rock art and other features but no specific site-use predictions were put forward by the research participants.

**Results**

The assemblage at the Boyatup rock art site (N=47) consists almost entirely of chert, other than a single quartz flake fragment (Table 10). There is one core, six complete flakes, 21 broken flakes and 31 fragments, with no retouched flakes and no tools (Table 11 and 12). Among the 6 chert complete flakes one has cortex (17%), while one of five chert cores have cortex (20%) (Table 13).

**Discussion**

This site was predicted as a camping place but the assemblage does not conform to the prediction due to a lack of technological diversity, no raw material diversity, and a lack of working implements. The small assemblage appears more like a ‘gearing up’ site as part of a logistical mobility strategy, based on a prevalence of early to mid-level reduction (with high
levels of cortex, few cores and no tools or retouched flakes). There is evidence of place provisioning with useable stone (chert), of which the nearest source appears to be approximately 2km from Boyatup. The assemblage is interpreted predominantly as a logistical gearing up site. It may be that this area was used for social/ceremonial purposes related to the rock art and that people chose to camp away from this location. The relationship between the rock art and the lithic technology remains unclear.

### 6.5.9 Summary

The results of lithic analysis at the Belinup Stone Arrangements site partially conformed to the prediction of this activity area having been part of aggregation activities, on the basis of a statistically significant over-representation of imported silcrete within an assemblage otherwise dominated by locally available chert. However, the total numbers of silcrete artefacts were low, which suggests caution should be excercised in attributing too much significance to their presence. The technological signature at the Stone Arrangements site is mixed and does not specifically confirm or deny the predicted focus on social, spiritual or ceremonial activities.

Results at BEL1 did not uphold the prediction of a regular camping place due to low overall technological diversity. No clear prediction of activities was made for the Coastal Ridgetop site other than possibly being used for gearing up or activities such as butchering or woodworking. The results of the Coastal Ridgetop analysis were inconclusive, indicating a diversity of technological traits, interpreted as reflecting a palimpsest of activities over time.

The Upper Creek site did not uphold the prediction of an ‘assembly area’ for visiting personnel and instead reflected a logistical site focussed on raw material extraction and early stage
reduction. Results of analysis at the Quarry site upheld the prediction of raw material extraction, early stage reduction and tool production, associated with gearing up and perhaps long range travel.

The results of the Boyatup lithic analysis did not uphold the prediction of a camping place due to low technological diversity and appeared to reflect a logistical site used for gearing up.

Overall, the Belinup complex does not uphold the prediction of an aggregation locale very well, due to a lack of solid evidence for mixed regional personnel. While the possibility of aggregation is not specifically denied by the lithic results, nor can it be confirmed. Instead the results reflect logistical mobility strategies being employed as part of regular and sustained use of the area by local people. These results are briefly summarized in table 14 below.

<table>
<thead>
<tr>
<th>Site/ Activity Area</th>
<th>Predictions of Associated Activities and Technological Signature (from Table 9)</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belinup Stone Arrangements</td>
<td>Local and non-local stone; generalized technology; late stage reduction; tool maintenance; use; sharpening; preparing implements for immediate utility. Ceremonial hub; local and non-local personnel; centre of social and spiritual activities; non-economic, non-domestic</td>
<td>Local Stone (chert) dominates, some non-local stone (silcrete); low proportion cores consistent with late-stage reduction activities; no evidence of specialised tool production; high proportion retouched implements suggests provisioning individuals and residential mobility; high proportion backed artefacts suggests immediate utility, suitable for a mobile tool-kit, individual provisioning and residential mobility. Overall, diverse lithic technology, full range reduction phases, does not support prediction that the site was used only for ceremonial purposes, but some evidence for aggregation and possible visiting personnel.</td>
</tr>
<tr>
<td>BEL1</td>
<td>Local stone; cortical material; diversity of technology; all stages of reduction; tool production; tool use/re-use; re-sharpening; discard. Camping Place; local personnel; Mixed activities</td>
<td>100% local Stone (chert); some cortical material; low technological diversity; not all phases of reduction represented; no evidence of tools or re-sharpening. Overall, does not uphold prediction of camping place because low technological diversity and limited range reduction phases.</td>
</tr>
<tr>
<td>Belinup Coastal Ridgetop</td>
<td>Local stone; generalized technology; mid-late stage reduction; tool production. maintenance, use and discard. No clear/specific prediction; local personnel; gearing up; woodworking or food processing (such as butchering).</td>
<td>Local stone (chert); small but diverse assemblage; all stages of reduction (except quarrying); high proportion retouched implements; high percentage of cortex on cores; grindstone and backed artefacts.</td>
</tr>
</tbody>
</table>
Overall, combination of attributes reflects camping (wide range of technologies and less-portable items), individual provisioning (heavily retouched implements and tools) and residential mobility. Probably reflects palimpsest.

| Belinup Upper Creek Area | Non-local stone; formal technologies; late stage reduction; tool maintenance, re-use, discard; high intra-assemblage variability. ‘Assembly area’; non-local personnel; gathering/waiting before aggregation. Chert; cortical material; large flakes and cores; early reduction. Chert quarry; local personnel; specific activities; raw material extraction | All local stone (chert); no formal tools or retouched artefacts; high percentage of cores with cortex, low intra-assemblage variability. Overall, does not support prediction. Evidence suggests logistical site focussed on raw material extraction and early stage reduction. 100% local material (chert); cortical material, large flakes and cores. Overall, upholds prediction of a logistical site focussed on raw material extraction, early stage reduction and tool production. |
| Belinup Chert Quarry | Overall, does not support prediction. Evidence suggests logistical site focussed on raw material extraction and early stage reduction. 100% local material (chert); cortical material, large flakes and cores. Overall, upholds prediction of a logistical site focussed on raw material extraction, early stage reduction and tool production. |
| Boyatup | Local stone; diversity of technology; all stages of reduction; tool production; tool use/re-use; re-sharpening; discard. Camping Place; local personnel; Mixed activities 100% local stone (chert) imported from off-site (place provisioning); low technological diversity; no tools; no retouch; early to mid-stage reduction. Overall, does not uphold prediction. Suggests logistical site, perhaps gearing up. |

TABLE 14. BELINUP COMPLEX: SUMMARY OF PREDICTIONS AND RESULTS

6.6 CONCLUSION

The Marbaleerup complex, incorporating Marbaleerup proper (Mt Ridley), satellite sites MO1 and MO2, and near-by rock art site, Budjari Yorg, present a picture of an aggregation complex that supported mixed regional personnel travelling to Marbaleerup (residential mobility) and utilizing localized logistical mobility strategies, incorporating special purpose logistical sites (Figure 10 - Marbaleerup Lithic Landuse Map). Results of lithic analyses support the interpretation of an aggregation complex, focussed around an aggregation hub at Marbaleerup proper (Mt Ridley). There is evidence of mixed personnel including Nyungar and Ngadju people at the aggregation hub (Marbaleerup proper) and at Budjari Yorg. MO2 and to a lesser extent MO1 appear to have been utilized by people who brought silcrete from Ngadju country, in the form of pre-prepared cores and blanks as well as ready-made tools. This supports the interpretation of these places having functioned as logistical sites and perhaps short-term camping sites for visiting Ngadju, or other desert affiliated people. Although, it could also have
been Nyungar people who obtained silcrete from the north either through travel or trade. In that respect it is notable that retouch is overall significantly more abundant in the combined Marbaleerup (10.0%) sample than in that from the Belinup complex (5.6%). A chi square test demonstrates the statistical significance of these differences ($\chi^2=7.064$, df=1, $p=0.008$). To the extent that retouch abundance may be equated with curation and mobility, the data suggest higher mobility in the interior around Marbaleerup than in the better-watered regions towards the coast. Interestingly, though, the difference between the two areas in core abundance is non-significant as the high $p$-value (>0.05) in this chi square test indicates ($\chi^2=0.234$, df=1, $p=0.278$).

The Belinup complex is not so clear as Marbaleerup, but the lithic data do offer a basis for interpretation. The stone arrangements site at Belinup proper is the only assemblage in the Belinup complex that may support an interpretation of mixed personnel based on the presence
of imported stone from the interior (Figure 11 - Belinup Lithic Landuse Map), although it is acknowledged that movement of stone does not necessarily equal movement of people. However, the imported stone does imply a connection with non-local, non-Nyungar personnel. There is some evidence to support an interpretation of aggregation at Belinup stone arrangements and while the signal is not so strong as it is at Marbaleerup, the data do support the idea of the stone arrangements being a hub of any aggregation activities that did take place in this locality. As the evidence suggests a lower overall level of residential mobility near the coast, then it may be that the signal of aggregation at sites like the Stone Arrangements have been more strongly over-printed by local activities than comparable sites towards the interior.

The other sites in the Belinup complex mostly appear to reflect logistical sites (Boyatup, Upper Creek site, BEL1 and Belinup Quarry), except for the Coastal Ridgetop site overlooking the rivermouth and stone arrangements. This assemblage as a whole has a mixed signal, which probably reflects a range of activities and perhaps significant time averaging. There is no strong indication that the surrounding logistical sites at Belinup were used as part of aggregation events.
Marbaleerup and Belinup are situated within different areas of a broader Esperance Nyungar land-use system, of which there is a distinct core and periphery (Figure 12). Esperance Nyungar settlement and land-use is predominantly coastal now and into the distant past. This is reflected in the contemporary knowledge of Esperance Nyungar people about the way their ancestors used the landscape (Doc Reynolds, pers. comm., 24 August 2015). It is also reflected in the archaeology. The results of this analysis have demonstrated that the Belinup complex is part of a logistical land-use system focussed around intensive occupation of the resource rich coastal zone. On the other hand, the Marbaleerup complex has an archaeological signature that reflects a greater focus on residential mobility and reliance on granite outcrops as resource rich nodes in an otherwise harsh landscape for Aboriginal subsistence. While people could sustain occupation in the coastal zone relatively easily throughout the year within a localised system of logistical land-use, life in the interior relied upon periodic movements between sites and
complexes such as Marbaleerup. Long-distance travel was a pre-requisite for occupation in the Esperance hinterland, which may have been restricted to periodic forays from the coast at certain times of the year. If the current Esperance Nyungar conception of traditional land-use during the late-Holocene is accurate, then the occupation of the Esperance hinterland would largely have been confined to forays made by coastal people during the mid-late winter period to take advantage of seasonally available plant resources, before returning to the coast in spring. These inland forays would have coincided with social meetings between the coastal Nyungar and inland groups. Thus, it is likely there would have been an overlap of subsistence economics and social dynamics underpinning the use of places like Marbaleerup, of which aggregation was a fundamental component.

The results of analysis have produced a picture of past land-use at these locations, relative to the research aims and site predictions. While some of the assemblages are too small to produce...
robust interpretations on their own, combining them with other assemblages as part of comparative analyses, has expanded their interpretive potential. The aggregative nature of lithic data ensures that pure interpretive categories are not a realistic expectation and this somewhat tempers the conviction with which interpretive statements may be made, but does not undermine the plausibility of the results. The issue of time averaging and the recognition that all of these assemblages are palimpsests of multiple events and time periods, ensures that the lithic debris subject to analysis are not the result of a single technological process or provisioning strategy. Instead, they are the result of different episodes and eras of human activity. If the human activity is spatially patterned, as we assume it to be, then those patterns should be interpretable through archaeological methods such as those applied here. The results of this analysis have produced a picture of spatial patterning in the use of these places and thus suggest that the methodology has been successful in identifying patterns of past human behaviour, despite the limitations of time averaging.

As discussed earlier in this chapter, the theoretical underpinnings of lithics analysis are dense, varied and sometimes contradictory. These limitations reflect the challenges of interpreting past human dynamics from static archaeological records comprising flaked stone debris. Nonetheless, the theoretical approaches selected for application here are logically consistent and reasonable, as reflected in the results. The limitations of the approaches, and of lithic analysis more broadly have been acknowledged, and some of the uncertainties of analysis and interpretation may reflect theoretical uncertainties. Such limitations notwithstanding, interpretations based on the theoretically informed approaches adopted here are preferable to those which are either solely intuitive, or so abstract as to become divorced from the complexities of lived reality. It is important to remember that ultimately as a discipline we are
not interested in the lithic artefacts themselves so much as the people who made them, used them and discarded them.

Finally, this analysis has been illuminative about the value of putting forward expectations in the form of site-use predictions, to be tested against the data. If we assume that what we think we know is true, then there is a limit to what we can learn. Unexpected outcomes in the form of results that do not conform to site-use predictions, broaden our knowledge of the past. In this analysis, some of the predictions for how sites were used in the past were not supported by the results (eg. BEL1, Boyatup and Belinup Upper Creek Area). That does not mean that they were not true, only that they were inconsistent with the bulk of the archaeological data in this analysis. Seeing that lithic analysis is aggregative in its nature and allows for, in some cases, significant time averaging, the results of analysis will only reflect the broad patterns in past human behaviour, and will obscure much of the variability in activities that people are actually undertaking, particularly one-off activities, short-term activities or those that only account for a small portion of the overall use of a place. This is particularly pertinent to the question of aggregation given that such events only happen periodically, and may occur at locations that are used for a range of other non-aggregation activities, and occupation. This scenario is likely to be affecting the archaeological signature for Belinup, which appears to have been intensively occupied by local people. Thus, identifying aggregation in the archaeological record at Belinup is difficult, and the signal is faint. Despite its inability to identify many of the subtleties in human behaviour, especially those related to isolated activities, archaeology has the ability to contribute to the already known history of a place or region, through the identification of broad patterns in human behaviour, just as this analysis has done for Belinup, Marbaleerup and the Esperance region.
6.7 CHAPTER SUMMARY

This chapter has presented the theory, methodology, results and interpretation of lithic analysis at Marbaleerup and Belinup. The chapter has contributed significantly to research questions one, two and three (discussed further in Chapter 9).

The next chapter analyses stone arrangements and addresses research questions one, three and four.
7 Stone Arrangements as Symbols

7.1 Chapter Introduction

This chapter consists of a sole-authored manuscript accepted for publication in a special volume dedicated to the topic of Australian Aboriginal stone arrangements. At the time of completing this thesis the manuscript is in press through Archaeopress as part of the Access Archaeology Series. The section, figure and table numbering systems have been adapted from the published version to fit with the rest of the thesis. Because the manuscript needed to be a stand-alone document, there is some information repeated here that has already been discussed in previous chapters. The paper is directly relevant to the thesis and specifically addresses research questions one and four through an analysis of the stone arrangements at Belinup and Budjari Yorg.


7.2 Introduction

At Belinup in 2007, a senior Esperance Nyungar Elder, Veronica Williams-Bennell, pointed out the distinct similarity in form between the Belinup stone arrangements and the Budjari Yorg arrangements. Veronica asked me how they were connected and if I thought that they shared the same function given the obvious similarities in form, and if so what that function may have been? I did not know the answer to any of these questions. It struck me however, that these were very good questions that gave rise to a number of interesting topics for archaeological
In Esperance Nyungar country on the South Coast of Western Australia, like many parts of Australia, stone arrangements are a regular feature in the cultural landscape. While some arrangements clearly have practical functions, such as fish traps, many have no obvious practical or economic function. It is commonly believed that such arrangements were associated with ceremonial aspects of Aboriginal society. Belinup and Budjadi Yorg, are two large stone arrangement complexes of this type.

There is limited information pertaining to stone arrangements in Western Australia (Benson-Lidholm 1983:78; Randolph 2011:50) and researching them is difficult. One limiting factor is potential cultural sensitivity. The significance often attached to stone arrangements by Traditional Owners means that information about them may be restricted and unavailable to researchers. The poor documentation of many sites can pose difficulties. Robust methodologies and theoretical frameworks for better interpreting stone arrangements in Australian archaeology are urgently required. This paper proposes a theoretical framework which considers the arrangements as symbols, and then applies a methodology that is broadly based on conventions established through the field of rock art studies (McDonald 2006). This allows for the symbols to be broken down into their composite parts, recorded, quantified and analysed and the results used to make interpretations about past Aboriginal society.

The study sites are situated close to the eastern and northern periphery of what is currently considered Esperance Nyungar country (Figure 13). While this map is based on current conceptions of identity and territory, formalised into fixed boundaries through the Native Title process, they are underpinned by a historical trajectory, and have direct relevance to pre-
European notions of identity and territory. Historical evidence suggests that this area saw a dynamic process of ceremonial and ritual exchange between the Esperance Nyungars and the neighbouring Ngadju during the late-Holocene, as part of a broader expansion of Western Desert law and culture (Gibbs and Veth 2002). The boundary itself is not important to this study, so much as a recognition that distinct groups of people with different law, identity and territory, interacted with each other in this space. Thus it may be conceived of as an interaction zone.

There is no direct evidence to suggest that the Esperance stone arrangements are related to Western Desert law, which is not practiced in the Esperance area today. None the less, the Western Desert influence on the Esperance region would have had implications beyond activities related specifically to law, by opening up new broad-scale alliance and subsistence networks with desert people (Gibbs and Veth 2002). It has been suggested elsewhere (Hook...
and Di Lello 2010) that stone arrangements are likely to have been used in mediating such networks, as part of aggregation events (Conkey 1980).

This paper sets out to test the hypothesis that form and location of the Belinup and Budjari Yorg stone arrangements may indicate associations with Western Desert culture. Alternatively, the arrangements may be more strongly associated with Southwest culture, or contain a mixture of elements. In the absence of a direct ethnographic explanation, I focus on information that may be obtained through archaeological methods – form and location – and a comparison with available data on the form and location of other stone arrangements from surrounding Southwest (Noongar) and Western Desert/Goldfields (non-Noongar) regions (Figure 14).

![Regional map showing all sites considered in the analysis](image)

**FIGURE 14. REGIONAL MAP SHOWING ALL SITES CONSIDERED IN THE ANALYSIS (SITE NUMBERS ARE REFLECTED IN TABLES, SEE BELOW)**

**7.2.1 Esperance Nyungar Country – geographical and cultural context**
Esperance Nyungar country is situated at the south-eastern edge of the Southwest region of Western Australia, a geographical and culturally defined region. It is geographically defined by rainfall/drainage as the Southwest Drainage Division (Beard 1999) and by vegetation as the Southwest Australian Floristic Region (Hopper and Gioia 2004). The Southwest region is also culturally defined, as Noongar country (Figure 13). Noongar people share common language and customs across this large area, which distinguish them from other parts of Aboriginal Australia. Nevertheless, there is local cultural variation, and different sub-groups of Noongar people identify with particular local areas.

The Esperance Nyungars represent one such sub-group, although the term Esperance Nyungars is in itself a modern title, influenced by the contemporary political landscape of Aboriginal society. The northern and eastern neighbours of Esperance Nyungar country are the Ngadju people, who are part of the Western Desert cultural bloc. There are close family ties between the Ngadju and Esperance Nyungars which date back to pre-contact relationships (Murray Bullen, pers. comm., 2 Sept 2015).

Esperance Nyungar country is broadly composed of two distinct geographical sub regions; the coastal zone (Esperance sandplain), and the interior (Esperance Mallee). The coastal zone is a typically Mediterranean climate with wet winters and dry summers and average annual rainfall of 600 to 700 mm. In the interior zone, rainfall is less predictable and may occur at any time of the year, and averages 350-400mm (Smith 1993: 14). The coastal zone is dominated by drifting sand dune systems on a coastal plain, punctuated by granite domes, headlands and pavements, short estuarine rivers, creeks, swamps and lakes, mostly fresh water but some saline. Vegetation in the coastal zone is comprised of thick coastal scrub, providing very high biodiversity. The interior zone is dominated by wide open expanses of gently undulating open
mallee woodland, with uncoordinated drainage and many salt lakes, which are dry much of the year. Like the coastal zone, the interior is punctuated with granite domes and terraces though less frequently. Biodiversity in the interior is lower than the coastal district (Smith 1993: 16).

7.3 INTERPRETING STONE ARRANGEMENTS

Some consideration of the literature is presented here as a background for interpreting stone arrangements through archaeological methods. This includes discussion of the social situation in which the arrangements were created and some theoretical background about the significance of marking landscapes with stone.

There are numerous examples from around Australia of stone arrangements being linked through ethnography to ceremonial and/or ritual activities (Benson-Lidholm 1983; Cawthorne 1963; Hook and Di Lello 2010; Palmer 1977; Radcliffe-Brown 1926; Rowlands and Rowlands 1966, but see Long 1967 for critique; Wallace 1980). Tacon emphasises the significance of stone arrangements as ways of marking and thus “socialising” landscapes. He argues that “in the process of marking and mythologising landscapes humans socialised them” (Tacon 1994:117). He emphasises the use of various kinds of non-economic stone arrangements in marking special or sacred places as “centres for ritual associated with religious knowledge” (Tacon 1994:125). The creation of stone arrangements would have long lasting implications for the way in which people interact with that place:

Initially, stones were arranged to mark the ritual sites, but later they came to play an important role in the practices performed. Among other things, their presence and permanence reaffirmed the power and long lasting persistence of religious knowledge associated with the site, as well as the larger natural and supernatural environment (Tacon 1994:21).
In the first instance, it is in the act of creating a stone arrangement that ritual is enacted and ritual space is reified. Acknowledging that the making of a stone arrangement may be the result of multiple episodes of production, or indeed ongoing construction, and thus ritual may continue to be enacted over time. Stone arrangements may also be reused, rearranged or re-interpreted (Ross 2008). Some researchers emphasise the use of stone arrangements in ordering or structuring movement, performance and activity, which had ritual significance (Insoll 2009). These movements may also change, evolve and be reinterpreted over time.

As observed previously, continuity of ritual and performance is not necessarily precluded in relation to spatial understanding and so conceived the stone arrangements are possibly best seen as enduring material symbols of performance, movement, and ritual (Insoll 2009).

The permanence of stone is significant and the enduring nature of stone arrangements indicates that their makers intended them to mark places indefinitely.

Thus stone is an ideal medium for the transmission of knowledge about landscapes, visual expression concerning the nature of a group of people, and ideas or experiences important to individuals within groups (Tacon 1994:126).

Marking of landscapes with stone arrangements or other symbols, was also an important way of organising people’s movement and behaviour at a landscape scale.

As an area increasingly was marked and stamped with signs, symbols and other visual expressions of culture it became more and more integrated into a system that is neither fully natural nor cultural, rather a larger system that is a combination of both. This helped make a landscape more familiar culturally but it also transformed it into a set of places that are home or not home, restricted or not restricted, in or out of bounds, permissible to visit or not permissible unless there was some change of circumstance (Tacon 1994: 124-125).

Stone arrangements can be tied to identity and territoriality across time and space. The enduring nature of stone arrangements, and their being fixed in place, means that as symbols within a socialised landscape, they have the capacity to translate information over multiple generations, allowing for changing interpretations of the symbols over time. As Tacon points out, elements
of a socialised landscape, particularly long-term symbols like stone arrangements relate directly to identity, both individual and collective.

Much of it is related to expressions of time, space, human experience and cultural identity, the building blocks of all human cultures, past and present. We socialise the landscape because that is one of the ways in which we define ourselves (Tacon 1994: 127).

Elsewhere in Western Australia stone arrangements have been linked to aggregation and corporate signalling behaviour as a means to maintain and renegotiate broad-scale alliance and subsistence networks.

In this context stone arrangements and their construction are viewed as part of a wider graphic system which was used to control and promote the exchange of information. The Gurdadaguji stone arrangements may be an artefact of increasing ceremonial and ritual behaviour which may have managed the pressures placed on societies from increasing populations, and to bind increasingly segmented groups in mutually supportive alliances. Here, the role of ‘aggregation locales’ (ceremonial and ritual sites), such as the Gurdadaguji stone arrangements, are seen as inclusive of disparate groups in the face of what can be argued to be a period of population increase and social fragmentation. Such sites may be symbolic of cultural forces that bind societies and people together over large distances (Hook and Di Lello 2010:293).

Interestingly the Gurdadaguji stone arrangements are argued to have been related to similar negotiations of territory and identity as the Esperance study area, linked to the rapid expansion of Western Desert law and culture proposed by Gibbs and Veth. The Gurdadaguji arrangements are some 1500km north of Esperance so are not closely related geographically, but both areas have been influenced by the spread of Western Desert law and culture.

Hook and Di Lello’s interpretation of the Gurdadaguji arrangements forms a hypothesis for interpretation of the Esperance Study sites; that the stone arrangements at Belinup and Budjari Yorg are ritual and ceremonial places within aggregation locales, and have relevance to the negotiation of broad scale alliance and subsistence networks.
7.4 COMPARING BELINUP AND BUDJARI YORG STONE ARRANGEMENTS

The analysis is organised around four observable characteristics. 1) *Physical setting* provides a basic description of the landscape setting in which the stones are arranged. 2) *Component parts* (Table 15) presents measurable and observable data about the stones used in the arrangements. 3) *Motif* (Table 16) describes individual shapes or features within the complex, similar to the way motif is used as a class in rock art analysis (McDonald 2006). When multiple kinds of stone arrangement motifs are found at a single location, they are considered a stone arrangement complex (McCarthy 1970). 4) *Overall Design* refers to the stone arrangement complex as a whole, combining all of the motifs.

<table>
<thead>
<tr>
<th></th>
<th>Belinup</th>
<th>Budjari Yorg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Length of Stones (cm)</td>
<td>36</td>
<td>27</td>
</tr>
<tr>
<td>Mean Width of Stones (cm)</td>
<td>24</td>
<td>13</td>
</tr>
<tr>
<td>Mean Height of Stones (cm)</td>
<td>11</td>
<td>18</td>
</tr>
<tr>
<td>Standard Deviation (Length cm)</td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>Standard Deviation (Width cm)</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>Standard Deviation (Height cm)</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>No. Single Stone Stacks (% of stacks)</td>
<td>266 (65%)</td>
<td>721 (87%)</td>
</tr>
<tr>
<td>No. Double Stone Stacks</td>
<td>42 (10%)</td>
<td>60 (7%)</td>
</tr>
<tr>
<td>No. Triple Stone Stacks</td>
<td>32 (8%)</td>
<td>19 (2%)</td>
</tr>
<tr>
<td>No. Quadruple Stone Stacks</td>
<td>27 (7%)</td>
<td>13 (2%)</td>
</tr>
<tr>
<td>No. Stacks containing 5-10 Stones</td>
<td>42 (10%)</td>
<td>15 (2%)</td>
</tr>
<tr>
<td>Number Cairns (&gt;10 stones)</td>
<td>0</td>
<td>4 (&lt;1%)</td>
</tr>
<tr>
<td>Total Number of Stacks</td>
<td>409</td>
<td>832</td>
</tr>
<tr>
<td>Minimum Total Number of Arranged Stones</td>
<td>764</td>
<td>1065</td>
</tr>
</tbody>
</table>

Table 15. Component Parts (Belinup and Budjari Yorg)
### TABLE 16. TABLE OF MOTIFS AT BELINUP AND BUDJARI YORG

<table>
<thead>
<tr>
<th>MOTIF CLASS</th>
<th>DESCRIPTION</th>
<th>Belinup</th>
<th>Budjari Yorg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triangle (TRI)</td>
<td>Three-sided shape. Sides may or may not be equal length</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Square (SQ)</td>
<td>Four-sided shape with roughly equal length sides</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Rectangle (REC)</td>
<td>Four-sided shape that is not a square</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Rectangle Irregular (RI)</td>
<td>Four-sided, with non-equal length sides creating an irregular shape</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Spiral (SPI)</td>
<td>Single curvi-linear motif resembling a spiral</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Polylinear Parallel (PLP)</td>
<td>Two or more lines of arranged stones, parallel to one-another</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Polylinear (PL)</td>
<td>Two or more lines, joined in some way, not parallel and is not one of the shapes otherwise listed in this table</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Linear (L)</td>
<td>Straight line, 3 or more stones</td>
<td>17</td>
<td>16</td>
</tr>
<tr>
<td>Curvilinear (CL)</td>
<td>Curved line, 3 or more stones</td>
<td>11</td>
<td>15</td>
</tr>
<tr>
<td>Circular (C)</td>
<td>Regular circle shape</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Circular Irregular (C1)</td>
<td>Non-regular circular shape</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Circular Irregular Infilled (CII)</td>
<td>Non-regular circular shape with with stones filling the centre</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Circ + Curv (Tadpole) (TAD)</td>
<td>A short (&lt; 3m) curvilinear with circular shape at one end, resembles a tadpole shape</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Semi Circle Open (SCO)</td>
<td>A curvilinear motif that arcs around to form a half circle</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Cairn (CAI)</td>
<td>Pile of 10 or more stones</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Two cairns joined by a line of stones (2C+L)</td>
<td>Two distinct cairns joined by a line of stones (2x cairns in this feature are included in the total no. cairns above)</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Irregular (I)</td>
<td>Abstract shape that is not otherwise classifiable</td>
<td>20</td>
<td>7</td>
</tr>
</tbody>
</table>

**Physical Setting**

The Belinup arrangements are situated on a granite rise with a south-westerly aspect, overlooking the Southern Ocean and the mouth of the Thomas river (Figure 15 a,b,c). As with much of the coastal area, resources suitable for use by Aboriginal people are plentiful within the immediate vicinity. The arrangements are placed on the granite, some directly on the granite surface and some within shallow sediment atop the granite. There has been no subsurface investigation of the stones within sediment, but there is no evidence that the stones were
embedded as part of construction. The sediment has probably accumulated around the stones in situ. There has been noticeable disturbance to the arrangements in the past but a large number of intact arranged stones remain in place.

FIGURE 15 A. BELINUP, LOOKING SOUTH-WEST

FIGURE 15 B. BELINUP CURVILINEAR MOTIF FACING WEST
The Budjari Yorg arrangements (Figure 16 a,b,c) are located some 80km from the coast (105km NW of Belinup), situated on a low granite rise with 360° aspect, overlooking the surrounding flat, open mallee woodland, and clear views of distant granite domes and peaks. There is a line of sight to the location of another stone arrangement complex on a flat granite terrace between Mount Ney and Mt Heywood (Figure 16 a) and to the rock art site of Marbaleerup situated 13km away. Resources suitable for use by Aboriginal people are somewhat limited, including fresh water which is only available during parts of the year, following rain. The arrangements are placed on the granite and nearly all stones are sitting directly on the granite surface, but for a few on lower areas that are engulfed by shallow sediment, which probably occurred as a result of natural silting up, subsequent to the original construction of the arrangements.
FIGURE 16 A. PHOTO SHOWING BUDJARI YORG PHYSICAL SETTING, VIEW TO DISTANT GRANITE OUTCROPS MT HEYWOOD (LEFT), MT NEY (RIGHT) AND GENERAL LOCATION OF ANOTHER NEAR-BY STONE ARRANGEMENT SITE (CENTRE). DISTINCTIVE ‘TWO CAIRNS JOINED BY A LINE OF STONES’ MOTIF IN THE FOREGROUND.
FIGURE 16 B. PHOTO OF DISTINCTIVE ‘CIRCULAR-IRREGULAR’ FORM AT BUDJARI YORG WHICH BEARS CLEAR SIMILARITY TO A FORM AT BOORABBIN

FIGURE 16 C. TYPICAL EXAMPLE OF ‘LONG CURVI-LINEAR’ FORM AT BUDJARI YORG
Component Parts

More than 764 arranged stones have been recorded at Belinup and more than 1065 stones have been recorded at Budjari Yorg. Piles of more than five stones were recorded simply as >5 and cairns were recorded as >10 so total numbers are somewhere in excess of this number (Table 15). Many more stones are part of what appear to be partial or disturbed arrangements, which have been recorded as ‘possible’ arrangements, but these are not included in this total figure. All the arranged stones at both sites are locally available granite and there is no evidence that any stones have been brought from off-site. Most of the stones are small enough for a single person to lift comfortably. Table 15 shows the size of the stones and the proportion of how many are placed singly, or in piles/stacks of 2, 3, 4, 5, or >5. More stones are placed singly at Budjari Yorg than at Belinup and the mean size of Budjari Yorg stones are slightly smaller than at Belinup.

Motif

The Belinup motifs (Figures 17 a,b,c,d,e,f,g) and Budjari Yorg motifs (Figures 18 a, b, c, d, e, f) are dominated by linear and curvilinear shapes (Figures 15b, 16c, Table 16) constructed of arranged single stones or small stacks of multiple stones (Figure 15c; Table15). At Budjari Yorg ‘Linear’ forms are also common (7 of 42), followed by circular (5) and ‘circular infilled’ (3). ‘Circular + curvilinear’ or ‘tadpole’ shape was a distinctive recurring motif at Belinup but there are none at Budjari Yorg. These consist of short (less than 3m) curvilinear lines with a small circular shape (less than 2m diameter) at one end (Figure 17g). There are five ‘circular irregular’ shapes at Belinup, labelled as such because they do not conform to a definite shape but are broadly circular. There is one notable ‘spiral’ shape at Belinup, which is attached to a long curvilinear line, comprising a visually striking, serpentine form (Figure 17f). There is one spiral at Budjari Yorg, but it is far less distinctive than the Belinup example and is not associated with
an extended curvilinear line. There are a number of ‘lizard traps’ at Belinup (at least 25 have been counted intact, with many others likely to have collapsed or become silted up) across the site, clustered in some areas (Figure 17b).\(^\text{12}\) While fewer in number, lizard traps also occur at Budjari Yorg. A distinctive form that occurs at Budjari Yorg but not Belinup is two cairns, situated 5m apart and joined by a line of stones, (Figure 16a, 18c). A large (>10m in length) elliptical shape, or ‘circular-irregular’ form is also present at Budjari Yorg (Figure 16b, 18e). A number of motifs at both sites are listed under the ‘irregular’ category. Most of these probably represent arrangements that have been highly disturbed, are incomplete, or where it is difficult to distinguish between arranged stones and naturally occurring stones.

\[\text{FIGURE 17 A. BELINUP STONE ARRANGEMENTS WITH AERIAL IMAGERY (ATTRIBUTION: IMAGERY ©2015 CNES/ASTRIUM DIGITAL GLOBE)}\]

\(^{12}\) Despite the name ‘lizard traps’, these features, which are common on granite outcrops throughout Southwest Australia, are not in fact traps, but artificially created habitats. They are made by propping up a flat slab of granite on a smaller stone, creating a small shelter suitable for lizards to hide beneath, while being easily accessible to human hunters. While some of these simple structures may well occur naturally as a result of the fracturing properties of granite, many are clearly constructed, especially those that have multiple ‘prop’ stones neatly stacked on top of one another.
FIGURE 17 B. BELINUP ARRANGEMENTS, NORTH END

FIGURE 17 C. BELINUP ARRANGEMENTS, MID-NORTH SECTION
FIGURE 17 D. BELINUP ARRANGEMENTS, MID-SECTION

FIGURE 17 E. BELINUP ARRANGEMENTS, SOUTH-WEST SECTION
FIGURE 17 F. BELINUP ARRANGEMENTS, SOUTH SECTION

FIGURE 17 G. BELINUP TADPOLE MOTIF
FIGURE 18 A. BUDJARI YORG STONE ARRANGEMENTS

FIGURE 18 B. BUDJARI YORG, NORTH-EAST SECTION
FIGURE 18 C. BUDJARI YORG, MID NORTH-EAST SECTION

FIGURE 18 D. BUDJARI YORG LOWER NORTH-EAST SECTION
FIGURE 18 E. BUDJARI YORG, UPPER SOUTH-WEST SECTION

FIGURE 18 F. BUDJARI YORG LOWER SOUTH-WEST SECTION
Overall Design

There are two overall visual characteristics at Belinup which are immediately apparent (Figure 17a). These are its elongated shape and its orientation. The arrangement is over 500m long, and no more than 90m across at its widest point. The arrangement is oriented on a north-east to south-west axis of around 45°. These traits are clearly associated with the shape of the granite exposure on which it is placed. It could be argued that the overall design is a result of the granite shape itself, but it must also be acknowledged that the selection of this particular area of granite, in a landscape where granite outcrops are ubiquitous, and the way in which the overall design follows the natural shape of the granite is a deliberate choice by the people who created the arrangement.

The Budjari Yorg design is comprised of two distinct clusters of motifs (Figure 18a), in close proximity to one another (around 500m), separated by vegetation growing in shallow sediment on granite. There may be other motifs in between the existing clusters that are obscured by vegetation or sediment. The two clusters are separated but clearly related on the basis of proximity and shared motifs. The two clusters are delineated here as SW cluster and NE cluster, with the latter being located directly north-east of the former. This SW to NE orientation is similar to Belinup. Both clusters are located on granite exposures which reflects a deliberate selection of open granite areas for the arrangements. As with Belinup, the design elements appear to follow the natural features of the granite in many of the motifs. Curvilinear motifs dominate both parts of the Budjari Yorg arrangement.
7.5 COMPARING WITH SOUTHWEST AND WESTERN DESERT STONE ARRANGEMENTS

This analysis looks at comparative data from 17 sites in the Southwest and 19 from the Western Desert bloc. The data-sets cannot be considered comprehensive because of the limited available data for stone arrangements in southern Western Australia. However, they serve as a basis for comparison. Most of this data is obtained from records of the Western Australia Department of Aboriginal Affairs heritage register. Table 17 presents a summary of all the data relevant to this study across both regions.

<table>
<thead>
<tr>
<th>No.</th>
<th>Site Name/No.</th>
<th>Physical Setting</th>
<th>Type Stone</th>
<th>Motifs</th>
<th>Overall Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Ney-Heywood Arrangement</td>
<td>low flat terrain consisting of shallow white clay sediment atop granite sheets, interspersed with mallee scrub and salt lakes</td>
<td>Granite</td>
<td>long curvi-linear (&gt;30m) roughly parabola shape, 1x short (&lt;20m) linear, 2 x small circular clusters, 1x standing stone dug into sediment. Smooth topped stone</td>
<td>Long curvi-linear is main element of motif, surrounded by smaller discrete elements which do not appear to be intact. Standing stone is outside the main clearing in near-by scrub</td>
</tr>
<tr>
<td>4</td>
<td>Cascades Rock Arrangement (2622)</td>
<td>granite outcrop near waterhole, creek and artefact scatter</td>
<td>Granite</td>
<td>1x long (30m) curvi-linear 'parabola' and 1 x stone circle D=2.75m stacked slab construction</td>
<td>stone circle (stacked slabs) sits north of single curvilinear of regularly spaced stones.</td>
</tr>
<tr>
<td>5</td>
<td>Boorabbin Stone Arrangement (Koorrarawalyee Rock) (31737)</td>
<td>granite outcrop</td>
<td>Granite</td>
<td>5 x cairns, 6x curvi-linear semi-circular ('horse shoes') all with open side toward the west,1x closed eliptical (irregular circular shape),5 x 'marker stones'</td>
<td>Abstract cluster of discreet features forming no clear pattern. Closed irregular circle is largest feature, surrounded by cluster of smaller 'open' irregular circles, all open toward west. Multiple cairns and marker stones</td>
</tr>
<tr>
<td>6</td>
<td>Bobbies Point Arrangement 1 (26355)</td>
<td>Unknown</td>
<td>Quartz</td>
<td>stone clearings (multiple-circular, semi-circular, linear, orientation E-W), stone piles (multiple),</td>
<td>Multiple clearings in dense scree, possible stone piles. Principle feature - line 32m long x 1-2m wide, totally cleared of stone, aligned E-W. Numerous clearing - circular and semi-circular and between 1-3m in diametre.</td>
</tr>
<tr>
<td>7</td>
<td>Stone Arrangements (20674)</td>
<td>&quot;black and brown rolling ridges&quot;.</td>
<td>Unknown</td>
<td>&quot;lines of placed stones&quot;</td>
<td>&quot;pathway nestled within a pinched saddle. The path thus formed leads from outside ground level, up the jagged rocky slope, then loops around and joins the same path again, forming a distinct loop.&quot;</td>
</tr>
<tr>
<td>8</td>
<td>Paddy's Knob Stones 2 (21864)</td>
<td>Unknown</td>
<td>Unknown</td>
<td>sub rectangular, placed stones (slabs)</td>
<td>A small stone arrangement consisting of seven medium to large slabs forming a sub-rectangular arrangement,</td>
</tr>
<tr>
<td>Site Code</td>
<td>Site Name</td>
<td>Location Description</td>
<td>Date Code</td>
<td>Date Code</td>
<td>Date Code</td>
</tr>
<tr>
<td>-----------</td>
<td>----------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
<td>-----------</td>
<td>-----------</td>
<td>-----------</td>
</tr>
<tr>
<td>9</td>
<td>Darda Ceremonial site (19609)</td>
<td>Unknown; 2 piles of stones (2), standing stones</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Metzke Stone Arrangement (3086)</td>
<td>open clearing of loose pebble scatter amongst mulga scrub</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Pinawanggu (838)</td>
<td>near granite</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>KY 36 (20350)</td>
<td>near granite</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>PN 34 (24468)</td>
<td>near granite</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14, 15, 16, 18</td>
<td>Hinge Under Cover Stone Arrangement 1 (27351, 27352, 27353)</td>
<td>rocky scree on red laterite soils amongst open Mulga bushland. Small pebbles &lt;10cm of angular hornblend e and quartz fragments stone piles (4), stone pile, roughly circular, between 1 and 3m in diametre, rising to &lt;50cm at the centre.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Hinge Under Cover Stone Arrangement 4 (27354)</td>
<td>rocky scree on red laterite soils amongst open Mulga bushland. Small pebbles &lt;10cm of black ironstone and quartz cobbles stone piles (1), stone pile, roughly circular, between 1 and 3m in diametre, rising to &lt;50cm at the centre.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19, 20, 21, 22, 23</td>
<td>Lawlers 1 stone arrangement 1 (27414, 27415, 27416, 27417, 27418)</td>
<td>scree of small pebbles on red laterite soils amongst mulga scrub angular basalt and slate pebbles stone piles (1), stone pile, roughly circular, between 1 and 3m in diametre, rising to &lt;25cm at the centre.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Coconarup Stone Arrangement (4547)</td>
<td>South side of a large, flat granite outcrop (20x40m) at the headwaters of a small gully. granite slabs up to 50cm long and 5 - 10cm thick 2 x enclosed oval shape of granite slabs stacked on top of one-another, 2 slabs high 2x4m and 2x2m enclosed circular shapes adjacent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>West River Stone Arrangements (5192)</td>
<td>low flat granite outcrop in open, flat country granite Lizard traps, 1 x circle apx 2m stacked slab construction, low cairns (&lt;1m), small curvi-linear (&lt;2m), Unknown as there is no plan drawing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Lake Bonney Arrangement (4614)</td>
<td>On the shoreline of a lake unknown 1 x Stone mound (similar to stone pile, but with sediment), 3 x curvi linear lines &gt; 5m Mound of stones (&quot;grassy mound with numerous embedded and loose stones&quot;), with 3 curvi-linear lines emanating from the central mound. Lines are apx 35m, 6m, and 17m respectively.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Wongan Hills: Woodalls Farm (5110)</td>
<td>granite flat granite and dolerite 1 x Stone pile Pebble mound on granite flat (large pebbles between 10cm and 40cm diameter) Dolerite stones large and small. Lots flake material near-by and gnamma hole with permanent water</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Chinocup (5790)</td>
<td>quarried surface of silcrete breakaway Silcrete 18 x low heaps of silcrete boulders Unknown as there is no plan drawing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Reynolds Hill Group (4546)</td>
<td>A prominent granite hill in flat coastal sandplain Granite Curvilinear, enclosed circulars, rectangl- heaped slab contraction On the peak is egg shape 4m x 3m and two small circles + small rectangular feature of heaped slabs. On lower east slopes a sinuous line encloses an area at</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Location</td>
<td>Physical Setting</td>
<td>Cultural Setting</td>
<td>Notes</td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>---------------------------------</td>
<td>-----------------------------------------</td>
<td>------------------------------------------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Jerramungup group (5753)</td>
<td>Headwaters of the Bremer River</td>
<td>stone lines and structures, circular or subcircular, also subrectangular and heart shaped, a cairn and possible ‘lizard traps’, largest arrangement is about 4m and the smallest is about 1m</td>
<td>the edge of a granite sheet, split into two parts by linear. To the west another linear feature and to the east is a small circle about 1m in diameter. Unknown as there is no plan drawing</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>Parsons Stone Arrangement (5157)</td>
<td>unknown</td>
<td>1 x trapezoid (13m x 13m narrowing to 6m)</td>
<td>This is a trapezoidal arrangement of stones in a cleared paddock and cut by a fence line (Figure 14, no.4). [It is 13 metres along its east-west axis and 13 metres wide at the end east narrowing to about 6 metres at the west end.]</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Twertup Creek (5019)</td>
<td>level granite outcrop on south side of creek</td>
<td>sub-circular structure - stacked slab construction, up to 50cm high</td>
<td>subcircular structure on flat granite outcrop</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>Calyerup Creek (5344)</td>
<td>unknown</td>
<td>1x stone circle, 1x cairn, 2 x lizard traps, linear, parrallel linear</td>
<td>site complex includes a stone circle 1.55m x 1.68m comprising mostly single stones, cairn apx 45cm high, 2x ‘lizard traps’. Nearby is another possible stone arrangement comprising several parallel lines of stones apx. 2m long.</td>
<td></td>
</tr>
<tr>
<td>34</td>
<td>Gnianup (5342)</td>
<td>unknown</td>
<td>line of granite boulders</td>
<td>line of granite boulders in a farm paddock, said to mark a burial (Caroline Bird, pers. comm. 2015)</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Lake Beautiful (Koorda) (5065)</td>
<td>lake-bed</td>
<td>Granite</td>
<td>Unknown as there is no plan drawing</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>Wongalillup</td>
<td>granite outcrop and creek, vegetation Casuarina and Maleluca</td>
<td>granite</td>
<td>Circle D= apx.2m (stacked slab construction), and a series of other features which appear to be mostly lines of stacked stones, more like large pebbles 10-20cm and thus smaller than the stacked slabs. Unknown as there is no plan drawing</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Avon Downs</td>
<td>granite outcrop amid open woodland</td>
<td>granite</td>
<td>2x parallel lines of standing stones and other aligned stones approximately 100m in length Unknown as there is no plan drawing</td>
<td></td>
</tr>
</tbody>
</table>

TABLE 17. SUMMARY OF AVAILABLE INFORMATION FOR ALL COMPARATIVE SITES.

**Physical Setting**
Among the Goldfields sites there is only one arrangement that sits on a granite outcrop (Boorabbin), and four near a water source. There are three marker stones situated near granite but not on it, while other sites are in different geological contexts altogether. Baseline geology obviously has the potential to affect this factor, and while granite outcrops are a feature in parts of the Goldfields (particularly southern and western areas), they are not so ubiquitous as they are in the Southwest. Only one site (Boorabbin) has an artefact scatter in association with the arrangements (this may be more a reflection of the completeness of the data-sets than of the archaeological record itself). Based on available data, Boorabbin is the only Goldfields site in a comparable physical setting to that of Belinup and Budjari Yorg, on the basis that it is on a granite exposure. In the Southwest, eleven of the seventeen arrangements are on granite outcrops and twelve are situated near a water source. Four sites in the Southwest have artefact scatters in association, and three are listed as having lizard traps in association. Based on available information, there are eight sites in the Southwest which are broadly comparable to the study sites. The main identifiable traits underlying this observation are granite exposures/outcrops comparable to those of the two study sites. Granite outcrops and exposures are a very common setting for various archaeological sites (especially stone artefact scatters, gnamma holes/water sources, lizard traps, and stone arrangements) throughout the Southwest and the western and southern parts of the Goldfields. The ecology and water collection properties of these locations makes them resource rich for Aboriginal occupation, and their ubiquitous nature makes them easily accessible. While the practical advantages and accessibility of these types of granites may make them seem an obvious choice, only a relatively small proportion of them actually contain stone arrangements, and there are examples of arrangements in other geological situations, so the question of human agency in site selection remains important. Put another way, baseline geology alone, does not adequately account for
site selection patterns observed in the data sets. Rather there is an interplay between natural and cultural determinants underlying these site selections.

Component Materials

In the Goldfields there are four arrangements comprised of granite, however three of those are just single marker stones. Boorabbin is the only Goldfields site with comparable materials to the study sites in the form of numerous large granite pebbles roughly of a size to be moved by one person using both hands (there is no metrical data currently available, so this approximation is based off photographs). In the Southwest, there are twelve arrangements comprised of granite. Belinup and Budjari Yorg appear to be larger than the other comparative sites in terms of number of arranged stones, although this may be the result of a lack of numerical data about the other sites. Something common to all sites, is that they all use local stone, so again baseline geology is an underlying factor. There is no metrical data available as to the size of stones used in the comparison sites, but in some cases photographs make it possible for general estimations of size.

Motif

This information for the comparative sites is obtained from available data either in the form of written notes, plan diagrams or photographs (Table 18). The numbers listed below refer to the number of sites at which any of these motifs occur. No attempt is made here to estimate how many of a particular motif are present at each site. Linear motifs are found at the most number of sites (11), followed by curvi-linear (8), and cairns (7), all of which occur more or less evenly across the two regions. Circular forms are also found commonly (6), however circular w/infill are only found at three sites, all in the Esperance area. Long curvi-linear forms are found at 4 sites, all in the Esperance area. Semi-circular forms are found equally across both regions (6).
Circular irregular forms are found at 4 sites. Similarity between the Boorabbin and Budjari Yorg circular-irregular (elliptical) motifs is apparent, based on photographs. There is an oval motif at Reynolds Hill, Belinup and Budjari Yorg. There is a single trapezoid in the SW. Spirals are not noted elsewhere, other than Kunturu to the north-west of the study area (Gould and Gould 1968). One notable form found at five SW sites, but not found at either of the study sites are circular shapes with a diameter or width of between 2 and 3m and no more than 0.5m in height, built from granite, using a distinctive ‘stacked slab’ construction. These appear to be a popular form in Noongar arrangements, including at 3 sites in the western parts of Esperance Nyungar country. Standing stones are (6) found in both regions. The ‘tadpole’ shape at Belinup is not found elsewhere, and nor is the ‘2xcairns joined by a line of stones’ at Budjari Yorg. Overall there are twelve shared motifs found at Belinup and Budjari Yorg. All Belinup forms (13) apart from the ‘tadpole’ are also found at Budjari Yorg, which has three motifs not found at Belinup (cairn, ‘cairns +line’, ‘negative’ cleared stone). Boorabbin is the only arrangement among the Goldfields sites with comparable motifs to the study sites. However, Boorabbin lacks the long sinuous lines that characterize the study sites. The majority of motifs found at Boorabbin also occur at Budjari Yorg, however the inverse is not true because Bujdari Yorg has greater diversity of motifs forms. A site that does share the prevalence of long curvilinear motifs is Canna, situated just north of Noongar country, but just outside the study area (Randolph 2011).
Overall Design

In terms of overall design there are no other arrangements in the Goldfields or Southwest region that bear great resemblance to either of the study sites. The closest site is Boorabbin, but that lacks the long sinuous lines, SW-NE orientation and general elongated nature of both study sites. While the two study sites are different from one another, there are distinct commonalities in terms of overall design, which are regionally distinct.
7.6 DISCUSSION

Among the thirty-six other sites analysed in this study, Belinup and Budjari Yorg stand apart in terms of shared motifs and similarities of overall design. The measurable similarities between the two study sites, are not shared with the other sites to the same degree. This does not conform to expectations, which predicted that the study arrangements would likely reflect the form of others within one region, or both. While shared motifs are noted at the regional and inter-regional scale, the extent to which the study sites stand apart is evident.

Also evident, is the high degree of variation among stone arrangements across both regions. High variability in stone arrangement form and associated ‘purpose’ has been noted elsewhere in Australia too (e.g. Palmer 1977; Radcliffe-Brown 1926). The diversity among stone arrangements reflects the richness and variety of ceremonial life in Aboriginal society, evident in ethnographic accounts. It also suggests a high degree of localisation within ceremonial and ritual activities. At this stage it is not possible to identify a clear set of traits that distinguishes desert from Southwest stone arrangements.

On the whole there are more common elements of form among the Southwest sites than among the Goldfields sites, and the study sites share more common elements with those of the Southwest than the Goldfields. However, of all the sites across both regions, the most similar to the study sites based on the four scales of analysis is certainly Boorabbin, which is located within Maduwonga Galagu Country in the western Goldfields (Australian Broadcasting Corporation 2011). Boorabbin and Budjari Yorg in particular share numerous common motifs, including a distinctive irregular-circular shape and semi-circles. A noticeable distinction between the two is the apparent absence of any linear or curvi-linear forms at Boorabbin, whereas they dominate the Budjari Yorg assemblage. The location of the Boorabbin
arrangement within the Goldfields (a non-Noongar context) close to the edge of Noongar country is interesting, and invites further research into stone arrangements along this peripheral zone between the south-western edge of the Goldfields and eastern edge of the Wheatbelt region (Southwest).

Perhaps the most salient motif among the Southwest arrangements is the ‘stacked slab’ circular constructions of between 2 and 3m diameter and less than 0.5m high. These motifs (with some variation) occur at 5 of the 17 sites in Noongar country plus 1 similar motif of rectangular shape, and they all occur in the southern part of Noongar country (Figure 19). Three of these places Coconarup, Cascades and West River are around the western part of Esperance Nyungar country, close to the currently recognized boundary with their Noongar neighbours to the west (Wagyl Kaip). It is interesting to note that these stacked slab circular forms do not occur at either Budjari Yorg or Belinup.

![Figure 19. Map showing distribution of granite 'stacked slab' motifs in the Southwest](image-url)
The results discussed above are informative, and lay the foundation for further research into Aboriginal stone arrangements in southern Western Australia. Further research and development of the field of study is required to overcome some of the limitations in the data-sets underpinning the current analysis. Where challenges currently lie with the interpretation of stone arrangements in southern Western Australia, and indeed through much of Australia, is a lack of knowledge about what the salient features of the arrangements actually are, and how they are applicable to archaeological enquiry. This has implications for the current study, which has been conducted in a rather large research gap, and works towards the establishment of a theoretical and methodological framework for the study of Aboriginal stone arrangements in the region. Any ethnographic interpretation from Aboriginal knowledge holders about arrangements directly, is the best way to become better informed about what the salient features are, but when the ceremonies at a particular place are no longer active and the stories are lost or muddled, archaeology has a role to play. This requires engaging with fundamental principles of archaeology and focussing on the material record, making detailed and replicable recordings of arrangements for the purposes of research. This is where much can be borrowed from the field of rock art studies, in which established research principles enable archaeologists to investigate the distributions of motifs and design elements across different regions, to make interpretations about the social landscape (Chapman 2002), based on well-developed principles of analysis (McDonald 2006).

A further challenge for stone arrangement research is dating and chronology, and indeed there is no direct dating currently available for any of the sites in this study. Some of the variation observed between sites may well be a result of construction and use at different times. Arrangements may have been constructed at different times but had overlapping periods of use. Usage and meaning may have changed over time and in some cases been lost, or reinvented
(Ross 2008). However, the symbols remain fixed in the landscape and to this extent are contemporary with one another, and have been for an unknown length of time. The symbols are still present, even if the ceremonies are not active, and this provides opportunities for archaeology to contribute to an understanding of what those symbols may once have meant, and hopefully how the meaning has changed over time. The application of relative and direct dating methods, particularly thermo-luminescence dating, presents opportunities for improving our understanding of dates and chronologies. The Esperance Nyungars have initiated a research initiative to attempt to date the Budjari Yorg and Belinup arrangements, as part of future research efforts.

7.7 CONCLUSION

It is clear that Aboriginal stone arrangements in southern Western Australia are highly variable at both a regional and local scale. Nevertheless, Budjari Yorg and Belinup share more in common with each other than with any other sites across the region. There is no strong indication of Western Desert influence in the Budjari Yorg or Belinup arrangements, but they are also distinctive in comparison to other stone arrangements in the Southwest, including those in the Esperance region. This suggests that the ritual or ceremonial activities taking place at Belinup and Budjari Yorg are principally of local origin. These preliminary interpretations provide insights into the richness and diversity of Aboriginal ceremonial practice at local and regional scales.

This research also highlights the shortcomings in our understanding of stone arrangements. In some cases, stone arrangements may be the only window into past ceremonial and ritual
activities and they remain a challenging and exciting prospect for Australian archaeology, well worthy of further research. Best results will be obtained through research partnerships with Aboriginal custodians, to ensure that research is culturally informed, relevant and appropriate. The Esperance Nyungars have initiated further research into stone arrangements in their area which seeks to combine archaeological science (including dating) with culturally informed processes of investigation that incorporate knowledge exchange with desert Aboriginal people. The Esperance example may be instructive for similar research into Aboriginal stone arrangements elsewhere.

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7.8 CHAPTER SUMMARY

This chapter presented a consideration of stone arrangements as symbols and applied a theoretical and methodological approach, focussing on the study sites Belinup and Budjari Yorg in a comparative analysis with other arrangements across southern Western Australia. The results contribute toward answering research questions one, three and four. The next chapter applies a similar approach to the study of rock art, also contributing to research questions one, three and four.
8 THE ROCK ART OF MARBALEERUP AND ITS PLACE IN THE ART TRADITIONS OF SOUTHWEST WESTERN AUSTRALIA

8.1 CHAPTER INTRODUCTION

This chapter consists of a co-authored manuscript, accepted for publication in the journal *Rock Art Research*. The section, figure and table numbering systems have been adapted from the published version to fit with the rest of the thesis. As with chapters 5 and 7, due to the fact that the manuscript needed to be a stand-alone document, there is some information repeated here that has already been discussed in previous chapters. The paper is directly relevant to the thesis and specifically addresses research questions one, three and four through an analysis of the rock art at Marbaleerup and Boyatup. Following the manuscript, I have written a Chapter Summary and Addendum section which compares and contrasts the Southwest results with data out of the Western Desert, to expand the analysis and make it more applicable to the research questions.

My approach to understanding the symbolic record around Marbaleerup and Belinup requires quantifying and mapping where else those symbols do, or do not, occur at a regional and inter-regional scale. In assessing the question of where else the rock art symbols at Marbaleerup and Boyatup exist, an initial stumbling block was that there was no clear synthesis of Noongar rock art in existence. However, R.G. (Ben) Gunn and Esmee Webb had conducted field assessments of all known/registered Noongar rock art sites in 2004, but had not yet published or disseminated the results. This provided an opportunity to access the data, and Gunn and I undertook a joint initiative to analyse, interpret and publish the data, with some later editorial assistance from Webb. My contribution to this manuscript was to provide the research context
through which to analyse the rock-art data. This is why the paper directly addresses the research questions in my thesis because I intentionally designed it to do so. I also provided some of the Esperance rock art data and assisted with the data analysis. The majority of data was provided by Gunn who also conducted most of the data analysis and contributed most of the figures and tables, which is the basis for his role as lead author. I contributed a large portion of the text, especially the introductory sections, the discussion and conclusions.

The results identified the presence of a distinctive rock art tradition in the eastern part of Noongar country, clustering particularly toward the margins along the north-eastern edge. It became evident that the form of the Marbaleerup and Boyatup rock art assemblages are consistent with those of their Eastern Noongar counterparts and thus, are considered part of the Eastern Noongar Rock Art Tradition. The significance of these findings with regard to the research questions underpinning this thesis, is that people chose to mark the landscape in this frontier location with symbols predominantly found elsewhere in Noongar country rather than those found in the Western Desert. This is a strong reflection, or perhaps even a statement of Noongar identity and connection to place at Marbaleerup, and to a lesser extent (because it is a much smaller rock art assemblage), at Boyatup. However, it must be noted that Noongar/Nyungar knowledge indicates that much of the art was created as a result of interaction with non-Noongar people so the situation is nuanced. It is evident that the art production is interconnected with interaction and identity politics throughout this frontier region between the desert and the Southwest.

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8.2 INTRODUCTION

The recent recording of two rock art sites in the country of the Esperance Nyungars in southern Western Australia revealed that they appeared to share formal characteristics with rock art sites from their Noongar neighbours to the north-west. Using both quantitative and qualitative methods, the two suites of rock art are compared in order to determine whether or not such a subjective association was justified and whether or not such a simplistic approach was suitable. The approach has been used previously in a similar borderland context (Gunn 2002).

Marbaleerup, or Mount Ridley, is a distinctive granite dome (Figure 20) some 80 km north-east of the town of Esperance, in southern Western Australia. It is an inselberg of undifferentiated Precambrian granite amid an open, flat expanse of Mallee woodland and frequent salt lakes. The mount contains a cluster of eleven rock art sites with over 200 motifs, which form a notable feature of Aboriginal site 2882 (Western Australia Dept of Aboriginal Affairs, DAA, register). Marbaleerup is a place of great cultural significance for Aboriginal people, particularly the local Esperance Nyungar traditional owners (Native Title Determination: 14 March, 2014).

Boyatup (DAA site 2462) is situated some 130 km east of Esperance and 115 km south-east of Marbaleerup (Figure 21). It is another granite dome but composed of Middle Proterozoic bedrock. Boyatup lies 13 km north of the coast, among the undulating dune systems and coastal
scrub heath that characterize the Esperance coastal zone. It contains a single small rockshelter with 21 red pigment motifs, predominantly hand stencils, and is the easternmost rock art site known on Noongar country.

Esperance is situated in a frontier zone both in terms of geography and Aboriginal territorial organisation. As the names Marbaleerup and Boyatup are grounded within the Noongar language tradition through the ‘up’ suffix (Education Dept 2010), their Noongar associations are well founded. The area is also at the south-eastern edge of the Southwest Australian Floristic Region, an environmental zone that defines the south-west corner of the Australian continent based on flora and rainfall (Hopper and Gioia 2004). It is also situated at the outer extremities of Noongar country, otherwise referred to as the Southwest Cultural bloc (Berndt 1973) or the Southwest Region (Horton 1994:1010). As such, the area forms a well-defined cultural and geographic region (Ferguson 1987). Dynamic negotiations over territory and identity in the Esperance area between Esperance Nyungar and non-Noongar affiliated groups (particularly the neighbouring Ngadjju to the east) during the late-Holocene have been widely discussed in
ethno-historic literature (Eyre 1845; Forrest 1875; Curr 1886; Helms 1896; Tindale 1974; Bates and White 1985; Von Brandenstein 1988). These negotiations centered on the distinct differences in law and ritual observances between the Noongar and the Western Desert cultural bloc to which the Ngadju belong (Figure 22). It has been suggested that Western Desert law was being impressed upon the Noongar as part of a territorial expansion toward the Southwest, positioning northern and eastern Noongar groups (including the Esperance Nyungars) at the edge of a “rapidly moving frontier of cultural change” (Gibbs and Veth 2002: 11). Thus, there was not necessarily a fixed boundary between Noongar and non-Noongar territories, but more likely an interaction zone that shifted and changed over time. Much of the corpus of rock art (referred to here as ‘Noongar art’) clusters toward the outer periphery of areas currently considered Noongar (based on Native Title claim areas). Some of the sites discussed here lie outside the Single Noongar Claim boundary (Figure 22), but many of the sites are situated clearly within Noongar territory or have ethnographically established Noongar connections. The similarity of the rock art in those sites outside the present Noongar boundary with those inside (see below) is the principal reason for aggregating all of the sites as Noongar, however, the extent to which non-Noongar people may have been involved with or influenced art production at some or all of these sites remains unknown.
Ethnographic accounts maintain that rock art reflects the visual language of the producer, whether resident or visitor, who has some connection and rights to the place (Chaloupka 1993; Flood and David 1994; Gunn 1995, 2002; Mulvaney 1996; Chapman 2002). It has also been demonstrated that hunter-gatherer behaviour is territorially organised (Stanner 1965; Wobst 1977), and differences in rock art style have been attributed to territorial affiliation and cultural regionalisation of rock art sites (McBryde 1974; Morwood 1984; David 1991, 1994; David and Chant 1995; Gunn 1995, 2002; David and Lourandos 1998; Taçon 1993; Chapman 2002; McDonald 2008). Hence, a comparative analysis of Marbaleerup and Boyatup rock art with that of other Noongar art may be informative about territorial affiliation and the social role of rock art in southern Western Australia. Noongar knowledge from members of the Ballardong community suggests that a lot of the art in their country is related to interaction with Wangai people (non-Noongar) from further east and north (Ballardon Working Party Meeting, South West Aboriginal Land and Sea Council, Cannington, Western Australia: 27 May 2015). Esperance Nyungar knowledge suggests that Marbaleerup was a meeting place between local Nyungar people and visiting Ngadjju and Mirning (non-Noongar people) (Murray Bullen, pers.
comm., 19 February 2014). The incorporation of this important ethnographic knowledge makes this corpus of art all the more relevant and interesting for archaeological enquiry.

8.3 METHODS

Initially, the Esperance Nyungar rock art is described qualitatively and quantitatively, based on previously unpublished data from technical reports and field notes. The rock art of the other 38 Noongar sites east of the Darling Range is then described, using both published and unpublished data. The Esperance Nyungar and Noongar assemblages are then compared and contrasted. Five rock art sites on the western side of the Darling Range, in the limestone belt along the Southwest coast, are also discussed.

At Marbaleerup, each motif or fragment was sketched, numbered and its attributes described (see Gunn 2008 for details). Due to variation within the pigment hue across individual motifs, simple colour enhancement (cf. David et al. 2001) did not produce acceptable records and, for this project, further colour enhancements of rock art photographs at all sites was undertaken using various ‘DStretch’ filters (Gunn et al. 2010; 2014). The eight art panels at Boyatup were similarly recorded.

The majority of Noongar rock art sites were recorded in 2003-2005 for the South West Aboriginal Land and Sea Council (Webb and Gunn 2004). No overall report was commissioned, however, and no overview of the art region was assembled. The survey was not a systematic survey of Noongar Country, but undertook methodical recording of rock art sites entered on the DAA Register from references in published accounts (Davidson 1952; Serventy 1952; Hallam 1971, 1972, 1979; Bednarik 1987-88) and spot surveys of likely places reported
by landowners or observed in transit. Conversely, at least 10 registered sites either could not be found despite careful searches or the ‘artwork’ they were said to house appeared to have formed naturally. In total, 22 site complexes with 38 rock art sites were recorded (Figure 23). The recordings entailed photographic coverage and freehand sketches of all of the visible artwork at each shelter, and the preparation of motif lists (including technique, colour, form, type, size and condition). As part of the initial survey, the three reported petroglyph sites listed on the DAA site register at Metro Road (DAA 3497, 3498), Bolgart (DAA 3342), and Harmony (DAA 15126) were assessed. These all occur in the granites of the Darling Range and it was concluded that all were the product of natural erosional processes. Consequently, these sites are excluded from this study.

Following the initial survey, detailed recordings, including photo-tracings and mapped shelter plans, were undertaken at Mulka’s Cave (Gunn 2006a), Kybra (Dortch et al. 2006, Gunn et al. 2011), Marbaleerup (Gunn 2008) and Boyatup. The combined data sets from all projects (50 sites in 24 complexes) form the basis of the present study. Terminology is largely based on the pioneering work of Maynard (1976, 1977) but with modifications where appropriate.

To derive the formal properties of the rock art assemblages, tallies were made of their attributes, the most numerous of which were then taken as the principal quantitative attributes. The prime qualitative attribute, however, was based on visually prominent motifs or compositions (based largely on motif size, colour and panel placement) and was regarded as a separate set that provided a key to defining the character of the assemblages.
8.4 ESPERANCE NYUNGAR ROCK ART

8.4.1 The Rock Art at Marbaleerup

Marbaleerup (Mt Ridley) is a low granite dome (or inselberg), 297m above sea level and a mere 100m above the surrounding plain, with its peak providing a broad 360° view to the distant horizon (Figure 20). It is an outcrop of Precambrian granite, composed of course, even-grained to porphyritic, pink lath feldspar rock (Morgan 1972). Like other inselbergs in the Southwest (Bourne and Twidale 2002; Twidale and Bourne 2004), the outcrop forms a prominent visual feature in the otherwise flat regional landscape. Atop the dome sit a number of large granite tors and boulders, many of which have eroded out to form rock shelters and sculptured forms. The surrounding landscape is largely dominated by dry salt lakes within an area with a low annual average rainfall of 351 mm (Bureau of Meteorology 2013). The geology and ecology of
Marbaleerup create, therefore, a significant ecological node that is seasonally well-provisioned with resources suitable for Aboriginal occupation, including potable water, plant and animal foods, and quartz suitable for knapping (cf. Bindon 1997).

The Marbaleerup site complex was recorded in detail in 2008 for the Esperance Nyungar traditional owners (Gunn 2008; Thorn 2008). It contains 11 rock art sites on the western side of the dome, an extensive surface scatter of stone artefacts around the base, and two widely separated gnammas. The rock art sites form a localised cluster, with a major central site (MR-01) and a suite of adjacent smaller satellite sites. The artwork is mainly concentrated within two large shelters, MR-01 and MR-02, which together contain 60% of all the motifs recorded (Table 19).

<table>
<thead>
<tr>
<th>Art Site code</th>
<th>Shelter length (m)</th>
<th>depth</th>
<th>height</th>
<th>Orient.</th>
<th>Nos</th>
</tr>
</thead>
<tbody>
<tr>
<td>MR-01</td>
<td>6.5</td>
<td>5.5</td>
<td>2.5</td>
<td>90</td>
<td>79</td>
</tr>
<tr>
<td>MR-02a</td>
<td>8</td>
<td>5</td>
<td>4</td>
<td>158</td>
<td>46</td>
</tr>
<tr>
<td>MR-02b</td>
<td>2.5</td>
<td>9</td>
<td>1.5</td>
<td>103</td>
<td>5</td>
</tr>
<tr>
<td>MR-03</td>
<td>7</td>
<td>8</td>
<td>5</td>
<td>40</td>
<td>12</td>
</tr>
<tr>
<td>MR-04</td>
<td>5</td>
<td>2.5</td>
<td>3</td>
<td>220</td>
<td>39</td>
</tr>
<tr>
<td>MR-05</td>
<td>3</td>
<td>2</td>
<td>2.5</td>
<td>145</td>
<td>1</td>
</tr>
<tr>
<td>MR-06</td>
<td>4.5</td>
<td>3.3</td>
<td>1.6</td>
<td>220</td>
<td>3</td>
</tr>
<tr>
<td>MR-07</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>70</td>
<td>6</td>
</tr>
<tr>
<td>MR-08</td>
<td>5</td>
<td>2.5</td>
<td>2</td>
<td>20</td>
<td>4</td>
</tr>
<tr>
<td>MR-09</td>
<td>4</td>
<td>2</td>
<td>1.5</td>
<td>35</td>
<td>5</td>
</tr>
<tr>
<td>MR-10</td>
<td>2</td>
<td>2.5</td>
<td>2</td>
<td>40</td>
<td>4</td>
</tr>
<tr>
<td>MR-11</td>
<td>3</td>
<td>1.5</td>
<td>2.5</td>
<td>65</td>
<td>5</td>
</tr>
</tbody>
</table>

**TABLE 19: MARBALEERUP ART SITES RECORDED**
Site MR-01

The main art site, MR-01, a hollowed tor on the mid-slope of the dome (Figure 24), contains 79 motifs on 12 panels. Prominent amongst these are a number of large graphic designs, both simple and complex in form, covering the full extent of their respective panels and positioned to be visually conspicuous (Figure 25).

FIGURE 24. MARBALEERUP SHELTER MR-01 FROM THE NORTH

FIGURE 25. PHOTO-TRACING OF THE MAIN ART PANEL AT MR-01 SHOWING SUPERIMPOSITIONING
The motifs were produced using three different techniques (Table 20): painting (73%), stencilling, and printing. The technique of another 12 motifs could not be determined due to their poor preservation.

<table>
<thead>
<tr>
<th>TECHNIQUE</th>
<th>COLOUR</th>
<th>Painting</th>
<th>Stencils</th>
<th>Prints</th>
<th>Unknown</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>MR-01</td>
<td>Red</td>
<td>51</td>
<td>7</td>
<td>2</td>
<td>12</td>
<td>72</td>
<td>91</td>
</tr>
<tr>
<td></td>
<td>Cream</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Yellow</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>MR-02</td>
<td>Red</td>
<td>9</td>
<td>20</td>
<td>2</td>
<td>14</td>
<td>45</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>White</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

**TABLE 20. MR-01 AND MR-02 COLOUR BY TECHNIQUE**

Red (pale to deep red ochres) is the most common pigment colour (91%), accounting for 88% of paintings. It is the only colour used for stencilling, printing, and in the unknown class (Table 20). The central red+cream striped design appears to have been originally painted in red and then, at some later time, touched up with a cream (distinctly yellowish off-white) pigment concurrent with the painting of the other cream motifs on the panel (Figure 26).
The 48 motifs whose form could be classified comprise four basic types: linear, outline, hand stencil and hand print, along with two combination forms: ‘outline+infill’ and ‘linear+outline+infill’ (Table 21). The motif types are dominated by simple designs (40%), along with lines and groups of lines, hand stencils and bird tracks (Table 22). Amongst the hand stencils and prints, left and right hands are equally represented. Only two of the hand stencils could be measured: middle finger lengths of 8 cm and 9 cm respectively (most likely adult male; cf. Gunn 2006a), while the two hand prints both had middle fingers 7 cm in length (most likely adult female or adolescent male). The 27 measured motifs ranged from 5 cm to 340 cm in length (mean 113 cm, median 75 cm). Eight motifs were less than 50 cm long and four greater than 200 cm. While the superimposition sequence could not be determined for many
motifs due to poor condition, it was clear that two red layers preceded the cream motifs, which were then followed by the red bird track. The relationship between the red bird track and the yellow line is unclear but, on the basis of differences in pigment preservation, the bird track was probably the most recent addition to the panel.

<table>
<thead>
<tr>
<th>Technique</th>
<th>Form type</th>
<th>MR-01 No.</th>
<th>MR-01 %</th>
<th>MR-02 No.</th>
<th>MR-02 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paintings</td>
<td>Linear</td>
<td>29</td>
<td>37</td>
<td>9</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>Outline+infill</td>
<td>5</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Linear+outline+infill</td>
<td>4</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Outline</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>Stencils</td>
<td>Handstencil</td>
<td>7</td>
<td>9</td>
<td>19</td>
<td>63</td>
</tr>
<tr>
<td>Prints</td>
<td>Handprint</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>79</td>
<td>100</td>
<td>30</td>
<td>100</td>
</tr>
<tr>
<td>Fragments</td>
<td></td>
<td>31</td>
<td>39</td>
<td>16</td>
<td>35</td>
</tr>
</tbody>
</table>

TABLE 21. MR-01 AND MR-02 FORM FREQUENCIES

<table>
<thead>
<tr>
<th>TECHNIQUE</th>
<th>MOTIF TYPE</th>
<th>MR-01 n=45 No.</th>
<th>MR-01 %</th>
<th>MR-02 n=30 No.</th>
<th>MR-02 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paintings</td>
<td>Simple design</td>
<td>18</td>
<td>40</td>
<td>18</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Line</td>
<td>5</td>
<td>11</td>
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<td></td>
<td>Line pair</td>
<td>3</td>
<td>7</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Line set</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Other bird track</td>
<td>3</td>
<td>7</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Emu track</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Complex designs</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
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<td></td>
<td>Bar</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Oval</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Stencils</td>
<td>Left hand</td>
<td>4</td>
<td>9</td>
<td>7</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Right hand</td>
<td>3</td>
<td>7</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>? hand</td>
<td>0</td>
<td></td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td>Prints</td>
<td>Left hand</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
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<td></td>
<td>Right hand</td>
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<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>? hand</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>45</td>
<td>99</td>
<td>30</td>
<td>98</td>
</tr>
<tr>
<td>Fragments</td>
<td></td>
<td>32</td>
<td></td>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>

TABLE 22. MR-01 AND MR-02 MOTIF TYPE NUMBERS BY TECHNIQUE
The age of the artwork has not been determined. A Harris matrix analysis of the 28 motifs on the main panel, however, reveals six layers of superimpositioning and suggests at least three phases of painting (Table 23, Figure 27; see Harris 1989; Russell 2000).

- Phase I: the earliest phase of red paintings containing at least four layers of similar red pigment. The chronological relationship between the motifs of layer 1 is unknown and, hence, the motifs should not be read as necessarily representing a single temporal layer.
- Phase II: a later phase of cream paintings, followed by
- Phase III: two later individual motifs in red and yellow that are the most recent in the shelter. The temporal relationship of each to the other is unknown. The red motif (#31) is stronger than, and of a different hue to, the red used in Phase I. Similarly, the yellow of motif 33 is considerably stronger than that of the Phase II cream colour.

These six, and possibly more, superimposed layers of painting attest to the significance of MR-01 as an art site and suggest the site has been a focus for artwork for a considerable, but as yet undated, period.

<table>
<thead>
<tr>
<th>Motif No</th>
<th>Underlying Motif Nos</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>24, 55</td>
</tr>
<tr>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>25</td>
<td>55, 32, 24, 63</td>
</tr>
<tr>
<td>26a</td>
<td>24, 57, 58, 61</td>
</tr>
<tr>
<td>26b</td>
<td>26a, 55, 57, 58, 61, 24</td>
</tr>
<tr>
<td>27</td>
<td>55, 61</td>
</tr>
<tr>
<td>28</td>
<td>61</td>
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<tr>
<td>29</td>
<td>28, 55, 32, 59, 61</td>
</tr>
<tr>
<td>30</td>
<td>59</td>
</tr>
<tr>
<td>31</td>
<td>24, 55, 25</td>
</tr>
<tr>
<td>32</td>
<td>67, 68, 60, 63, 64, 65, 62</td>
</tr>
<tr>
<td>33</td>
<td>28, 55, 32</td>
</tr>
<tr>
<td>55</td>
<td>24, 60, 62, 28, 26a</td>
</tr>
<tr>
<td>56</td>
<td>63, 64</td>
</tr>
</tbody>
</table>

**Table 23. MR-01 Main Panel Motif Superimpositions**
FIGURE 27. INTERPRETED HARRIS MATRIX FOR THE MAIN PANEL AT MR-01 (MOTIF NUMBERS AND COLOUR SHOWN ON THE MATRIX)
‘Doc’ Reynolds, a widely-respected Noongar elder, recounted an ethnographic interpretation of the motifs in Marbaleerup 1 told to him by the late Tom Bullen, a well-known Esperance Nyungar knowledge holder (pers. comm., 2012). There are two interpretations specific to the red painted art of Phase 1. The first refers to the visually prominent motif that fills most of the panel. This is understood to be the body of a breaching whale, with its flipper sticking straight up in the air. In the same phase, the red lines in the bottom right hand corner of the panel, are said to represent the hull of a boat, with mast sticking straight up and sails arching around the right edge of the panel. The second interprets the panel more broadly, as a method by which the coastal Esperance Nyungar informed the inland people of what was happening at the coast. Whether or not this related to local mythology is unknown.

Site MR-02

The nearby MR-02 site consists of two alcoves within adjacent boulders. The larger of the alcoves, MR-02a (8 x 6 x 3 m), has several access points of which two are easy entrances for people. The notable artwork here is a design of red and white vertical stripes on a large panel on the back wall (Figure 28). The white line set is longer and overlies the original set of red lines, although at some time after the white was painted, the red stripes were repainted, thus making them the more outstanding. The only type represented more than once are five emu track motifs (Table 22); the only visually outstanding motif is the white ‘line set’ mentioned above, which is also the largest single motif in the shelter (80 cm tall).
The motifs within MR-02a were produced using the same three techniques as at MR-01: painting, stencilling and printing; all bar one are in red (Table 20). An adjacent smaller and more confined alcove, MR-02b, contains three hand stencils (left, right and indeterminate) and two small linear paintings (simple design and bar). Overall, the motifs in the two alcoves consist of hand stencils, linear designs and hand prints (Table 21).

Other MR art sites
Nine other art sites were recorded at Marbaleerup (MR 03-11), all in cavernous shelters within boulders. All had fewer motif numbers than MR-01 or 02, although they range in size from larger to much smaller than MR-01 (Table 19). The number of motifs in these satellite sites ranges from 1 to 43 (Figure 29). The most prolific of these, MR-04 with 43 motifs, is exceptional; unlike MR-01 and MR-02, its artwork is dominated by hand stencils and contains only two small paintings. The artwork within the other satellite shelters is similarly dominated by red hand stencils with low numbers of small paintings. The size of the middle-finger lengths of the stencilled hands ranges from 5 cm to 9 cm in length but, as with MR-01 and MR-02,
most are 7 cm or greater (Figure 30). The measurements indicate that all age groups are represented, from young children (5 cm) to adult males (>8.5 cm) (Gunn 2006b). The few painted motifs within these shelters are all simple geometric motifs (Table 24).
<table>
<thead>
<tr>
<th>Col/ttech</th>
<th>Motif type</th>
<th>SITE</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>MR-03</td>
<td>MR-04</td>
<td>MR-05</td>
<td>MR-06</td>
<td>MR-07</td>
<td>MR-08</td>
<td>MR-09</td>
<td>MR-10</td>
</tr>
<tr>
<td>Red Hst</td>
<td>Left hand</td>
<td>17</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Right hand</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>? hand</td>
<td>2</td>
<td>19</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cream Paint</td>
<td>Line</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Red Paint</td>
<td>Line</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Simple design</td>
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<td></td>
</tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>Red fragments</td>
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<td>3</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total</td>
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<td>42</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

TABLE 24. MARBALEERUP SITES MR-03 TO MR-11: NUMBER OF MOTIF TYPES BY COLOUR, TECHNIQUE AND SITE

8.4.2 The Rock Art at Boyatup

As noted above, Boyatup (Fig. 21) is a low granite dome, situated 13km north of the coast. The dome is an isolated outcrop of Middle Proterozoic biotite granite (Lowery et al. 1972). Stone artefacts are concentrated on the flat granite terraces on the southern side of the hill but, except for the bare granite surfaces, ground visibility is mostly obscured by thick vegetation. On the eastern side of the dome there is a small, easterly-facing rock shelter, 2.8 x 2.3 x 2.6 m, whose entrance is almost blocked by a large boulder. Inside, there are a series of 21 motifs across eight panels, consisting of 13 hand stencils, seven partial hand stencils, and, on a separate panel, a single painted small simple design (Figure 31). All are in red pigment. Digital enhancement of the photographs using DStretch suggests further stencils may have been placed here but they now exist only as remnants due to heavy exfoliation of the granite surface. A total of nine intact middle finger measurements were taken, with a mean length of 7 cm and range of 6 to 8 cm.
(Figure 32). The finger sizes suggest that the people whose hands are stencilled include infants, young children, adolescent children or adult women and adult men (cf. Gunn 2006b:110).

**FIGURE 31. PAINTING AT BOYATUP**

**FIGURE 32. BOYATUP HANDSTENCIL MIDDLE-FINGER LENGTHS**

### 8.4.3 Summary
From these examples, Esperance Nyungar rock art can be seen to consist of a widespread background of red hand stencils overlain, in a small number of well-decorated shelters, by a limited number of paintings. The latter consist of large linear designs, smaller geometric elements and emu tracks, painted mostly in red but occasionally in yellow, cream and pink (Tables 25 and 26). The smaller shelters contain just hand stencils, or hand stencils plus a small number of geometric motifs (elements or designs) all utilising the same range of colours. All rock shelters known in the Esperance region are niches within granite boulders or flared slopes.

<table>
<thead>
<tr>
<th>Site Complex</th>
<th>geo E</th>
<th>small SD</th>
<th>all bird tracks</th>
<th>large design</th>
<th>hand stencils</th>
<th>hand prints</th>
<th>other</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marbaleerup</td>
<td>21</td>
<td>18</td>
<td>11</td>
<td>3</td>
<td>76</td>
<td>4</td>
<td>133</td>
<td></td>
</tr>
<tr>
<td>Boyatup</td>
<td>1</td>
<td>18</td>
<td>7</td>
<td>2</td>
<td>61</td>
<td>3</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>TOTAL %</td>
<td>14</td>
<td>12</td>
<td>7</td>
<td>2</td>
<td>61</td>
<td>3</td>
<td>&lt;1</td>
<td>99%</td>
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</table>

*excluding fragments
TABLE 25. ESPERANCE MOTIF TYPES PER SITE COMPLEX (NUMBERS)

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<th>red</th>
<th>white</th>
<th>purple</th>
<th>cream</th>
<th>yellow</th>
<th>orange</th>
<th>Pink</th>
<th>bichrome</th>
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<td>1</td>
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<td>209</td>
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<td></td>
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<tr>
<td>TOTAL %</td>
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<td>&lt;1</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td></td>
<td></td>
<td></td>
<td>99%</td>
</tr>
</tbody>
</table>

*The red and white striped designs at Marbaleerup MR-01 and 02 mentioned above are seen as the superimposition of a second design over an earlier red design and hence are not considered a bichrome painting in this sense.*

TABLE 26. ESPERANCE COLOURS BY SITE COMPLEX (NUMBERS)

8.5 NOONGAR ROCK ART
8.5.1 The Study Area (Southwest Western Australia)

Geologically the greater part of Noongar country is underlain by the southern part of the Yilgarn Craton (Figure 33), a massif emplacement of Late Achaean shield rocks, principally granites (Whitaker 2001; Anand and Paine 2002). Variously, these granites are exposed in places as either mountain ranges or inselbergs. The granite ranges of the Darling Range in the west and the southern hills, including the sedimentary uplift of the Stirling Range, parallel the >400 mm rainfall isobar (Figure 23). Within Eastern Noongar country, the granites are exposed as residual domical inselbergs, or bornhardts, which rise conspicuously from a partial etchplain (Anand and Paine 2002; Twidale and Bourne 2004; Twidale and Campbell 2005). A belt of Quaternary limestone abuts the western and southern edges of the craton, paralleling the coast line (Baxter et al. 1980).

![Figure 33. Location of the underlying Yilgarn Craton, surface granites, and art site complexes](image)

The rock art sites east of the Darling Fault (Mokine, Gwambygine and Nyamutin; Figure 23) now lie in various bioregions (South-East Coastal, Avon Wheat Belt and Western Australian
Mallee; Australian Natural Resources Atlas 2002a, 2002b) and lie within the 400-600 mm rainfall zone; the sites located farther east now receive an average annual rainfall of 300-400 mm (Bureau of Meteorology 2014). The former shelters are on mid-slope granite outcrops, the latter are primarily on isolated granite domes. All these shelters are, however, niches that developed in granite boulders by cavernous weathering (Dragovich 1969, 1981; Turkington and Phillips 2004; Viles 2005). In contrast, the rock art sites known further north, for example around Cue (Gunn et al. 1997; Gunn and Webb 2000, 2003), comprise predominantly breakaway shelters that have formed in the pallid zone (saprolite) beneath duricrust, also by cavernous weathering. Only two breakaway shelters are known in the Southwest: Lake Hillman and Halfway Rocks.

Five rock art sites have been recorded within the limestone belt in the west of the study area: four in subterranean caves (Hallam 1971; Morse 1984; Bednarik 1987-88), and one on an open pavement (Gunn et al. 2011). The limestone belt, dominated by the Leeuwin-Naturaliste limestone ridge that contains the four cave sites, has an average annual rainfall ranging between 600 mm and 1200 mm. The character of this region is, therefore, considerably wetter and more forested than that in the drier regions to the east.

8.5.2 Previous Ethnographic Investigations

The first reported rock art site in the region was the site now known, inappropriately, as Dale’s Cave (DAA site 3846), near Gwambygine, in 1830 (Dale 1834: 57; Smyth 1878: 222; Serventy 1952; Hallam 1979: 86). The Noongar myth associated with the site describes it as being where the Moon lived prior to ascending into the sky (Serventy 1952; Hallam 1979). Smyth described the art (Figure 34) as consisting mostly of hand marks [stencils] and a “circular figure, drawn
with the same red substance [as the hand stencils], about 15 inches in diameter, and filled up with lines and crossbars” (Smyth 1878: 222).

The only other art shelter with recorded mythological associations is Mulka’s Cave (DAA site 5842), near Hyden. Here the hand stencils are seen to be those of Mulka, a cross-eyed giant, who lived in the cave (Figure 35). Mulka, an excellent but very anti-social hunter, took to stealing young children from their camps and eating them, and also to killing other warriors at night as they slept. He was finally pursued by a large party of warriors, coming from groups throughout the region, who tracked him to a waterhole near Dumbleyung, 150 km to the south-west of the cave, where they killed him after a long battle (Acre 1941).
The Kybra site, in the south-west corner of Noongar country (Figure 36), was the home of “Kybra, a big white flying bird, [who] lived in the area, but then left and flew westward over the horizon and well out to sea” (Traditional Owner Wayne Webb, pers. comm., 2005; quoted in Dortch et al. 2006:13). The petroglyphs at the site, which are dominated by bird track motifs, are closely associated with the Kybra Dreaming (Figure 37).
Hammond (1933: 64-65; quoted in Hallam 1979: 88-89) recounts a myth given to him by an old Aboriginal man from Kellerberrin. The myth describes the destruction of a very large tree at Kellerberrin that was the nesting place for eagles who took Aboriginal babies to feed their nestlings. It was eventually burnt down by a large number of people using all the surrounding timber and leaving the place barren of vegetation. Although the location of where the tree stood is unknown, the occurrence of the major Kellerberrin rock art complex in the same general locality is unlikely to be coincidental.

These accounts indicate that at least some of the art site complexes were culturally significant places for the Noongar. Given the evidence from elsewhere in Australia, which suggests major rock art sites were/are mostly linked to culturally significant places (e.g. Massola 1957; Arndt 1962; McCarthy and Macintosh 1962; Mountford 1965; Maddock 1970; Mowaljarlai and Malnic 1993; Gunn 1997; Gunn et al. 1997), it is highly likely that the other Noongar rock art complexes were of high cultural significance to the various Aboriginal people (Noongar and their neighbours) living within the broader region.
8.5.3 Previous Archaeological Investigations

In 1938-39, D.S. Davidson (1952:77) visited many of the then known art sites throughout Western Australia and attempted a synthesis of the State’s rock art, placing the present study area within his Southern Area. He recorded eight pictogram [pictograph] sites, although one of these, reportedly near Gwambygine, has not been found by subsequent researchers. From his sample, he proposed the art of his Southern Area consisted predominantly of red hand stencils, with a minor component of red linear designs (1952:112-113). Subsequent published studies concentrated on the five ‘anomalous’ art sites along the coastal limestone belt (decorated cave and open petroglyph sites: see below), an area for which no records existed during Davidson’s time (Hallam 1971, 1972; Clarke 1983; Morse 1984; Bednarik 1987-88; Franklin 2007; Gunn et al. 2011).

Excavations at Mulka’s Cave (DAA site 5842; Bowdler et al. 1989; Rossi 2014) found that the cave was being used around 8000 years ago and the open camping area, 150 m in front of the cave, around 5000 years ago. The excavation report does not mention either the presence or absence of ochre, but notes that heavy visitation to the site since the 1980s had eroded the cave sediments by almost a metre (Webb and Rossi 2008). This would have also removed any ochre discarded from a more recent period of art production. Consequently, the age of the art at Mulka’s Cave remains unknown, although Gunn (2006a) suggested, on the basis of the poor condition of the surviving pigments, that a recent age was unlikely.

The occupation of Frieze Cave (DAA site 3350) has continued for the past 3000 years, where red ochre was found in the lowest layers of the excavation but, despite the conclusion that red colouring had been used for at least 3000 years, no mention is made of ochre in the upper levels (Hallam 1971:95).
8.5.4 **Five Anomalous Noongar Art Sites**

The five sites within the coastal limestone belt are very different to those on the Yilgarn Craton. Orchestra Shell Cave (DAA site 4404; Figure 23) and the adjacent alcove Orchestra Shell West contain a large number of finger-fluting and scratchings in the twilight zone of the cave and its side passage (Hallam 1971; Bednarik 1987-88). Excavation of the floor deposits of the larger alcove by Hallam (1971: 102) revealed occupation between 6600 BP to 1650 BP, although she rejected the older age as stratigraphically incoherent, concluding that the site was first occupied about 4000 BP (Hallam 1974). The finger-flutings here, however, are masked by “an extensive growth of speleotherms” of unknown age (Bednarik 1987-88: 3), so could be older than the dated archaeological deposits. Bednarik (1987-88: 14) briefly describes a second cave in this system, 150 m south of Orchestra Shell Cave, that also contains finger-fluting within reach of daylight.

Morfitt’s Cave (DAA site 3277; Figure 38; also known as Mandurah Cave) also has finger-fluting and scratchings in the twilight zone of the cave chamber. These markings are also partially overlain by a natural “precipitate” that post-dates their production (Bednarik 1987-88: 13). Again, no age for the precipitation is known or proposed but, on the proposed ages for similar precipitation events elsewhere in Australia (Bednarik 1998: 413), an early- or pre-Holocene age is likely.
Kudardup Cave (DAA site 4803; Figure 39) contains three red hand stencils just inside the entrance to a deep cave system (including an additional one to the two reported by Morse 1984). Following excavation of the floor deposits, Morse (1984: 197) argued that the cave was probably occupied in the mid-Holocene because the artefacts she found included fossiliferous chert, the sources for which were drowned around 6000 years ago by post-glacial sea level rise (Glover 1979, 1984; Glover and Lee 1984). The possibility of the discard here of re-used older artefacts from other sites was not discussed nor was the percentage of such artefacts given. The evasion of deep caves by Aboriginal people in southern Australia during recent times, however, usually on the basis of avoidance myths (Howitt 1904; Bates 1938; Bednarik 1986: 3), suggests that such caves have been avoided for the past 3500 years at least (cf. David 2002: 210).
The aforementioned Kybra site contains a suite of 267 pecked motifs on an open pavement of heavily eroding limestone within a swampy environment (Figure 37). The motifs are dominated by bird tracks (48%), roo tracks (15%) and simple geometric elements (31%). No age for these petroglyphs has been determined but as the pavement into which they were pecked is mid to late-Holocene in age, they cannot be older than this (Dortch et al. 2006).

The age of the finger-flutings in the two Orchestra Shell Caves and Morfitt’s Cave is unknown, but the speleotherm growth over the markings in Orchestra Shell Cave suggests an older rather than a younger age. Bednarik (1990: 66) has argued that the finger-flutings in Orchestra Shell
Cave were produced prior to the development of the 4000 year old occupation deposits. The similarity of these finger-flutings to those in Koonalda Cave on the Nullarbor Plain, 1600 km to the east, and other cave sites across southern Australia (Bednarik 1986; 1990) suggests an extremely wide-ranging tradition (Flood 1997: 39-50) or, alternatively, an unlikely coincidental occurrence of independent invention. The finger-flutings in Koonalda Cave have been associated with charcoal dated to around 20,000 BP (Wright 1971), and those at Karake Cave in south-eastern South Australia date to the mid-Holocene or earlier (Bednarik 1990: 66). Together, this slim evidence is pointing to at least the mid to early-Holocene parietal art tradition.

In contrast, although still undated, circumstantial evidence suggests a late Holocene age for the Noongar painted art on the Yilgarn Craton (cf. Dortch 1979; Webb 1996; Turney et al. 2001; Rossi 2014). Further, given the disintegrating nature of the granite surfaces when exposed to air, it is unlikely that these art surfaces have survived for more than a few thousand years (cf. Twidale and Campbell 2005: 132).

Consequently, as the petroglyphs of the limestone caves are distinctly different in type and context, techniques and motif types, and most probably age, from the pigment art on the craton, they will not be included in the comparative assessment of the Eastern Nyungar art corpus. The Kybra petroglyph site is excluded for similar reasons, as the site, its context and contents are regionally unique.

While hand stencils like those at Kudardup Cave are found in many of the craton sites, Kudardup is a limestone cave that was probably occupied before 6000 BP (Morse 1984:197), suggesting its use has a greater affinity with Orchestra Shell and Morfitt’s caves than with the
stencils within the granite boulder sites on the craton. Hand stencils, also in the twilight regions of limestone caves and possibly of similar pre-mid Holocene age to those in Kudardup Cave, have been reported from the Nullarbor Plain (Lane and Richards 1966) and Tasmania (Cosgrove and Jones 1989). This suggests that Kudardup Cave is likely to be part of another extremely wide-ranging early rock art practice that pre-dates that of the existing granite shelter art, and possibly parallels the age of other southern Australian parietal art. Consequently, Kudardup Cave is also excluded from the following assessment. The content and context of these hand stencil and finger-fluting caves, however, are recognised as a particular aspect of rock art within Noongar country, although possibly pre-dating the present Noongar land affiliations.

8.5.5  **Noongar Art Sites on the Yilgarn Craton**

Excluding the Esperance Nyungar sites discussed above, 38 rock art sites have been recorded from 23 site complexes on the Yilgarn Craton within Noongar country (Table 27, Fig. 33). The art sites occur either as singular isolated shelters or as small, localised clusters. In most cases, the names given to the sites in Table 27 are those on the DAA Site Register, except where the recorded name is geographically misleading (as at Bococoopin and Dajoing Hill) and/or the original reporter asked to be acknowledged (Le Moignan). Hence, the DAA site numbers (ID) have been added for clarity.
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<tr>
<th>Group</th>
<th>Site Complex</th>
<th>SITE NAME</th>
<th>Art Site code</th>
<th>Shelter length (m)</th>
<th>depth</th>
<th>height</th>
<th>orient Nos</th>
<th>Type*</th>
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### Single Art Sites

- **Bald Rock**
- **Beringbooding**
- **Bococoopin**
- **Boyatup**
- **Burran Rock**
- **Chiddacoopin**
- **De-eranning**
- **Halfway Rocks**
- **Lake Hillman**
- **Le Moignan**
- **Mt Hampton**
- **Halfway**
- **Boyd**
- **Boyatup**
- **Burran Rock**
- **Chiddacoopining**
- **Dahjoing Hill**
- **De-eranning**
- **Halfway**
- **Lake Hillman**
- **Le Moignan**
- **Mt Hampton**
- **Halfway**
- **Lake Hillman**
- **Le Moignan**
- **Mt Hampton**
- **Halfway**

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</tr>
</tbody>
</table>
TABLE 27. LIST OF NOONGAR ROCK ART SITES RECORDED.

A systematic survey of all areas of Noongar country has yet to be undertaken, but the present data are considered to be representative of the region as a whole, as they derive from all of the currently known art sites.

The art shelters on the Yilgarn Craton occur in one of three situations: hillsides (slopes), tors, or breakaways (Figure 40). Hillside and tor situations, which account for 21 (91%) of the complexes, are within granite outcrops; while the two breakaway complexes are in saprolite beneath duricrust. The granite varies in composition across the study area, ranging from fine- to coarse-grained, and having a range of various mineral compositions (Geological Survey of Western Australia 1:250 000 geological maps). According to the geological survey maps, the two site complexes within the saprolite exposures are located within sedimentary deposits; field inspection, however, found them to be within outcrops of saprolite – heavily degraded rock with a clay matrix and hardened exterior (cf. Ollier 1991; Bourne and Twidale 2002: 83-85).

Both these breakaway site complexes contain a single art shelter with small numbers of red hand stencils. No other archaeological sites or features were found at these locations.
All of the art shelters recorded have flat floors suitable for occupation, but surface artefacts and the signs of potential archaeological deposit were uncommon. While most shelters have concave rear wall-ceilings that can readily accommodate a standing person, a few have very low ceilings, <1 m high. Others have low entrances that require hands-and-knees access but then open out into sizable interior recesses (Figure 41).
The 38 art sites recorded contain 1560 motifs, but 452 (29%) of these occur in the single shelter at Mulka’s Cave (Gunn 2006a). The number of motifs in the other sites varies from two to 118, with a mean of 23, median of 11, and standard deviation of 27 (Table 27). Unfortunately, graffiti removal at the Hippo’s Yawn (DAA site 4661) also removed most traces of its Aboriginal art (possibly in the early 1980s; Robert Reynolds, Dept. Aboriginal Affairs, pers. comm., 2004).

Mulka’s Cave, the site with the greatest number of motifs, is central to the region (Figure 42). Secondary category sites (80-250 motifs) tend to occur as local foci across the area, but there is no apparent pattern in the distribution of complexes with lesser motif numbers.
The size of a shelter can influence the amount of artwork present through the size of the available wall area suitable for art production. Within Nyungar country, however, motif numbers show very little correlation with shelter length which is generally a measure of overall shelter size (Figure 43). Shelters with more than 20 motifs range from 3.3 m to 15 m in length. The exceptional sites are Lake Hillman, at 25 m long but with only 10 motifs, and Kellerberrin site KBB-01, with 118 motifs and a length of just 7.5 m. Mulka’s Cave, with its 452 motifs within a shelter only 15 m long, is one of four shelters that form the group of second largest shelters. The other three shelters of similar length, however, contain only 32, 43 and 74 motifs respectively.
4. EXCLUDING MULKA'S CAVE WITH ITS EXCEPTIONALLY HIGH MOTIF NUMBERS (452) AND A SHELTER LENGTH OF 15M

8.6 THE ATTRIBUTES OF EASTERN NOONGAR ROCK ART

Techniques

Four art production techniques were recognised: stencilling, painting, printing and dry-pigment drawing (Table 28). Overall, no relationship is evident between the number of motifs present and the range of techniques used. Where multiple techniques occur, one will generally dominate and, in most cases, with more than the sum of the lesser techniques.

<table>
<thead>
<tr>
<th>Technique</th>
<th>No. of motifs</th>
<th>%</th>
<th>No. of sites</th>
<th>% sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>stencil</td>
<td>753</td>
<td>61</td>
<td>35</td>
<td>71</td>
</tr>
<tr>
<td>paint</td>
<td>373</td>
<td>30</td>
<td>31</td>
<td>63</td>
</tr>
<tr>
<td>print</td>
<td>78</td>
<td>6</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>draw</td>
<td>31</td>
<td>3</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>TOTAL</td>
<td><strong>1235</strong></td>
<td><strong>100</strong></td>
<td><strong>49</strong></td>
<td>-</td>
</tr>
<tr>
<td>frags</td>
<td>325</td>
<td>32</td>
<td>32</td>
<td>65</td>
</tr>
</tbody>
</table>

TABLE 28. TECHNIQUE FREQUENCIES IN NOONGAR ROCK ART
Stencilling and painting, although not present in every shelter, are present in all complexes. Hand prints, while more restricted in number, are also widespread. Drawing occurs in small numbers and is mostly limited to those complexes and groups along the eastern slopes of the Darling scarp: Mokine, Gwambygine, and Nyamutin (Figure 23), with three drawings also recorded at Mulka’s Cave.

Comparison of those complexes in which the numbers of a particular technique are relatively high (Table 29) indicates that no complex contains major representation of all techniques. Furthermore, no one technique is dominant at all of the site complexes, nor do the major techniques cluster in localised regions.

<table>
<thead>
<tr>
<th>COMPLEX</th>
<th>Paint</th>
<th>Stencil</th>
<th>Print</th>
<th>Draw</th>
<th>Motif Nos</th>
</tr>
</thead>
<tbody>
<tr>
<td>York</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>119</td>
</tr>
<tr>
<td>Kellerberrin</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td>152</td>
</tr>
<tr>
<td>Mulka's Cave</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td>452</td>
</tr>
<tr>
<td>Warren DC</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>127</td>
</tr>
<tr>
<td>De-eranning</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>92</td>
</tr>
<tr>
<td>Nyamutin</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>59</td>
</tr>
</tbody>
</table>

TABLE 29. MAJOR TECHNIQUES IN NOONGAR ROCK ART

Colours

Red is the dominant colour throughout (63%), with white the only other colour well represented (Table 30). Red is predominant in 17 complexes and white in four (Dajoing, Le Moignan, Nulla Nulla and Ogilvie Caves); each of the latter complexes have only low motif numbers and all are widely separated. Other colours represented are cream, yellow, purple, orange, and pink. Thirty-six bichrome motifs were recorded, 35 from Mulka’s Cave (hand stencils on a pre-coloured surface; Gunn 2006a:30) and a set of small, red+white concentric arcs at Le Moignan. White tends to be concentrated in the north-central complexes, north-east of Kellerberrin, as is orange, which only occurs in sites with high numbers of white motifs. Yellow is not found in
any sites north of Kellerberrin, and only occurs in any notable number at Mulka’s Cave (19 motifs). In general, the range of colours represented is greatest in those complexes with higher motif numbers (Table 30).

<table>
<thead>
<tr>
<th>Site Complex</th>
<th>red</th>
<th>White</th>
<th>purple</th>
<th>Cream</th>
<th>yellow</th>
<th>orange</th>
<th>pink</th>
<th>bichrome</th>
<th>Total Motifs</th>
<th>No. of Colours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mulka’s Cave</td>
<td>276</td>
<td>111</td>
<td>7</td>
<td>19</td>
<td>4</td>
<td>35</td>
<td></td>
<td></td>
<td>452</td>
<td>6</td>
</tr>
<tr>
<td>Kellerberrin</td>
<td>59</td>
<td>50</td>
<td>33</td>
<td>7</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td>152</td>
<td>6</td>
</tr>
<tr>
<td>Warren DC</td>
<td>68</td>
<td>50</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td>127</td>
<td>5</td>
</tr>
<tr>
<td>York</td>
<td>103</td>
<td>11</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>119</td>
<td>4</td>
</tr>
<tr>
<td>De-eranning</td>
<td>53</td>
<td>36</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>92</td>
<td>3</td>
</tr>
<tr>
<td>Nyamutin</td>
<td>54</td>
<td></td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>59</td>
<td>2</td>
</tr>
<tr>
<td>Mt Hampton</td>
<td>44</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>44</td>
<td>1</td>
</tr>
<tr>
<td>Chiddarcooping</td>
<td>43</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>43</td>
<td>1</td>
</tr>
<tr>
<td>Beringbooding</td>
<td>22</td>
<td>13</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>38</td>
<td>3</td>
</tr>
<tr>
<td>Mokine</td>
<td>28</td>
<td></td>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>32</td>
<td>2</td>
</tr>
<tr>
<td>Le Moignan</td>
<td>2</td>
<td>22</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>25</td>
<td>3</td>
</tr>
<tr>
<td>Ogilvies Caves</td>
<td>2</td>
<td>20</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>24</td>
<td>3</td>
</tr>
<tr>
<td>Nulla Nulla</td>
<td>6</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>26</td>
<td>2</td>
</tr>
<tr>
<td>Hyden Rock</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>Warrachupin</td>
<td>18</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>20</td>
<td>2</td>
</tr>
<tr>
<td>Dahjoing Hill</td>
<td>6</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>19</td>
<td>2</td>
</tr>
<tr>
<td>Bococoopin</td>
<td>4</td>
<td>5</td>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>13</td>
<td>3</td>
</tr>
<tr>
<td>Lake Hillman</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>Bald Rock</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Burran Rock</td>
<td>4</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Halfway Rocks</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>852</td>
<td>355</td>
<td>40</td>
<td>24</td>
<td>25</td>
<td>12</td>
<td>7</td>
<td>36</td>
<td>1351</td>
<td></td>
</tr>
<tr>
<td>%</td>
<td>63</td>
<td>26</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>&lt;1</td>
<td>&lt;1</td>
<td>3</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 30. NOONGAR COLOURS BY SITE COMPLEX (NUMBERS)**
Motif types: Preform motifs (Stencils and Prints)

Preform motifs are those whose form is predetermined by their technique (cf. Maynard 1977:393; “mechanical figures”). The most common preform motif in Australia is the hand stencil. Here, hand stencils occur in 36 shelters (73%). The number of stencils per individual site ranges from 1 to 314, with a median of 8. Excluding Mulka’s Cave with its 314 hand stencils, the range drops to from 1 to 63. The site complexes, again excluding Mulka’s Cave, contained from 1 to 85 stencils with a median of 16 (Table 31). Three complexes stood out for their high numbers of stencils: Mulka’s Cave, Kellerberrin, and Warren DC. Four complexes do not contain any hand stencils; Bald Rock, Burran Rock, Dajoing Hill and Mt Hampton, each consisting of a single art site and 6, 6, 19 and 44 motifs respectively. All four sites occur in the north-east of the region and were not too far distant from complexes with high hand stencil numbers.

Hand prints occur in six sites; however, 98% of these occur in just two sites: Mulka’s Cave and De-eraning. The other four sites have only one or two examples. While all hand prints occur within shelters with hand stencils, the majority of sites with hand stencils do not have hand prints. As is common throughout Australia (Gunn 2007), in these sites left hands are more frequently stencilled than right hands (2.7:1), while right hands are more often printed than left (2.6:1) (Table 31). This trend holds here for sites with both large and small motif numbers.

<table>
<thead>
<tr>
<th>%</th>
<th>HAND STENCILS</th>
<th>HAND PRINTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motif type</td>
<td>Mulka's Other</td>
<td>Mulka's Other</td>
</tr>
<tr>
<td>Left hand</td>
<td>39</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>55</td>
<td>12</td>
</tr>
<tr>
<td>Right hand</td>
<td>23</td>
<td>36</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>19</td>
</tr>
<tr>
<td>? hand</td>
<td>38</td>
<td>50</td>
</tr>
<tr>
<td>(n)</td>
<td>(264)</td>
<td>(28)</td>
</tr>
<tr>
<td></td>
<td>(315)</td>
<td>(42)</td>
</tr>
</tbody>
</table>

TABLE 31. HANDEDNESS BY TECHNIQUE AT MULKA’S CAVE AND ALL OTHER NOONGAR SITES (%)
Other than hands, stencilled objects are uncommon, with eight noted in complexes in the central north region. Objects stencilled in red include two feet at Kellerberrin (left: ball width 9 cm, and another that couldn’t be measured); a right fist; and two unknown, but different, objects at Kellerberrin and Chiddacooping. Objects stencilled in white comprise two small right foot stencils (ball width 5 cm) at Ogilvie Cave 1, and a boomerang (45 x 4 cm, curve 6 cm) at Warren DC 1.

Motif types: Freeform motifs (Paintings)

In contrast to preform motifs, freeform motifs are those whose form is not dependent on the technique other than it being essentially produced freehand: painting, drawing, pecking, etc. (cf. Maynard 1977:393; “delineated figures”).

Of the 23 complexes studied, 74% contained paintings, while the other 26% contained only stencils (Table 32). In total, 372 paintings were recorded from 31 shelters, with numbers per shelter ranging from 3 to 42 (median 5), with eight sites each having more than 20 painted motifs.
<table>
<thead>
<tr>
<th>Site Complex</th>
<th>geo small all bird large bars arc roo track small CD</th>
<th>TOTAL No. of types</th>
</tr>
</thead>
<tbody>
<tr>
<td>York</td>
<td>30 13 7</td>
<td>50 3</td>
</tr>
<tr>
<td>Kellerberrin</td>
<td>14 5 14 1 4 2 1</td>
<td>41 6</td>
</tr>
<tr>
<td>Mt Hampton</td>
<td>23 10 2</td>
<td>35 3</td>
</tr>
<tr>
<td>Warren DC</td>
<td>7 4 15 1 3 2 1</td>
<td>33 7</td>
</tr>
<tr>
<td>De-eranning</td>
<td>10 7 3 3 4 3 1 1</td>
<td>32 7</td>
</tr>
<tr>
<td>Le Moignan</td>
<td>4 4 8 1 5</td>
<td>22 5</td>
</tr>
<tr>
<td>Mulka's Cave</td>
<td>14 2 5</td>
<td>21 3</td>
</tr>
<tr>
<td>Dahjoing Hill</td>
<td>7 7 5</td>
<td>19 4</td>
</tr>
<tr>
<td>Beringbooding</td>
<td>3 1 4 1 4</td>
<td>14 6</td>
</tr>
<tr>
<td>Ogilvies Caves</td>
<td>8 3 2</td>
<td>13 3</td>
</tr>
<tr>
<td>Mokine</td>
<td>4 1 1 1 4</td>
<td>11 5</td>
</tr>
<tr>
<td>Nulla Nulla</td>
<td>1 7 1 1</td>
<td>10 4</td>
</tr>
<tr>
<td>Nyanmutin</td>
<td>3 3 1</td>
<td>7 3</td>
</tr>
<tr>
<td>Burran Rock</td>
<td>1 2 2</td>
<td>5 3</td>
</tr>
<tr>
<td>Bald Rock</td>
<td>2 1</td>
<td>3 2</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>12861 52 28 16 13 9 4 2 1 1</strong></td>
<td><strong>316</strong></td>
</tr>
<tr>
<td>%</td>
<td>41 19 16 9 5 4 2 1 &lt;1 &lt;1 &lt;1</td>
<td>100</td>
</tr>
</tbody>
</table>

Key to motif types:
- geo El = geometric elements (such as single bars, lines, crosses, U-shapes, etc.)
- small SD = small simple designs (<50 cm)
- bird track = bird track (three and four toed tracks)
- Large des = large designs (both simple or complex >50 cm)
- bar set = groups of parallel bars
- arc set = concentric arc set
- roo track = macropod tracks
- small CD = small complex designs
- oval = outline oval or circular shape
- fauna = shape that suggests a faunal species (here lizard-goanna)

**TABLE 32. NOONGAR PAINTED MOTIF TYPES PER SITE COMPLEX (NUMBERS)**

The paintings were sub-divided into 10 motif classes on the basis of shape (Table 32). Geometric Elements were the most common motif type (41%) and the most frequent type in
seven complexes. A wide range of elements are depicted, however, with the most notable being straight, curved, and undulating lines; paired lines; apex designs (elongated tridents, star-shapes, etc.); single bars; and arcs. Unusual Geometric Elements recorded were a single concentric circle at Beringbooding and four oval shapes at Corolin Creek 1 and 2.

The small Simple Designs were mostly elaborations on or of Geometric Elements (Figure 44). They include sets of either multiple and parallel short bars or longer lines in horizontal rows of vertical elements (Figure 45). The number of elements (lines or bars) varied considerably, sometimes extending in length to overlap with the Large Design category (see below). The other common Simple Design forms were those based on an infilled outlined shape. The single small Complex Design recorded (Figure 46) consists of three Simple Design elements (concentric arc set, bar set, and barred oval) combined into a single unit.

![FIGURE 44. SIMPLE DESIGN MOTIFS FROM BURRAN ROCKS (PHOTO-TRACING)](image-url)
Bird Tracks were the third most common freeform motifs (16%), and occur in seven of the 17 complexes with paintings. The Bird Track motif consisted of three-toed (emu) tracks and four-toed (other bird) tracks. In most complexes emu tracks outnumber other bird tracks, but the relative ratios vary across the region. Only Warren DC 2 has more other bird than emu tracks (ratio 9:2).
Macropod (roo) tracks, account for 2% of the painted motifs and occur in only four shelters; Beringbooding, De-eranning and Warren DC 1 and 2; the latter two also have bird tracks. Apart from Marbaleerup, all other complexes with track motifs occur in the central north of the study area.

A separate category of Large Designs was assigned as it was clear, after visiting several complexes, that this motif type made the greatest visual impression on the onlooker (Figure 47). The category includes designs that are both simple and complex in form. They range in length from 0.7 m to 9.9 m (see discussion on motif sizes below). The category, however, does not include long single lines, which reach up to 3.4 m. Lines of all lengths are classed as Geometric Elements as, being narrow, they have little visual impact. The Large Designs are extremely varied in their forms, ranging from long rows of short bars up to 9.9 m (Figure 48), a row of small circles (1.6 m) and simple apex designs (1.2 m), to extensive complex designs (3.7 x 3.4 m; Figure 49). Of the 17 complexes with paintings, 13 contain Large Design motifs. Large Designs occur in both red and white pigment; some are very weathered and appear to be of greater age, while others are better preserved and appear to be younger. The greatest number of Large Designs occurs in the Gwambygine Complex. The distribution of Large Designs by colour (Figure 50) shows that red designs occur throughout the area, while those in white tend to be concentrated in the northern complexes. Given their visual dominance, it is expected that the sites housing these Large Designs had considerable cultural significance in the past and were the most important within their respective complexes.
FIGURE 47. TYPICAL LARGE DESIGN MOTIFS HERE SUPERIMPOSED OVER HANDSTENCILS (MULKA’S CAVE, 2005)

FIGURE 48. COLOUR-ENHANCED SECTIONS OF THE 9.9 M LONG SIMPLEX LARGE DESIGN (ROW OF BAR MOTIFS) (FRIEZE CAVE, 2005) (DSTRETCH_LRE10)

FIGURE 49. COMPLEX LARGE DESIGN MOTIF 3.7 X 3.4 M (BALD ROCK) (FREEHAND SKETCH. NO PHOTOMOSAIC COULD BE ACHIEVED DUE TO THE UNDULATING LOW CEILING)
The only figurative motifs recorded were two possible lizards, at De-eraning and Warren DC 1. As both are simplified static forms, constructed with a vertical line with two cross bars, their identification as lizards is questionable.

Overall, there is no correlation between the number of freeform and preform motifs within the complexes (Figure 51).
Motif types: Freeform motifs (Drawings)

Of the 31 dry-pigment drawings recorded, only 20 could be reliably classified according to motif type (Table 33), with the remainder being relegated to a class of fragments. These are limited to small Simple Designs (Figure 52), Geometric Elements and four Large Designs. The absence of bird tracks is notable. The two largest of the designs are a complex encircled bar arrangement 1.25 x 0.80 m and a simple horizontal line with loop 1.2 x 0.2 m, both in the one shelter at Nyamutin. None of the drawings are visually dominant due to their fine linear construction and generally poor preservation.

<table>
<thead>
<tr>
<th>Name</th>
<th>Small SD</th>
<th>Large Des.</th>
<th>Frag.</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nyamutin</td>
<td>2</td>
<td>3</td>
<td>10</td>
<td>26</td>
</tr>
<tr>
<td>Mulka's Cave</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Mokine</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>York</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>5</td>
<td>11</td>
<td>4</td>
<td>11</td>
</tr>
</tbody>
</table>

Key as per Table 32

TABLE 33. DRAWN MOTIF TYPES PER NOONGAR SITE COMPLEX (NUMBERS)

FIGURE 52. DRY-PIGMENT DRAWING (SIMPLE DESIGN) NYAMUTIN (UNENHANCED PHOTOGRAPH AND PHOTO-TRACING)
Motif size

The 271 freeform motifs that could be measured ranged from 2 cm to 990 cm in length, with a mean of 34 cm, a median of 21 cm and a standard deviation of 78 cm. The most frequent class of sizes was <10 cm (Figure 53), with a regular decline in numbers per class as size increases. Within individual art shelters, the largest motifs range from 7 cm to 990 cm. The sizes of the largest motifs, however, are unrelated to the overall number of motifs on the panel (Figure 54) or to shelter size (Figure 55).

At the time of recording, knuckle width was measured for all hand stencils and hand prints. Subsequently, middle finger length was shown to be a more reliable measurement than knuckle width (Gunn 2006b). In lieu of middle finger measurements for these stencils and prints, knuckle width can be seen to give a rough indication of the class of people whose hands were utilised. The knuckle widths of the stencilled hands were all ≥7 cm, suggesting that most were made by adolescents, adult women or adult men. At Mulka’s Cave there are only two hands likely to be of infants, while there is an apparent absence of children’s hands (Gunn 2006a:31).
FIGURE 53. NOONGAR ROCK ART MOTIF LENGTHS

FIGURE 54. LARGEST MOTIF SIZE BY SHELTER MOTIFS NUMBERS
Superimposition and sequence

Instances of motif superimposition are uncommon, most likely due to the low overall motif numbers on individual panels and the presence of adjacent unused panel space. The sequence of 52 examples of superimposition, listed in Table 34, indicates white overlying red six times more than red overlies white (Table 35). This supports the subjective impression that the use of red pigments largely pre-dates that of the existing white pigments. The sequences for cream paint and red drawing are inconclusive, but, from their relative states of preservation, it appears that both colours are represented amongst the most recent artwork in their respective shelters.

**TABLE 34. NOONGAR SUPERIMPOSITION FREQUENCIES (NUMBERS)**

<table>
<thead>
<tr>
<th>UNDER</th>
<th>OVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>red hst</td>
<td>red paint</td>
</tr>
<tr>
<td>red hst</td>
<td>3</td>
</tr>
<tr>
<td>red hst</td>
<td>6</td>
</tr>
<tr>
<td>red hst</td>
<td>4</td>
</tr>
<tr>
<td>red hst</td>
<td>1</td>
</tr>
<tr>
<td>red hst</td>
<td>1</td>
</tr>
<tr>
<td>red hst</td>
<td>4</td>
</tr>
<tr>
<td>white hst</td>
<td>4</td>
</tr>
<tr>
<td>white hst</td>
<td>2</td>
</tr>
<tr>
<td>cream paint</td>
<td>1</td>
</tr>
</tbody>
</table>
These sequences suggest that there are two overlapping phases present in Nyungar rock art. Initially, the artwork was dominated by the production of red hand stencils and red paintings. At some later time a phase dominated by painting was added, but it did not totally replace the stencilling tradition. While white paintings may have been produced along with the earlier red hand stencils, no recognized examples have survived. In contrast, few red motifs overlie white motifs and few others, not present in superimpositioning, are as well preserved as the white motifs, testifying to a significant reduction in the uses of red pigment in rock art during this recent phase.

8.7 THE CHARACTER OF EASTERN NOONGAR ROCK ART

Using the above data and the concepts of “character” (Maynard 1976:107-109) and “personality” (Clegg 1978:54-55), the general character of Eastern Noongar rock art can be derived by selecting the most numerous and widespread attributes, idiosyncratic features, and common patterns, if any, in location or sequence in the rock art described above.

Hence, overall Noongar rock art can be characterised as consisting of:

1. A predominant use of red pigment, with a lesser use of white. In most cases, white pigment overlies, and hence is more recent than, red. Other colours, such as pink and orange, are uncommon and appear to be contemporary with the more recent use of
white. Only one bichrome painting was recorded although, at Mulka’s Cave, 35 hand stencils were placed over a surface initially prepared with a complimentary colour.

2. An underlying and numerically dominant suite of red hand stencils. While many stencils predate painted motifs, at a few sites, stencilling continued to be practiced along with paintings.

3. Hand stencils are primarily those of adolescents, adult women or adult men (knuckle size mostly >7 cm), with few infants or small children.

4. Paintings are essentially linear in form (linear, outline or outline with linear infill) and none are painted with the finesse associated with fine brush painting (such as occurs in the Kimberley and elsewhere in northern Australia; e.g. Walsh 2000).

5. A small number of Large Design motifs (>70 cm and either simple or complex) and placed prominently to form visually impressive images. These paintings tend to occur within the major art site of each complex.

6. A small numbers of paintings of less visually impactful Geometric Elements, small Simple Designs, Bird Tracks and Large Designs, that occur within shelters with and without Large Designs.

7. A total absence of anthropomorphic and naturalistic fauna motifs.
8.8 A COMPARISON OF ESPERANCE NYUNGAR AND THE EASTERN NOONGAR ROCK ART

The assemblage of Esperance Nyungar and Eastern Nyungar rock art share seven common characteristics:

1. Red pigment predominates; other colours mostly overlie the red. In Eastern Nyungar rock art most of the more recent motifs are in white, while within Esperance Nyungar rock art only cream is present. This difference is not considered significant, however, as white and cream pigments appear to be relatively contemporaneous and the presence of cream may simply reflect a lack of white pigment in the region. Note that all Eastern Nyungar sites with cream also contain greater numbers of white motifs. Bichrome motifs are very unusual.

2. Red hand stencils are widely distributed as the underlying (oldest) art form, but stencilling in other colours continues to be practiced along with painting.

3. Hand stencils were predominantly made by adolescents and adult men and women.

4. Paintings are essentially linear or outline in form and appear to be painted with the fingers.

5. Major art sites contain small numbers of visually impressive Large Designs measuring more than 0.7 m, but Large Designs are not present in all complexes.
6. Other painted or drawn motifs comprise less visually impressive Geometric Elements, small Simple Designs, Bird Tracks, and Large Designs.

7. There are no anthropomorphic motifs.

8.9 DISCUSSION

The above comparison revealed distinct commonalities of form between the rock art of the Esperance Nyungar and that of the Eastern Noongar. Seven characteristics of form were identified that were numerically dominant within the art assemblages of the two Esperance art sites. In a separate analysis of the Eastern Noongar rock art, the same seven characteristics were identified. Consequently, it is proposed that:

1. There exists an Eastern Noongar Rock Art Tradition (cf. Bednarik 2016) that, on the basis of common characteristics of form and character, incorporates all the known rock art sites in Noongar country east of the Darling Range.

2. The art at Marbaleerup and Boyatup is part of the Eastern Noongar Rock Art tradition, on the basis of closely similar formal and qualitative characteristics.

3. The Eastern Noongar Rock Art Tradition also incorporates sites beyond the current boundary of Noongar country but which lie close to the boundary and within currently unclaimed lands.
4. At least some of the Eastern Noongar rock art is related to interaction with non-Noongar people to the east and north.

The Eastern Noongar Rock Art Tradition is distributed over a wide area of south-western Western Australia. The distance from Lake Hillman, in the north, to Boyatup, in the south-east, is over 650 km. The sites, however, are all within broadly similar environments, being toward the northern or eastern fringes of the Southwest Australian Floristic Province, in areas where the annual rainfall is 300-400 mm (Figure 23). Only the sites at Gwambygine, Mokine and Nyamutin occur on the slightly better watered and better vegetated eastern slopes of the Darling Range. Boyatup stands apart from the other Eastern Noongar sites as it is the only site close to the coast, 13 km to the south, and within a coastal environment. The majority of the sites are all located on the drier region of the Yilgarn Craton. So while the sites are spatially separated and have minor environmental differences, they are linked throughout the Southwest Australian Floristic Province, whose boundaries are unlikely to have changed much since sea level stabilized about 6000 BP (Pickett et al. 2004). These environmental and geological conditions form a cohesive geographic context for the art tradition proposed here. The distribution of the eastern sites forms a belt along the eastern edge of Noongar country with most of the sites clustering near to the periphery. Again the Gwambygine, Nyamutin and Mokine Group sites are anomalous in this regard being further westward and deeper into Noongar country. So while there is a wide spatial distribution among the study sites, they are linked by common environmental and cultural elements, thus forming a cohesive geographic context for the posited art tradition.

Whether all of the art was made by Noongar people, and whether it is exclusively ‘Noongar’ in its origin or associations, is currently unknown. The clustering of many of the art sites close
to the periphery of Noongar country and the ethnographic information which suggests interaction, invites the question of what influence non-Noongar people may have had on the art assemblages. As most of the sites fall within, and include sites central to current Noongar lands, the tradition is referred to here as Noongar.

The Eastern Noongar rock art can be related to that of the Wadjari (non-Nyungar) rock art some 300 km to the north, around Cue. Both assemblages are dominated by red hand stencils and incorporate small numbers of Geometric Elements (Gunn and Webb 2000, 2003). A principal difference between the two regions is the dominance of the more friable saprolite rock shelters around Cue, with a much higher proportion of red motifs, a lack of ‘striped’ designs, and the notable presence of petroglyphs; the latter occur both within shelters and on open granite surfaces. Also, the Noongar rock art has no comparable site to the outstanding and unique site at Walga Rock with its high density of art and use of Western Desert type motifs (Walga Rock: Davidson 1952; Gunn et al. 1997).

The relationship between Noongar rock art and that of their neighbours to the east in the Western Desert and Goldfields is unclear, as the latter area remains largely unpublished (cf. Davidson 1952). From a sample of six locations Davidson notes petroglyphs of human footprints and the presence of “stencilled hands and anthropomorphic figures with head ornaments” (Davidson 1952:445). On the basis of published accounts of Western Desert art further to the east that is dominated by anthropomorphic figures, animal tracks, concentric circles and maze designs (e.g. Mountford 1937a and b, 1965; Munn 1973), there appears little similarity with the Noongar artwork recorded here. The only Eastern Nyungar motifs that would fit into a Western Desert assemblage are the concentric arc sets at Le Moignan (Figure 56); the concentric arc sets in conjunction with macropod or bird tracks at Kellerberrin, Le
Moignan and De-eranning (Figure 57); and the cream coloured ‘tree’ design at Marbaleerup (Figure 26A), which is amongst the most recent motifs in the shelter. The ‘tree’ or ‘path’ design, consisting of a central straight or curved line crossed by regularly placed arcs (Mountford 1965: Fig.36 CC), is unknown elsewhere in Eastern Nyungar rock art but is a distinctive motif of Western Desert rock art. In contrast, the emu track and line set motifs of the same layer as the tree design (Figure 26) are common motifs in Eastern Nyungar rock art. As these three groups of motifs at Marbaleerup appear to have been undertaken at the same time, it would appear that either they were all done by an artist familiar with both traditions or, given their relative positions on the panel, by artists from both traditions sharing the one panel. Future research may derive dates for the different phases of superimposition at Marbaleerup that may, in turn, be correlated with other lines of archaeological enquiry to understand more about the significance of these motifs and any possible relationship they may have with Western Desert rock art.

FIGURE 56. CONCENTRIC ARC DESIGN (LE MOIGNAN, 2004)
8.10 CONCLUSION

This paper has quantified the occurrence of common formal characteristics in the rock art assemblages at two sites in Esperance Nyungar country and within the 38 other sites on or close to current Noongar lands. This is designated as the Eastern Noongar Rock Art Tradition, which includes the rock art, and hence the sites, of Marbaleerup and Boyatup. The five art sites in the coastal limestone belt to the west of the Darling Range are clearly anomalous in form and context from the eastern corpus, and are thus considered a separate corpus distinct from the Eastern Noongar Rock Art Tradition. While the focus of this paper has been on the Eastern Noongar rock art corpus, it is acknowledged that these five western coastal sites also represent an important aspect of the rock art of south-western Western Australia.

With respect to rock art and territorial boundaries, the Eastern Noongar Rock Art Tradition clearly does not reflect the entirety of current Noongar lands, as it excludes the western coastal sites, and includes sites to the north and east beyond the present Noongar border.
The approach to the quantitative and qualitative analysis presented here serves as a preliminary characterization of Noongar rock art and has justified the simple methods used. The use of more complex methods in future may elucidate subtler trends in the art and its spatial patterning. Further research into dating the rock art is required to refine the temporal parameters of these interpretations. Additionally the social dynamics that underpin this rock art tradition, which clusters around the ‘boundary’ or ‘meeting area’ at the edge of Nyungar country, is an area that has yet to be studied.

The recent recording of the rock art sites within the Coastal Limestone Belt, the Marbaleerup complex, and the small site of Boyatup, has enabled a long overdue revision of Davidson’s (1952:77) assessment of the rock art of south-western Western Australia and the definition of the Eastern Noongar Rock Art Tradition.

8.11 CHAPTER SUMMARY AND ADDENDUM: PRELIMINARY COMPARISON OF EASTERN NOONGAR AND WESTERN DESERT ROCK ART

This section is not part of the published manuscript. I have added it here to advance the research questions pertaining to Western Desert influence in the Esperance region through an assessment of rock art symbols.

Following the identification of the Eastern Noongar Rock Art Tradition and the assertion that the Esperance art sites sit comfortably within this tradition, the next step toward answering the
research questions is to understand how the Eastern Noongar assemblages relate to those of the Western Desert. Broadly, the form of Western Desert art is different from that of the Eastern Noongar tradition, though there are some commonalities. Presented here is a preliminary comparative analysis between Eastern Noongar and Western Desert rock art. The analysis is limited by a current dearth of available rock art data from the Western Desert. This analysis is based on a small data-set obtained from Rock art recording and dating work along the Canning Stock Route: Report to ARC Linkage Project Colloquium, prepared by Jo McDonald (2011). The process undertaken here is to use the seven dominant characteristics of form observed from the Noongar data sets (Gunn et al. in press), as a basis for comparison with the available Western Desert data (Figures 58 and 59). It is acknowledged that the Western Desert data-set is but a small sample of the overall assemblages across the Western Desert, which is why this is considered a preliminary analysis. A more comprehensive assessment of Western Desert rock art is currently being conducted (Jo McDonald, pers. comm., 15 Sep 2014), the results of which will postdate this thesis. There is opportunity in the future therefore to expand on this preliminary analysis and see whether a more robust Western Desert data set will support or refute the findings presented here.

FIGURE 58. “CARNARVON RANGES – SERPENTS GLEN AND BELLA VISTA PIGMENT MOTIF ASSEMBLAGE” (FROM MCDONALD 2011:75)
To begin with, some qualitative observations are made, to distinguish broad differences between the two regions. Firstly, the presence of engraved art in the Western Desert presents an immediate distinction with the Eastern Noongar assemblage, where there are no known engravings. This may be related, at least in part, to the geology of the Eastern Noongar area, which is comprised predominantly of granite, a hard rock that is difficult to engrave, though not impossible. It may also be an issue of chronology, in that many of the engravings in the Western Desert are thought to be very old, and in many cases to predate the pigment art (McDonald 2011:71). Most, if not all of the Eastern Noongar art is presumed to be of late-Holocene age, so it could be the case that the engravings in Western Desert art predate the Eastern Noongar art production phases. Nonetheless, the presence of engraved art in the desert and the complete absence of it in the Eastern Noongar sites is a notable difference between the two regions.

Another fundamental difference between the two regions is the notable and prominent presence of anthropomorphs in the desert painted art assemblages, whereas these are completely absent in all of Noongar country. It is also important to note that anthropomorphs, particularly those
with headdresses are a considerable proportion of the desert assemblages, so these are not outliers within the assemblage but are clearly a popular motif type. Similarly there are no naturalistic fauna motifs in the Noongar assemblage, with the possible exception of the whale motif at Marbaleerup (though it is arguable whether it might be considered a ‘naturalistic’ depiction because its form is quite abstract and it is really only the accompanying ethnographic interpretation that suggests it is a depiction of a whale), whereas naturalistic fauna depictions are common in the desert assemblages, primarily turtle, lizards, snakes, quadrupeds and macropods (kangaroos/wallabies).

Hand stencils represent a numerically significant trait in the Noongar assemblages, particularly in underlying (older) layers, but are extremely rare in the Western Desert assemblages. There is a very small class of “hands” listed in the tables for desert assemblages, but these appear to have been mostly printed rather than stencilled (McDonald 2011: 33, 58, 5).

Where bi-chrome motifs (generally red and white pigment) are common in the Western Desert (McDonald 2011:58-59), they are extremely rare in Noongar country. In Noongar country, red is the predominant colour used in artwork, especially in the underlying (earlier) phases, with a lesser use of white, generally overlying the red (Gunn et al. in press). Other colours such as pink and orange are present, but much less common. In Western Desert assemblages, red and white also appear to be common and perhaps the dominant colour scheme, however there is no numerical data currently available to offer statistical support to this assertion. The presence of black pigment in Western Desert assemblages distinguishes them from Noongar, where there is no evidence of black pigments being utilized.
Noongar paintings are essentially linear in form (linear, outline or outline with linear infill). The Western Desert assemblages also contain linear, outline and outline with linear infill, but motifs with solid colour infill are also common, which is a distinction from the Noongar. The numerical extent of this distinction is not known at this point. A salient feature of Noongar assemblages is the presence of large (<50cm) visually dominant motifs. While there are certainly examples of large visually dominant motifs in the Western Desert it is not known if these are a salient feature of the assemblages or just occur in some instances.

Despite the distinctions identified above, there are also cross-regional commonalities in the art. Bird tracks are common in both the Western Desert and Noongar assemblages. Kangaroo tracks (macropod tracks) are present in both assemblages, though in lower numbers than birds. Bar sets are present in both assemblages as are circles/ovals with bar sets inside, and concentric arcs. Geometric elements such as sinuous or meandering lines are present in both assemblages, as are ovals. So there is certainly evidence of shared graphic vocabularies between the assemblages, which in many regards conforms to expectations, given the known history of interaction across this frontier and the obvious clustering of art sites close to the edge of Noongar country. As more fine grained and statistical data become available for the Western Desert, this picture may be refined further.

Turning to Marbaleerup specifically, it is interesting to note that most of the above shared graphic elements (bird tracks, bar sets, ovals with bar sets inside, and meandering lines) are present in the assemblage, indicating the participation of Marbaleerup artists in shared Noongar-Western Desert graphic vocabularies. Not present at Marbaleerup are macropod tracks or concentric arcs. The aforementioned ‘tree’ design at Marbaleerup (Figure 26A), is a prevalent motif in Western Desert iconographies, referred to by McDonald (2011) as “fern”
(Figure 58). On the whole, Marbaleerup shares a majority of traits with other Eastern Noongar art assemblages, as well as containing a small number of shared Western Desert-Noongar traits in the upper super-imposed layers of art production. The significance of these results for the research questions is discussed in more detail in the next chapter which presents the discussion and conclusions for the thesis.
9 CONCLUSIONS

9.1 CHAPTER INTRODUCTION

This chapter begins by distilling all the results from the three fields of analysis – lithics, rock art, stone arrangements – to answer the six research questions. The concluding half of the chapter discusses the implications of the results in relation to the core topics of the thesis – mobility, aggregation, identity, and community research partnership. The final section outlines the conclusions.

9.2 RESEARCH QUESTION ONE

What information does the archaeological record provide about Marbaleerup and Belinup in regards to suggested interaction with people from the north and east (including Ngadju and Mirning people) during the period leading up to European settlement?

Lithics

The distribution of chert and silcrete as the two primary raw material types in the study assemblages provide interesting results in relation to this research question. Belinup sits in the chert rich coastal zone, while Marbaleerup sits around mid-way between the ‘chert belt’ at the coast and the ‘silcrete belt’ in the north and there are no known sources of either stone close to Marbaleerup. This means that all, or at least most, of the chert artefacts at Marbaleerup are presumed to originate from the south, deep in Esperance Nyungar country, and all or most of the silcrete artefacts are presumed to originate from Ngadju country, or at least the
northernmost fringe of Esperance Nyungar country at the Ngadju frontier. Therefore, the presence of silcrete as the dominant raw material in the Marbaleerup assemblages means stone has almost certainly been brought to this location from Ngadju country and utilised in the production, use, maintenance, and discard of stone tools. There is a strong likelihood that at least some of this stone was brought to Marbaleerup by Ngadju and perhaps other desert personnel, while some is likely to have been obtained by Esperance Nyungar people travelling north to Ngadju country. Trade may have also played a role in the transport of stone. Whatever the case, the silcrete at Marbaleerup reflects interaction with people from the north. There are some silcrete artefacts at Belinup which account for a small portion of the assemblage found on and around the stone arrangements. This too reflects some level of interaction with people from the north and east, though the small number of silcrete artefacts means the signal is very faint.

The technological traits apparent in the chert and silcrete assemblages at Marbaleerup present a picture of mobile tool kits consisting of pre-prepared tools, blanks and cores which are consistent with people travelling long distances from the source of the material and taking items for immediate utility along with them. This follows the prediction for the Marbaleerup assemblage reflecting provisioning strategies suitable for residential mobility. There is also evidence of people having provisioned Marbaleerup with useable chert and silcrete, demonstrating the employment of logistical mobility strategies around the Marbaleerup complex. MO2 is dominated by silcrete and has evidence of distinctive tool types from the Western Desert in the form of tula slugs. MO2 is thus reasonably interpreted as a logistical ‘gearing up’ site and perhaps short-term camping site for visiting Ngadju or other non-Nyungar people. Therefore, the results of the technological analysis support an interpretation of
interaction with people from the north and add further weight to the interpretation that Ngadju and other desert people were visiting Marbaleerup, given the presence of desert tool types.

**Rock Art**

The results of rock art analysis inform interpretation relating to this research question. The form of the Marbaleerup and Boyatup rock art motifs are consistent with those found in other areas of Eastern Noongar country and are therefore argued to be part of an Eastern Noongar Rock Art Tradition. It is significant that people chose to mark the landscape in this location with symbols that also mark other parts of Noongar country. This is interpreted as a strong reflection of Noongar identity and connection to place at Marbaleerup, and to a lesser extent (because it is a much smaller rock art assemblage), at Boyatup. Contemporary knowledge of Ballardong people (Esperance Nyungar’s neighbours to the north-west), about the rock art in their country suggests that at least some of the Eastern Noongar art is the result of interaction with desert people. There are marked differences between the artistic traditions of the Western Desert and the Eastern Noongars (including Esperance Nyungars), but there is also evidence of some shared graphic vocabularies, which intimate communication and interaction between these two regions.

The rock art of Marbaleerup, while adhering overwhelmingly to the broader conventions of the Eastern Noongar Rock Art Tradition, has some clear evidence of shared graphic vocabularies with the Western Desert. Of particular interest is a ‘tree’ or ‘fern’ motif that is painted in cream pigment in a layer that is super-imposed over earlier layers of art in the main art panel MR-01. This particular motif type is very common among Western Desert pigment art assemblages but is absent among the Noongar assemblages. The ‘tree’ motif at Marbaleerup is associated through a single painting episode (on the basis of being painted in the same layer and same
colour) with a ‘bar set’ (vertical lines) and an emu track (three toe bird track), which are both part of the shared Noongar-Desert graphic vocabulary. As the peer reviewers made clear in response to an earlier draft of the rock art manuscript (Chapter 8), these motifs are statistically insignificant and there are problems with attributing too much significance to a single ‘tree’ motif. However, the fact remains, that there is a distinctive Western Desert symbol, superimposed over earlier Noongar symbols, and in association with shared symbols. Interestingly, this layer is integrated with existing layers and is clearly intended to be complimentary, or to add to existing artwork, not to cover it or to replace it.

It is not possible to know with any certainty whether the artwork at Marbaleerup was made by Noongar people, Western Desert people, by both, or by people with duel affiliation. However, Western Desert artistic traits are evident in the artwork and this supports an interpretation of interaction with desert people. It is likely that some of this interaction took place on site and may be linked to the art production. At the very least it supports the interpretation that the people making this artwork were influenced by interaction, even if that interaction were not taking place on site.

The Boyatup assemblage reflects Eastern Noongar Rock Art Tradition and there are no elements in it that can be attributed directly to Western Desert influence. Therefore, while it does not preclude interaction, the Boyatup art does not support any interpretation of interaction with desert people.

**Stone Arrangements**

There is no evidence in the archaeological analysis of stone arrangements at Belinup and Budjari Yorg to support an interpretation of interaction with desert people. The results of the
stone arrangements analysis did not conform to the predictions, which held that the form of the study arrangements would be reflected in the stone arrangement assemblages of the Southwest, the Goldfields/Western Desert or both. The possibility of ‘neither’ was nominally added to the hypothesis but it was not expected to be the case. As it stands, the results of the analysis found that the arrangements at Belinup and Budjari Yorg stand together as the only two assemblages included in the analysis that display such broadly comparable attributes. This is the basis for an interpretation of the Belinup and Budjari Yorg arrangements as local ceremonial centres. Visiting personnel from the desert may have participated in ceremonial events, but the evidence suggests that these activities were of a local origin in Esperance Nyungar country.

Summary – Question One

There is clear evidence of interaction between Esperance Nyungar people and non-Noongar people with Ngadju associations in the lithic assemblages of the Marbaleerup complex. There is no direct evidence for Mirning people in the archaeological record, but an absence of evidence should not be assumed to be evidence of absence. There is also evidence of interaction between Nyungar and non-Noongar people in the results of rock art analysis, which support the ethnographic model of Marbaleerup having functioned as a meeting place between the Esperance Nyungars and their semi-desert dwelling neighbours. At Belinup there is no clear archaeological evidence of interaction between Nyungar and non-Noongar people, other than a small percentage of imported silcrete in the lithic assemblage recorded at the Belinup stone arrangements.
9.3 RESEARCH QUESTION TWO

*How can archaeological methods be used to provide information about movement cycles of people in Esperance Nyungar country, and the role of Marbaleerup and Belinup within local and regional settlement/mobility systems?*

Through a methodology for lithic analysis that uses the concept of provisioning strategies to link lithic technology (the data) with different kinds of mobility (the behaviour), this thesis has demonstrated how archaeological methods can be used to provide information about movement cycles of people in Esperance Nyungar country. Critical to the approach was situating the lithic analysis within its full geographical and cultural context. This was done through a series of site-use predictions which were informed by community knowledge, existing archaeological results, other archaeological features, ethnography, geology, geography, botany, and any source of information that could help to contextualise the sites. The site-use predictions were then tested against the lithic data. Most of the predictions were upheld, while some were not. The results informed an interpretation about how each of the activity areas around Marbaleerup and Belinup were used as part of regional systems of movement. These results are exemplified figures 10, 11 and 12. A consideration of aggregation and how it contributes to a picture of local and regional settlement patterns expands our understanding of Esperance Nyungar mobility.

The Marbaleerup complex demonstrated an archaeological signal of a quintessential aggregation locale, with strong evidence of mixed regional personnel and spatial patterning consistent with that predicted for an aggregation complex. The mobility patterns associated with the place show a mix of residential and logistical mobility strategies. There is evidence of
individual provisioning associated with long-range travel, and place provisioning with imported silcrete and chert that demonstrate spatial patterning consistent with distinct activity areas within the site complex. Marbaleerup sits within the inland periphery of Esperance Nyungar country, an area associated with high residential mobility as people moved between resource rich nodes, especially granite outcrops. The Esperance Nyungars core settlement areas appear to have been on the coast so they probably only ventured inland as far as Marbaleerup once or twice a year to make use of seasonally available resources during the winter and early spring. These forays would have sometimes, or perhaps routinely included social engagements with desert or semi-desert dwelling people.

Counter to the prediction, Belinup does not present a strong archaeological signal of having functioned as an aggregation locale, principally because there is no strong evidence of mixed regional personnel, and the spatial patterning could not be convincingly tied to aggregation activities. It is possible that Belinup was used for aggregations of local Nyungar people only, which may make it difficult to identify ‘mixed regional personnel’ in the archaeological record. It also brings into question exactly what constitutes ‘mixed regional personnel’? if Esperance Nyungar people who were usually dispersed in smaller groups periodically gathered at Belinup, it could be considered aggregation. However, there is not sufficient evidence to support an interpretation of Nyungar-only aggregation at Belinup either, because the archaeological signature could equally be attributed to sustained/repeated occupation over time.

What is apparent around Belinup is that this was a more intensively used area than the hinterland and people employed a localised system of logistical mobility as part of core settlement that lasted through most of the year, especially late spring, summer and autumn. The intensity of non-aggregation activities here throughout the year may be obscuring an
archaeological signal of aggregation considering that if such events did take place here, they may have only happened once or twice a year. The results support an interpretation of logistically organised coastal settlement being at the core of Esperance Nyungar landuse.

9.4 RESEARCH QUESTION THREE

How can archaeological methods be used to distinguish between:

a) aggregation events of large groups of people from around the surrounding regions

b) sustained or repeated use of the site by small and medium sized groups of local people over time?

In this research question, the two defined scenarios need not be mutually exclusive. Aggregation events of large groups of people from surrounding regions, and sustained or repeated use of a site by small and medium sized groups of local people, may both occur at the same place. This complicates the archaeological signature and is one of the main challenges of applying the aggregation hypothesis.

Archaeological identification of aggregation is considered in relation to Conkey’s eight archaeological indicators (Conkey 1980, 612; and see section 4.3). Each of the indicators are discussed here and an argument is made that while all of these indicators are relevant to aggregation, not all of them are essential for the positive identification of aggregation in the archaeological record.

Indicator (1) larger group size and its relationship to the spatial extent of the occupation is difficult to prove archaeologically, especially if considered in isolation from other factors. This
challenge is apparent in the case of Belinup where a very large spatial extent of surface archaeological material was initially thought to be the result of larger group size associated with aggregation. However, upon closer analysis there was no evidence to specifically link the spatial extent of the materials to larger group size. This is due to the fact that the intensive archaeological signature that characterises this locality is just as likely a result of repeated and sustained activity by small groups as it is of larger groups aggregating together. In the case of Marbaleerup the spatial extent of the occupation was a little more distinctive because of a scarcer and more punctuated distribution of archaeological materials in the Esperance interior. On this basis Marbaleerup does stand out from other sites for its spatial extent. However, the link between spatial extent and larger group size is still tenuous. When spatial extent is considered in conjunction with other indicators such as site-structuring and different activity areas, it becomes a little easier to link the spatial extent to larger group size. On the whole, this indicator is relevant to the identification of aggregation and can be useful when applied in conjunction with other indicators, but should not be considered essential.

Indicator (2) seasonal occupation that may or may not have been repeated, the duration of which may be congruent with the length of the harvesting season is likely an important pre-requisite of aggregation because it is necessary to have enough food to provision for the events and seasonal availability is key. Furthermore, timing is an important part of any aggregation event and it needs to fit with seasonal movements. However, identifying this indicator archaeologically can be challenging, especially in open-site contexts where organic materials such as plant or animal remains may not have preserved. The breadth of the resource base also needs to be considered because in most cases a proliferation of different food sources would have been required to provision events. In some cases, a particular resource may have been the primary provider for the events. Critical to any possibility for aggregation was adequate fresh
water. In the case of Marbaleerup, rainfall events must have been a key consideration for seasonal occupation. At Belinup, rainfall is more regular, predictable and plentiful so it may have been less of a primary consideration. In fact, the resource base at Belinup is diverse and plentiful making a distinct harvesting season difficult to identify. At Marbaleerup, Nyungar knowledge suggests a seasonal occupation period of late winter/early spring, which directly reflects the seasonal availability of key resources. However, seasonal occupation was not evident in the archaeological results. This does not mean seasonal occupation did not occur, only that it is not archaeologically identifiable in this case. So, does the lack of archaeological evidence for seasonal occupation at Marbaleerup become an obstacle for identifying aggregation? I argue that if considered in isolation, this indicator should not be used to disprove the aggregation hypothesis on the basis that seasonal occupation relative to the harvesting season may have taken place without leaving a clear archaeological signature. A different way to approach this indicator might be to look at the potential resource base around the site (during the time period under consideration) to investigate whether there were adequate resources to provision for large gatherings and what some of the key resources might have been. I suggest the first consideration should be availability of adequate fresh water. Based on analysis of the key resources, it may be possible to postulate a harvest season at a given location. Having an idea about when a probable harvest season may have been may also provide a means to then test that hypothesis through archaeological analysis.

Indicator (3) site structuring and the way different activities were carried out is a good way to unpack the issue of distinguishing aggregation events from repeated use of the site over time, and is closely related to indicators (5) and (6). At Marbaleerup, site structuring was an important indicator for identifying aggregation. This was done at an inter-site rather than intra-site scale, through consideration of the different activity areas of Budjari Yorg, MO1, MO2
and at Marbaleerup proper. In this way, different activity areas were identified at different sites within the broader locale and together they formed a site structure consistent with aggregation. The same approach was conducted at Belinup but the results were quite different. At Belinup the results of lithic analysis did not conform to the predictions. Instead of supporting an aggregation hypothesis, the results indicate this area was intensively used by local groups of people. This indicator, along with the closely aligned indicators (5) and (6) become critical in upholding an aggregation hypothesis at Marbaleerup and disproving it at Belinup. Without some understanding of site structuring and a diversity of activities taking place, aggregation becomes very difficult to prove or disprove archaeologically.

Indicator (4) maintenance of relevant site features may have applicability to certain archaeological contexts, such as Altamira where Conkey formulated her original approach. However, I suggest that this indicator is not essential for proving or disproving the aggregation hypothesis in all cases. There was not strong evidence for this indicator at Marbaleerup or Belinup. It could be argued that site features such as the stone arrangements required maintenance but it is difficult to prove archaeologically. Gnamma holes require maintenance (regular cleaning) in order to provision clean fresh water and it is highly likely that the gnamma holes at Marbaleerup were regularly maintained, however it is difficult to prove this on current analysis. I do not believe that a lack of direct evidence for maintaining gnamma holes or other relevant site features at Marbaleerup disproves the aggregation hypothesis. On this basis, indicator (4) is considered relevant but non-essential to the aggregation hypothesis.

Indicator (5) a greater total range of activities than at any one other (presumably dispersion) site is closely aligned with indicators (3) and (6) and collectively I argue they are essential in proving the aggregation hypothesis because they can be used to help articulate a difference
between large sites resulting from repeated or sustained occupation as opposed to aggregation sites. However, sustained occupation without aggregation may also create a wide range of different activities so researchers need to be careful in assuming too much from this indicator alone. For example, the Marbaleerup complex fulfils this indicator and so does Belinup, with diverse archaeological features at both locations having been part of their attraction for using the aggregation hypothesis at the outset. Upon closer analysis however, Belinup did not uphold the aggregation hypothesis, despite clear archaeological evidence for a greater total range of activities than other sites. Conversely, the combination of indicators (3), (5) and (6) were important for upholding the aggregation hypothesis at Marbaleerup and on this basis they are considered important indicators, when used in conjunction with other indicators.

Indicator (6) *at least some activities different from those that took place at smaller, presumably dispersion sites* is critical in the aggregation hypothesis because aggregation involves people coalescing together to take part in events and activities that are outside of everyday experiences. The presence of extensive stone arrangements and rock art at Marbaleerup and Belinup support this indicator quite clearly. Indicator 6 is most useful when considered in conjunction with indicators (3) and (5).

Indicator (7) *ecological factors that might have contributed to the aggregation* is an essential indicator. Somewhat related to indicator (2), indicator (7) is more essential because without the right ecological factors, aggregation may simply not be possible. Both Marbaleerup and Belinup are rich ecological nodes with plentiful resources for Aboriginal subsistence and both locales appear well suited to provisioning for aggregation events at certain times of the year. While the presence of this indicator alone does not prove aggregation, its absence could disprove aggregation. On this basis indicator (7) should be considered critical.
Indicator (8) a mixture of regional personnel is an essential indicator for aggregation. This is the indicator that ultimately denied the aggregation hypothesis at Belinup because without solid evidence for mixed regional personnel it is very difficult to make an argument for aggregation. Multiple lines of evidence suggest there were mixed regional personnel at Marbaleerup which provides a strong base for upholding the aggregation hypothesis at this location. However, the question of what constitutes ‘mixed regional personnel’, complicates the discussion of this indicator. The research questions in this thesis are focussed on aggregation between Nyungar and non-Nyungar people and thus, the approach has looked at archaeological indicators for these distinct groups. However, intra-group aggregation may also occur between smaller sub-groups who are usually dispersed. The challenge with this scenario, is how to identify it archaeologically, and this leads back to the quintessential challenge for identifying aggregation in the archaeological record more broadly. That is, how do we distinguish between aggregation and sustained or repeated use of the site over time? It is my contention that without some evidence for mixed personnel (at any scale, including intra-group) the aggregation hypothesis cannot be convincingly upheld.

In summary, I argue that while Conkey’s eight archaeological indicators are all relevant to identifying aggregation, some are essential, while others are not. The critical point about identifying aggregation in the archaeological record is distinguishing between aggregation and repeated or sustained use by small groups over time. Therefore, indicator (8) is essential because evidence of mixed regional personnel is a requisite of aggregation. Indicator (7) is also essential because ecological factors need to be able to adequately provision for the event to make it possible. Indicator (2) is closely linked to (7) because it relates to the harvesting season and seasonal occupation but this can be difficult to prove archaeologically and I argue that
proving a harvest season is not critical to fulfilling the aggregation hypothesis. Indicators (3), (5) and (6) are interrelated and some combination of these indicators are essential to upholding the aggregation hypothesis because they all relate to site structuring and different activities taking place on site that distinguish it from other dispersion sites. Indicator (1) is certainly relevant but if considered in isolation from indicators (3), (5) and (6) is not essential because larger site size alone does not necessarily indicate aggregation. Indicator (4) is somewhat vague and I consider it relevant but not essential to the aggregation hypothesis.

What has been most instructive about this analysis is the importance of looking across multiple lines of evidence and considering a range of different indicators simultaneously, which is what Conkey’s approach was driving at with the eight indicators. Consideration of the posited aggregation sites within the broader system of mobility and land-use of which they are a part has been another important part of this analysis and must be an important part of identifying aggregation in almost any context because without some idea of what constitutes a dispersion (non-aggregation) site within a given settlement system, it becomes very difficult to make any sort of coherent argument for aggregation. In this way, mobility and aggregation are closely related conceptual fields for archaeologists studying hunter-gatherer societies.

9.5 RESEARCH QUESTION FOUR

How can archaeological methods be used to test the suggestion that Esperance Nyungar people were involved in a dynamic negotiation of territory and identity, as a result of the geographical expansion of Western Desert culture, language, and law? Can archaeological methods be used to understand more about the dynamics of these negotiations?
Answering this question through the application of archaeological methods is extremely challenging. However, through the analysis of a range of archaeological materials (stone arrangements, rock art and lithics), along with cross analysis of non-archaeological information (ethnographic, geographical, botanical, historical), a considered response to this question can be developed. Firstly, with rock art where the adherence of the Esperance assemblages to the formal characteristics of other art found in Eastern Noongar country, offers a strong reflection of Nyungar/Noongar identity. It is significant that other art sites displaying these characteristics proliferate along the outskirts of Noongar lands. The distribution of rock art sites in eastern and northern parts of Noongar country, may be an indication that identity politics and territorial negotiation were prominent in these frontier areas and that rock art was used in mediating and negotiating these dynamics. This scenario has been suggested elsewhere in Australia (Chapman 2002; Gunn 2002) and in North America (Lee and Hyder 1991). The marking of landscape with symbols is often considered to have been used by Aboriginal people as a way to negotiate matters of territory, identity and connection to place, on either an individual or collective basis (Tacon 1994). That is, by marking a particular place with permanent or semi-permanent symbols, individuals or groups may be expressing their ongoing association with a place, either explicitly or implicitly. When these symbols reflect those of a broader group or collective identity, the marking of landscape may be used to invoke territorial rights or obligations to place. The rock art at Marbaleerup supports this theory.

At Marbaleerup, as at other Eastern Noongar art sites, there are a number of formal elements in the art assemblage that are distinctly Noongar (ie. found in Noongar country but not in the Western Desert), and some traits that are common to both Noongar and Western Desert assemblages, indicating a shared graphic vocabulary. There is evidence of superimposition and
in one of these cases a distinctive Western Desert motif (‘tree’ or ‘fern’) is present in the superimposed (later) layer, which may be a reflection of shifting negotiations over territory and identity through time. The presence of some shared characteristics between Eastern Nyungar and Western Desert assemblages suggests at least some open social networks transcending a boundary between these distinct cultural blocs; while distinctive traits belonging to one region or the other, reflect boundaries between territories, and more bounded regional identities. These findings provide a subtle hint at the dynamics of interaction becoming apparent in the archaeological record of the Esperance region. More cross-analysis of rock art between the Southwest, Goldfields, Gascoyne and Western Desert regions will likely yield further basis for interpretation of the role of rock art in identity politics and territorial organisation at the edge of Noongar country.

It was predicted that the stone arrangements analysis would find evidence of non-Noongar origins of the stone arrangements at Belinup and Budjari Yorg. However, this was not the case and in fact the evidence suggests that at the overall design scale, the arrangements at the two study sites are of an entirely local origin, and they are thus interpreted as local ritual centres. This finding supports the idea of strong local Esperance Nyungar identity and connections to place, and does not support the idea that the stone arrangements were the result of interactions with Western Desert people.

The prevalence of silcrete from Ngadju country and some non-Noongar lithic technologies around the Marbaleerup precinct provide evidence of interaction between local Nyungar people and non-Nyungar people from further north. The spatial organisation of the Marbaleerup precinct, particularly MO2 being interpreted as a non-Nyungar logistical and short-term camping site hints at the dynamics of interaction. Nyungar knowledge contends that the
Marbaleerup proper was used for inter-group ceremonial purposes in which Nyungar people ‘hosted’ visiting Ngadju and Mirning people. This circumstance would predict some spatial delineation between the different groups during the down-time surrounding ceremonial events, including where different groups camp and undertake domestic activities, including stone tool production and maintenance. The results from MO2 support this prediction. More research into the spatial delineation of artefact materials around the Marbaleerup precinct may yield greater interpretive potential about the links between site structure and the dynamics of interaction.

**Territory and Identity – Summary**

There is no strong or conclusive archaeological evidence to support an interpretation of dynamic negotiations of territory and identity at the study sites. However, there are numerous hints of these kinds of negotiations at Marbaleerup, which bears all the archaeological hallmarks of an aggregation locale that supported gatherings of Nyungar and non-Nyungar people. The strongest indication of identity politics is in the Marbaleerup rock art assemblage, especially when considered in conjunction with lithic results that demonstrate the presence of exotic stone (silcrete) and spatial delineation of different activity areas around the precinct. There is no strong archaeological evidence to support an interpretation of these kinds of identity politics in the Belinup assemblages. On the whole, these results demonstrate that archaeology can be used to interpret dynamics of interaction, but it remains challenging terrain and such analysis may lead more to interpretive hints rather than strong and robust interpretations. This cautionary tale should not deter such research however, because these are important goals for archaeological research in that they begin to unpack the dynamics of past societies, something that is often poorly understood as a result of being perceived as too difficult. The challenges of interpreting human dynamics from static archaeological materials are potent, but we must
strive to develop theories and methodologies to unpack such dynamics for the continuing development of the discipline.

9.6 RESEARCH QUESTION FIVE

How can a working model of decolonized Indigenous archaeology (McNiven and Russell 2005; Smith and Wobst 2005) be used to ensure that this archaeological research project is relevant to the lives and culture of the contemporary Esperance Nyungar custodians?

The key to answering this research question is in the foundation of the research partnership which was set up prior to the commencement of the research and prior to choosing a research topic. Based on what I have learnt from this research, I argue that the framing of relationships both structurally and inter-personally before commencing research is pivotal to undertaking a working model of decolonized archaeology. Ensuring that the topic is relevant to the lives and culture of contemporary custodians can be structurally embedded in a research project by discussing the research questions in detail before commencing. This is somewhat simplistic but is actually a common stumbling block for archaeological research projects in Australia (Murujuga Aboriginal Corporation 2016: 266). Framing relationships and discussing the research topic before commencing research is not foolproof by any means as those relationships need to be maintained structurally and inter-personally throughout the entirety of the research project, as well as allowing for new relationships to be formed and nurtured as personnel changes within communities and organisations. Once a strong structural and inter-personal foundation is set for the research partnership and a research topic has been developed and agreed upon within a collaborative exchange, a working model of decolonized archaeology can be put into action.
9.7 CONCLUSION: IMPLICATIONS AND FUTURE RESEARCH

The following sections discuss the implications of the results in relation to the core topics of the thesis – mobility, aggregation, identity, and community research partnership.

9.7.1 Mobility, Landuse and the Social Landscape

Based on her doctoral research Moya Smith characterised the Esperance Nyungars as having practised high residential mobility. This interpretation provides a base line on which to build, and to work towards a more fine-grained understanding of Nyungar mobility in the Esperance region. The findings of this doctoral research indicate that Marbaleerup functioned as an aggregation locale that employed logistical mobility strategies within an extended site complex. There is evidence consistent with mixed regional personnel having been present, or at least that there was interaction between Nyungar and non-Nyungar people who visited this location (though contact may have been elsewhere). The presence of symbolic assemblages comprising rock art and stone arrangements suggest social and ceremonial elements were part of aggregation activities. Smith’s interpretation of high residential mobility is still accepted as the general landuse structure in the Esperance hinterland but the identification of localised logistical systems such as that surrounding Marbaleerup complicate Smith’s understanding of mobility and landuse. The identification of social and ceremonial elements offer a more nuanced picture of how social and economic drivers operated in tandem as part of the landuse system. The results from Belinup do not support the aggregation hypothesis but support an interpretation of logistical landuse systems focussed in the coastal zone, forming the core of
Esperance Nyungar settlement. Symbolic assemblages indicate that social and ceremonial pursuits formed part of that landuse system.

Another point for consideration is the connection between identity and environment. The Esperance Nyungars, who also refer to themselves as Tjaltjraak, say that their country extends as far as the Tjaltjraak trees (Blue Mallee Gum) grow to the east and north. The distribution of the Tjaltjraak trees broadly corresponds to the bio-geographical sub-region known as the Esperance Plains (Figure 3), although the Tjaltjraak do grow a bit further north in places (Figures 6 and 7). As argued in section 6.5 (and see Figure 12), archaeological evidence supports Esperance Nyungar knowledge that suggests the Esperance Plains is the core basis of Nyungar settlement and the areas to the north of it, which are in the Mallee bio-geographic sub-region (including Marbaleerup), are peripheral to traditional Esperance Nyungar settlement. The distribution of Tjaltjraak is directly connected to Esperance Nyungar identity in name and through their connection to country.

This analysis has highlighted the subtle interplay between social and economic drivers of the landuse system. Through application of the aggregation hypothesis and analysis of symbolic assemblages (rock art and stone arrangements) to understand more about social drivers; combined with analysis of economic assemblages (lithics) and a consideration of key resources (bush tucker, stone suitable for knapping, fresh water etc.) to understand more about economic drivers, the research has progressed the discussion toward what Kelly calls the “multi-dimensional” basis of mobility. The multiple dimensions of mobility that this thesis has dealt with incorporate a consideration of how residential and logistical mobility strategies are used interchangeably within the landuse system. This approach considers mobility at different scales, such as the internal logistical organisation within the Marbaleerup complex that
ultimately sits within a broader residential mobility strategy throughout the Esperance hinterland. The research links the logistical strategies employed around Marbaleerup to aggregation events that facilitated a range of social and economic exchanges between neighbouring groups. While the rock art and stone arrangements point to social and ceremonial exchange, Esperance Nyungars also highlight the importance of trade and economic exchange within these social and ceremonial interactions (Gail Reynolds-Adamson, pers. comm., 11 September 2015). Basic subsistence economics play a role in making the events possible and these are directly linked to seasonality and movement cycles. Core and periphery relationships within the landuse system are linked to patterns of seasonal movement, underpinned by subsistence economics and a social calendar that includes aggregation events (Figure 12). The results demonstrate that archaeology can be used as a tool in the process of unpacking these multi-dimensional factors of mobility and highlights the subtle and complex interplay between social and economic drivers in late-Holocene Aboriginal society of southern Western Australia. These findings are applicable to archaeological research in other parts of Australia and the world and to hunter-gatherer studies more broadly, including those dealing with deep time.

9.7.2 Aggregation

Through the combined application of contemporary Nyungar knowledge and an archaeological approach, this thesis contributes to an understanding of how aggregation may be assessed using archaeological methods. In so doing it provides a reconsideration of Conkey’s eight archaeological indicators (see section 9.4) and highlights the importance of assessing aggregation within broader mobility and landuse systems, emphasising that aggregation is a component within the multi-dimensional structure of hunter-gatherer mobility, which is
underpinned by a range of social and economic drivers. The thesis also demonstrates the inherent challenges with identifying aggregation through archaeological methods. These challenges are best demonstrated by the Belinup results.

Contemporary Nyungar knowledge provides an interpretation that suggests Belinup did host aggregation events in the past, but that aggregation was one of many functions of that locale (see section 3.2.1). This is somewhat different from Marbaleerup where Nyungar knowledge of a well-provenanced oral history, holds that aggregation was the primary function (see section 3.2.1). As there is strong consensus among all the Esperance Nyungar research participants in this regard, I am working under the assumption that they are both broadly accurate, at least for the most recent period of occupation (immediately preceding European settlement in the 19th century). The archaeological results did not uphold the aggregation hypothesis at Belinup, principally because of limited evidence for mixed regional personnel, but did uphold it at Marbaleerup where there is reliable evidence of mixed personnel. Therefore, the results suggest that in situations where aggregation was one of multiple functions/activities taking place at a given locale over time, it may not be recognisable in the archaeological record. This is due to the intensity of non-aggregation activities obscuring the archaeological signature of aggregation events. Most archaeological research is aggregative in nature and often incorporates significant time-averaging within the activities that produced the material culture. This means that the results will only reflect broad patterns in past human behaviour and will gloss over much of the variability in activities that people were actually undertaking, particularly one-off activities, short-term activities or those that only account for a small portion of the overall use of a place. This is directly relevant to the question of aggregation given that such events only happen periodically, and may occur at locations that are used for a range of other non-aggregation activities, and occupation. The implication is that while
aggregation may have taken place at a given location, this does not necessarily mean that it will be recognisable in the archaeological record, especially at locations with intensive occupation and other non-aggregation activities.

A further matter for consideration is what actually constitutes ‘mixed personnel’, and what are their material signals? For example, it may be that Belinup played host to gatherings of Esperance Nyungar people and perhaps other Noongar people from further west, rather than desert affiliated groups. This would likely leave a different material signal and may be obscuring the identification of ‘mixed regional personnel’ at Belinup. If Nyungar/Noongar people who were otherwise dispersed in smaller groups were gathering together at Belinup at certain times, it would still constitute aggregation, but may not have left such a discernible signal in the archaeological record. It may in fact make more sense for Belinup to have hosted Nyungar-only aggregation events, given that it is situated in the core of Esperance Nyungar settlement areas close to the coast, while Marbaleerup is in a peripheral location and therefore perhaps better suited (from a Nyungar point of view) to hosting events with non-Nyungar people who may represent a potential threat (either perceived or real) to territory. In this thesis I am particularly interested in aggregation between Nyungar and non-Nyungar people and have therefore focussed on this aspect of the archaeological record, but aggregation between Nyungar/Noongar people is also an interesting point for consideration in future research. The challenge with identifying aggregation between more closely aligned groups, or even intra-group aggregation, lies in recognising ‘mixed personnel’ in the archaeological record.

While highlighting some of the challenges, this thesis also demonstrates the applicability of the aggregation theorem to archaeological research and its utility as a conceptual tool in linking archaeological remains with human dynamics of mobility, society, and economy. This thesis
presents a multifaceted approach which assesses the aggregation hypothesis against a range of archaeological, geological, environmental and geographical data and considers each locale within its broader landuse context. I argue that a multifaceted approach is critical in overcoming the challenges of identifying aggregation in the archaeological record.

9.7.3 Identity

Identity has been pivotal for this research in two ways. Firstly, as a conceptual framework to investigate research questions about the dynamics of interaction between Nyungar and non-Nyungar people. Identity is inherently dynamic as we are all constantly negotiating and renegotiating our own individual and collective identities. This mutability creates challenges for archaeology, but it also makes identity an important tool in unpacking some of the dynamics of past societies from a static archaeological record. The results discussed in section 9.5 demonstrate how archaeological methods have been used to identify and understand something about the dynamic process of negotiating identity and territory within the frontier space at Marbaleerup. The second way identity has been pivotal is as a mechanism for linking the process of archaeological inquiry with the Esperance Nyungar descendent community. This is rooted in the principles of decolonized archaeology which espouses that ownership of heritage is the prerogative and right of descendent communities. Identity highlights this principle because the engagement of descendent communities with their heritage through archaeology, informs the identities of people and communities in the present. It is about where people come from and how they connect to their pre and post-colonial cultural heritage, and then how that informs them about their current identity/ies. This concept is discussed further in section 9.7.4. below.
To return to the challenge highlighted at the beginning of this thesis (see section 1.1) about the connection between identity and material culture. This research has employed a theoretical and methodological approach that addresses the challenge by mapping the spatial distribution of symbols across landscapes and considering the links between territory and identity in Aboriginal culture of Southwest Australia. Rock art and stone arrangements are well suited to such an analysis because they are symbols with fixed locations in the landscape. The approach used here works from the known to the unknown and thus begins with what is known about current conceptions of identity and territory through Native Title mapping, before moving back through time toward the unknown. The rock art at Marbaleerup for example is fixed in space in an area currently considered as Esperance Nyungar country. There are many shared symbols between the Marbaleerup assemblage and multiple rock art sites situated close to the current Noongar frontier that extends some 700km north-west to the Lake Hillman area. While it is not possible to say that the symbols directly represent the identity of Noongar or non-Noongar people, it does tell us that there were shared graphic vocabularies throughout this frontier zone. Noongar/Nyungar knowledge indicates that at least some of this art is considered to be the result of interaction between Noongar/Nyungar and non-Noongar people (see Chapter 8). This informs an interpretation of rock art having been used in past in negotiations of identity and territory along the frontier. In this way archaeology has been used to interrogate questions about identity without relying upon a direct connection between material culture and any particular notion of identity. The inverse is also true that identity as a conceptual framework has been used as a prominent tool for archaeological investigation of symbolic assemblages and has provided a means for interpretation, without relying on a direct connection between material culture and identity.
Another important point for consideration is how the symbols at Marbaleerup inform and shape current Esperance Nyungar identity. As Esperance Nyungar people connect to Marbaleerup now, they are reminded of their connections to the place and to their ancestry through the symbols in the rock art, and this informs identity now. In this way archaeology is a means for descendent communities to connect with their heritage, and identity is one of the key ways to mediate the connection between material culture of the past and people in the present.

9.7.4 **Community Research Partnership**

The continued interest, contribution and intellectual engagement of the Esperance Nyungar participants in this research across the six years that it was undertaken, has been critical to the successful completion of the thesis.

Part of what makes this research relevant is the timing of it, relative to the Esperance Nyungar timeline of events. The research was conducted through the last four years of the legal battle for Native Title rights. Two years before the completion of this thesis, Native Title was determined to still exist as part of a consent determination, and a new era began in Esperance with the Esperance Nyungars setting out their blueprint for how they wish to manage their heritage, culture and country into the future. The legal battle for Native Title was emotionally harrowing for the Esperance Nyungars because it was based on a sustained questioning of their identity and their connection to country. This doctoral research, while being undertaken in parallel to the Native Title case, had no direct involvement in the Native Title process whatsoever, which meant that it acted somewhat as a sanctuary for the participants to be involved in a project that offers them the space to explore the history of their own identity.
without the pressures of legal scrutiny or questioning of their identity or connection. It provided a means to assert identity and territory in a pro-active and positive way, as opposed to the context of responding to the legal attacks of the Government, that sought to undermine and de-legitimize Esperance Nyungar identity and territory through Native Title litigation. In this way, the research has been relevant to the lives and culture of contemporary Esperance Nyungar people.

One interesting and potentially challenging aspect of community research partnerships with descendent communities, is when the results of archaeological analysis do not correspond with community knowledge. This scenario occurred in some instances during this research project, whereby site-use predictions based on Nyungar knowledge at some of the Belinup sites did not match the archaeological results. In these instances, I attributed the divergence of the two positions principally to the fact that archaeological analysis is aggregative and generally only accounts for broad patterns of past human behaviour. Therefore, the site-use activities that the research participants predicted may have still taken place at certain times, but were not the dominant activities undertaken on a sustained basis and therefore are not reflected in the archaeological record. However, this explanation actually side-steps the issue of community knowledge and archaeological knowledge contradicting one another. The reality is that sometimes, the two perspectives do contradict one another and in these instances open and constructive dialogue is important to facilitate critical reflection on the results between both parties. This might be particularly fraught in a Native Title era when people are being challenged about their identity. If the dialogue is to be successful, it needs to be underpinned by mutual respect for each of the different knowledge systems. This includes critical reflection by researchers that academic research is one kind of knowledge system, and that other knowledge systems exist and co-exist. If mutual intellectual respect is present, then a
discussion about divergent results can be constructive and may be very illuminative for the particular research topic and for the field of Indigenous community-based archaeology more broadly. Such a dialogue would aim to uphold academic rigor on the one hand. While on the other hand it must be acknowledged that for the researcher/s the results represent an academic interest whereas for the descendent communities the results may have much more deeply personal and political implications. Researchers need to be mindful of this and to approach the discussion with due sensitivity. Mutual intellectual respect needs to be built into the relationship and into the formal research partnership from the outset. It may also be prudent to broach the subject of potential divergent results early in the research partnership. Furthermore, it may be useful to discuss the limitations of archaeological research, as well as the opportunities. An example of the limitations is the aggregative nature of archaeological research and its potential inability to identify many of the nuances in past human behaviours. In hindsight, I realise that I did not have these types of pre-emptive discussions with the research participants, but I now understand their importance. This topic is not widely discussed in the literature and warrents further attention.

At the completion of this thesis the Esperance Tjaltjraak Native Title Aboriginal Corporation (ETNTAC) is fully operational and taking up the leadership of managing culture, heritage and land. This includes managing data, information and research. All the research data generated through this thesis will be made available for ETNTAC along with the thesis itself and maps. In this way, the results contribute to an ongoing body of knowledge and research, led by Esperance Nyungar people. An effective structure and a clear system of cultural governance creates a platform for this to take place. The role of archaeology has been clearly outlined by the ETNTAC as an important operational component of managing and researching heritage
and culture in the future. Through this structure, a model of decolonized Indigenous archaeology will be active under the leadership of Esperance Nyungar people.

9.8 CONCLUSION

This research has demonstrated the dynamism that is apparent in Aboriginal society in southern Western Australia, now and into the distant past. The complexity and mutability of identity politics makes it an inherently dynamic society and this research has demonstrated a historical legacy of these dynamics that predates the colonial interruption. Then throughout all the upheaval of European settlement, these same identity politics continue to be negotiated, despite the external pressures. The internal social dynamics of Aboriginal society are at some level an important part of identity, as people continually negotiate who they are, how they relate to the people around them and how they relate to places. This constant process of identity-making is a fundamental part of culture.

Native Title has had the effect of making the structural organisation of Aboriginal society more internally bounded as legislation sought to codify distinct groups of people belonging to distinct areas of land. This can be directly observed within the study area through the delineation of ‘Esperance Nyungar country’ in the Native Title determination. The boundaries are in some cases arbitrary, such as the rabbit proof fence which forms the western boundary, but nonetheless have geo-political and socio-economic realities based around the rights to speak for country. In some ways the structural clarity that the Native Title process has effected is useful, as with the Esperance Nyungar six-family governance structure which is based on traditional tenets of Aboriginal society and formalised through the Native Title process. However, the process of establishing this formal structure caused bitter disputes and in-fighting.
within and between the families. Ultimately, Native Title seeks to create unambiguous bounded entities with specific rights to certain areas of land, that can be neatly drawn on a map. This neglects the nuanced realities of Aboriginal societies which are inherently dynamic and mutable. Where opponents of Native Title (primarily State Governments) seek to seize upon this mutability as a way to legally undermine and delegitimize Aboriginal people’s connection to land and resources, they are in fact maintaining a fallacy that Aboriginal society was stable and unchanging before the advent of colonisation and that any deviation during the post-colonial era somehow delegitimizes people’s connections. Underlying this fallacy is a national narrative of stasis and immutability in pre-colonial Aboriginal society. The Native Title system fails to recognise that there is always change within continuity and that culture is maintained as long as it continues to be re-negotiated within and across communities and generations, and this will be in response to both internal and external forces. The colonial invasion was just one of many forces that continues to influence Aboriginal culture and identity. This research has highlighted the falsity of such beliefs by demonstrating the inherent dynamism in Aboriginal societies of southern Western Australia during the late-Holocene, and that the continual negotiation of identity is fundamental to Aboriginal culture and society. There are challenges and opportunities for an archaeology which recognises such change and seeks to advance knowledge of past societies, their complexities, their nuances, and their dynamism.
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### APPENDIX 1: STONE ARTEFACT FIELD RECORDING SHEET

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<tr>
<th>Stone Artifact Recording Sheet</th>
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351